

Inorganic Dye and Pigment Manufacturing

1997

Issued October 1999

EC97M-3251C

1997 Economic Census

Manufacturing

Industry Series



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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325131	Inorganic dye & pigment mfg ..	58	74	8 608	395 570	5 666	11 832	251 662	2 027 247	1 706 481	3 734 425	212 501
281610	Inorganic pigments (pt)	N	74	8 608	395 570	5 666	11 832	251 662	2 027 247	1 706 481	3 734 425	212 501
281910	Industrial inorganic chemicals, n.e.c. (pt)	N	—	—	—	—	—	—	—	—	—	—

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325131, INORGANIC DYE & PIGMENT MFG												
United States	—	74	50	8 608	395 570	5 666	11 832	251 662	2 027 247	1 706 481	3 734 425	212 501
California	1	6	5	656	25 297	354	718	12 411	100 601	71 898	164 290	7 296
Illinois	2	7	5	391	15 433	275	692	12 355	48 527	58 457	107 301	5 658
Maryland	—	5	5	1 092	52 822	642	1 277	30 375	161 524	146 999	305 828	10 011
Ohio	—	7	5	898	46 149	512	1 113	27 379	208 449	232 091	431 250	22 751
Pennsylvania	—	7	6	803	35 196	460	1 047	17 061	93 019	59 048	152 211	9 364

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325131, INORGANIC DYE & PIGMENT MFG		325131, INORGANIC DYE & PIGMENT MFG—Con.	
Companies ¹	58	Value added	\$1,000 .. 2 027 247
All establishments	74	Total inventories, beginning of year	\$1,000 .. 571 868
Establishments with 1 to 19 employees	24	Finished goods inventories, beginning of year	\$1,000 .. 241 025
Establishments with 20 to 99 employees	24	Work-in-process inventories, beginning of year	\$1,000 .. 41 147
Establishments with 100 employees or more	26	Materials and supplies inventories, beginning of year	\$1,000 .. 289 696
All employees	8 608	Total inventories, end of year	\$1,000 .. 541 367
Total compensation ²	506 264	Finished goods inventories, end of year	\$1,000 .. 233 246
Annual payroll	395 570	Work-in-process inventories, end of year	\$1,000 .. 48 229
Total fringe benefits	110 694	Materials and supplies inventories, end of year	\$1,000 .. 259 892
Production workers, average for year	5 666	Gross book value of total assets at beginning of year	\$1,000 .. 3 404 370
Production workers on March 12	5 693	Total capital expenditures (new and used)	\$1,000 .. 212 501
Production workers on May 12	5 662	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 45 242
Production workers on August 12	5 684	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 167 259
Production workers on November 12	5 625	Total retirements ²	\$1,000 .. 65 377
Production-worker hours	11 832	Gross book value of total assets at end of year	\$1,000 .. 3 551 494
Production-worker wages	251 662	Total depreciation during year ²	\$1,000 .. 200 780
Total cost of materials	1 706 481	Total rental payments ²	\$1,000 .. 13 740
Cost of materials, parts, containers, etc., consumed	1 443 025	Buildings and other structures rental payments ²	\$1,000 .. 4 047
Cost of resales	44 772	Machinery and equipment rental payments ²	\$1,000 .. 9 693
Cost of fuels	96 104	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 9 761
Cost of purchased electricity	93 878	Response coverage ratio ⁴	percent .. 91
Cost of contract work	28 702	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 76 518
Quantity of electricity purchased for heat and power	2 499 061	Response coverage ratio ⁴	percent .. 91
Quantity of electricity generated less sold for heat and power	—	Cost of purchased communications services ³	\$1,000 .. 2 932
Total value of shipments	3 734 425	Response coverage ratio ⁴	percent .. 91
Primary products value of shipments	3 481 233	Cost of purchased legal services ³	\$1,000 .. 2 188
Secondary products value of shipments	200 939	Response coverage ratio ⁴	percent .. 91
Total miscellaneous receipts	52 253	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 1 050
Value of resales	50 783	Response coverage ratio ⁴	percent .. 91
Contract receipts	D	Cost of purchased advertising services ³	\$1,000 .. 1 712
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent .. 91
Primary products specialization ratio	94	Cost of purchased software and other data processing services ³	\$1,000 .. 1 997
Value of primary products shipments made in all industries	3 896 927	Response coverage ratio ⁴	percent .. 91
Value of primary products shipments made in this industry	3 481 233	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 8 212
Value of primary products shipments made in other industries	415 694	Response coverage ratio ⁴	percent .. 91
Coverage ratio	89		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325131, INORGANIC DYE & PIGMENT MFG												
All establishments	—	74	50	8 608	395 570	5 666	11 832	251 662	2 027 247	1 706 481	3 734 425	212 501
Establishments with 1 to 4 employees	9	13	—	27	1 096	19	30	644	5 166	4 656	9 802	696
Establishments with 5 to 9 employees	9	6	—	38	1 487	28	56	887	5 943	5 358	11 281	761
Establishments with 10 to 19 employees	8	5	—	72	3 657	50	85	2 099	15 760	13 827	29 334	1 833
Establishments with 20 to 49 employees	4	16	16	511	18 114	317	623	9 828	72 160	91 973	162 231	9 585
Establishments with 50 to 99 employees	—	8	8	561	21 875	424	981	14 864	83 407	80 049	163 410	5 087
Establishments with 100 to 249 employees	—	14	14	2 173	96 078	1 353	2 836	56 972	396 037	307 985	691 063	33 521
Establishments with 250 to 499 employees	—	8	8	2 621	129 997	1 494	3 124	79 653	556 033	475 199	1 029 228	39 016
Establishments with 500 to 999 employees	—	4	4	2 605	123 266	1 981	4 097	86 715	892 741	727 434	1 638 076	122 002
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	15	—	121	4 318	77	124	2 542	20 497	18 477	38 901	2 761

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325131	Inorganic dye & pigment mfg	74	8 608	395 570	5 666	11 832	251 662	2 027 247	1 706 481	3 734 425	212 501
3251311	Titanium dioxide, composite and pure	11	4 690	234 728	3 379	6 926	163 535	1 442 337	1 215 661	2 664 580	156 708
3251314	Other white opaque pigments	6	409	13 453	235	465	6 796	71 321	89 226	159 561	6 519
3251317	Chrome colors and other inorganic pigments	28	3 172	134 742	1 832	4 037	73 845	453 125	348 430	796 858	41 294

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325131	Inorganic pigments	N	X	X	3 896 927	N	X	X	N
3251311	Titanium dioxide, composite and pure @	N	X	X	2 499 187	N	X	X	2 316 198
32513110	Titanium dioxide, composite and pure	N	X	X	2 499 187	N	X	X	N
3251311000	Titanium dioxide, composite and pure	5	X	X	2 499 187	5	X	X	2 316 198
3251314	Other white opaque pigments	N	X	X	342 394	N	X	X	303 584
32513141	Other white opaque pigments	N	X	X	342 394	N	X	X	N
3251314111	Zinc oxide pigments	7	X	112.7	146 045	9	X	114.7	146 336
3251314121	Titanium pigment preparations	4	X	S	63 412	8	X	5.3	43 200
3251314131	All other inorganic white opaque pigments	6	X	S	132 937	9	X	292.2	113 962
3251314Y	Other white opaque pigments, nsk	N	X	X	—	N	X	X	N
3251314YVV	Other white opaque pigments, nsk	N	X	X	—	N	X	X	86
3251317	Chrome colors and other inorganic pigments @	N	X	X	942 618	N	X	X	N
32513171	Chrome colors	N	X	X	113 458	N	X	X	N
3251317110	Chrome colors	8	X	X	113 458	12	X	X	110 628
32513172	Iron oxide pigments	N	X	X	331 457	N	X	X	N
3251317211	Iron oxide pigments	16	X	X	331 457	19	X	X	283 588
32513173	White extender pigments, including barytes, blanc fixe, and whiting; ceramic color pigments; and all other inorganic pigments	N	X	X	497 703	N	X	X	N
3251317311	White extender pigments, including barytes, blanc fixe, and whiting	3	X	D	D	8	X	S	122 474
3251317321	Ceramic color pigments	6	X	D	D	5	X	S	99 101
3251317331	All other inorganic pigments, nec	14	X	X	292 858	N	X	X	N
3251317Y	Chrome colors and other inorganic pigments, nsk	N	X	X	—	N	X	X	N
3251317YVV	Chrome colors and other inorganic pigments, nsk	N	X	X	—	N	X	X	N
325131W	Inorganic pigments, nsk, total	N	X	X	112 728	N	X	X	N
325131WY	Inorganic pigments, nsk, total	N	X	X	112 728	N	X	X	N
325131WYWW	Inorganic pigments, nsk, for nonadministrative-record establishments	N	X	X	77 384	N	X	X	N
325131WYWY	Inorganic pigments, nsk, for administrative-record establishments	N	X	X	35 344	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3251311	TITANIUM DIOXIDE, COMPOSITE AND PURE @		
	United States	2 499 187	2 316 198
3251314	OTHER WHITE OPAQUE PIGMENTS		
	United States	342 394	303 584
	Missouri	8 950	N
3251317	CHROME COLORS AND OTHER INORGANIC PIGMENTS @		
	United States	942 618	N
	California	57 236	N
	Illinois	111 936	N
	Maryland	130 726	N
	Ohio	73 393	N
	Pennsylvania	142 706	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325131	INORGANIC DYE & PIGMENT MFG				
32531201	Phosphoric acid, except spent (100 percent P2O5)	1,000 s tons..			
32518805	Sulfuric acid (100 percent H2SO4), except spent	1,000 s tons..			
32518103	Chlorine (100 percent Cl basis)	1,000 s tons..			
32518105	Sodium carbonate (soda ash) (58 percent Na2O)	1,000 s tons..			
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	1,000 s tons..			
00190031	Salt in brine	1,000 s tons..			
325000A5	Other industrial inorganic chemicals				
32510091	Synthetic organic chemicals				
21239303	Sulfur	1,000 l tons..			
21220021	Iron and ferroalloy ores, including tungsten, chromite, manganese, molybdenum, and cobalt				
21220023	Nonferrous metal ores, including copper, mercury, vanadium, titanium, platinum, etc.				
21239001	All other crude chemical nonmetallic minerals, including barite, borate, potash, fluorspar, rock salt, etc.				
32419903	Coke including breeze, used as a raw material	1,000 s tons..			
33300015	Parts and attachments for machinery and equipment				
32221001	Paperboard containers, boxes, and corrugated paperboard				
33240000	Metal containers				
00970099	All other materials and components, parts, containers, and supplies				
00971000	Materials, ingredients, containers, and supplies, n.s.k.				

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325131 INORGANIC DYE AND PIGMENT
MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing inorganic dyes and pigments.

The data published with NAICS code 325131 include the following SIC industries:

- 2816 Inorganic pigments (pt)
- 2819 Industrial inorganic chemicals, n.e.c. (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3251311	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@3251317	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
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3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
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3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
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3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
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			325199A100	2869837	2869837	325222D	28248	28248
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3253140161	2875061	2875000 pt	325412A	28344	28344	3255204691	2891454	2891454
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						325520AYVW	2891700	2891700
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3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
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3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
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			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400	3256111411 pt	2841133 pt	2841145 pt
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841146 pt
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325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998WYWWW pt...	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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U.S. Department of Commerce

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Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325132	Synthetic organic dye & pigment mfg	84	112	8 314	373 426	4 654	10 130	193 235	1 246 196	1 248 067	2 530 183	119 366
286520	Cyclic crudes & intermediates (pt)	N	112	8 314	373 426	4 654	10 130	193 235	1 246 196	1 248 067	2 530 183	119 366

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325132, SYNTHETIC ORGANIC DYE & PIGMENT MFG												
United States	—	112	62	8 314	373 426	4 654	10 130	193 235	1 246 196	1 248 067	2 530 183	119 366
Illinois	—	4	4	284	11 696	229	514	8 679	40 542	48 679	86 695	2 460
New Jersey	—	20	14	1 054	47 916	683	1 397	26 734	157 360	159 913	328 138	9 467
North Carolina	—	6	4	702	27 262	276	576	11 687	97 706	80 570	178 721	14 272
Ohio	3	12	6	1 405	64 691	893	2 006	39 050	290 893	189 253	481 857	23 697
Pennsylvania	1	14	6	756	32 648	403	692	15 633	88 968	66 432	154 746	11 906

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325132, SYNTHETIC ORGANIC DYE & PIGMENT MFG		325132, SYNTHETIC ORGANIC DYE & PIGMENT MFG—Con.	
Companies ¹	84	Value added	\$1,000.. 1 246 196
All establishments	112	Total inventories, beginning of year	\$1,000.. 491 117
Establishments with 1 to 19 employees	50	Finished goods inventories, beginning of year	\$1,000.. 250 732
Establishments with 20 to 99 employees	32	Work-in-process inventories, beginning of year	\$1,000.. 82 897
Establishments with 100 employees or more	30	Materials and supplies inventories, beginning of year	\$1,000.. 157 488
All employees	8 314	Total inventories, end of year	\$1,000.. 439 396
Total compensation ²	476 494	Finished goods inventories, end of year	\$1,000.. 230 385
Annual payroll	373 426	Work-in-process inventories, end of year	\$1,000.. 67 324
Total fringe benefits	103 068	Materials and supplies inventories, end of year	\$1,000.. 141 687
Production workers, average for year	4 654	Gross book value of total assets at beginning of year	\$1,000.. 1 512 307
Production workers on March 15	4 735	Total capital expenditures (new and used)	\$1,000.. 119 366
Production workers on May 15	4 699	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 14 696
Production workers on August 15	4 617	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 104 670
Production workers on November 15	4 565	Total retirements ²	\$1,000.. 32 516
Production-worker hours	10 130	Gross book value of total assets at end of year	\$1,000.. 1 599 157
Production-worker wages	193 235	Total depreciation during year ²	\$1,000.. 97 072
Total cost of materials	1 248 067	Total rental payments ²	\$1,000.. 9 015
Cost of materials, parts, containers, etc., consumed	1 110 875	Buildings and other structures rental payments ²	\$1,000.. 2 939
Cost of resales	49 792	Machinery and equipment rental payments ²	\$1,000.. 6 076
Cost of fuels	31 119	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 4 629
Cost of purchased electricity	36 298	Response coverage ratio ⁴	percent.. 89
Cost of contract work	19 983	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 25 915
Quantity of electricity purchased for heat and power	811 937	Response coverage ratio ⁴	percent.. 89
Quantity of electricity generated less sold for heat and power	—	Cost of purchased communications services ³	\$1,000.. 3 083
Total value of shipments	2 530 183	Response coverage ratio ⁴	percent.. 89
Primary products value of shipments	2 250 447	Cost of purchased legal services ³	\$1,000.. 1 135
Secondary products value of shipments	201 555	Response coverage ratio ⁴	percent.. 89
Total miscellaneous receipts	78 181	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 794
Value of resales	63 633	Response coverage ratio ⁴	percent.. 89
Contract receipts	14 061	Cost of purchased advertising services ³	\$1,000.. 405
Other miscellaneous receipts	487	Response coverage ratio ⁴	percent.. 89
Primary products specialization ratio	91	Cost of purchased software and other data processing services ³	\$1,000.. 1 215
Value of primary products shipments made in all industries	2 616 497	Response coverage ratio ⁴	percent.. 89
Value of primary products shipments made in this industry	2 250 447	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 7 527
Value of primary products shipments made in other industries	366 050	Response coverage ratio ⁴	percent.. 89
Coverage ratio	86		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325132, SYNTHETIC ORGANIC DYE & PIGMENT MFG												
All establishments	—	112	62	8 314	373 426	4 654	10 130	193 235	1 246 196	1 248 067	2 530 183	119 366
Establishments with 1 to 4 employees	5	18	—	33	1 140	25	39	745	5 916	9 702	15 356	621
Establishments with 5 to 9 employees	6	13	—	84	4 240	47	90	1 643	11 881	11 413	23 213	1 438
Establishments with 10 to 19 employees	4	19	—	254	10 497	145	260	5 000	40 671	64 176	104 398	5 713
Establishments with 20 to 49 employees	—	25	25	804	30 672	421	828	13 837	128 320	150 142	276 585	7 537
Establishments with 50 to 99 employees	—	7	7	507	22 303	297	615	12 861	53 386	122 912	176 412	7 073
Establishments with 100 to 249 employees	—	20	20	3 410	152 007	2 075	4 597	83 823	493 881	522 036	1 022 387	48 966
Establishments with 250 to 499 employees	1	10	10	3 222	152 567	1 644	3 701	75 326	512 141	367 686	911 832	48 018
Establishments with 500 to 999 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	27	—	175	6 137	112	183	3 463	22 772	31 384	53 834	4 232

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325132	Synthetic organic dye & pigment mfg	112	8 314	373 426	4 654	10 130	193 235	1 246 196	1 248 067	2 530 183	119 366
3251321	Synthetic organic dyes	37	3 519	157 925	1 866	4 076	78 425	491 762	478 067	1 001 664	42 780
3251324	Synthetic organic pigments, lakes, and toners	43	4 597	208 366	2 662	5 845	110 784	727 958	733 513	1 465 931	71 665

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325132	Organic dyes and pigments	N	X	X	2 616 497	N	X	X	N
3251321	Synthetic organic dyes	N	X	X	1 012 062	N	X	X	1 341 651
32513211	Synthetic organic dyes	N	X	X	1 012 062	N	X	X	N
3251321100	Synthetic organic dyes	46	X	X	1 012 062	53	X	X	1 341 651
3251324	Synthetic organic pigments, lakes, and toners	N	X	X	1 542 435	N	X	X	1 246 025
32513241	Synthetic organic pigments, lakes, and toners	N	X	X	1 542 435	N	X	X	N
3251324100	Synthetic organic pigments, lakes, and toners	46	X	X	1 542 435	47	X	X	1 246 025
325132W	Organic dyes and pigments, nsk, total	N	X	X	62 000	N	X	X	N
325132WY	Organic dyes and pigments, nsk, total	N	X	X	62 000	N	X	X	N
325132WYWW	Organic dyes and pigments, nsk, for nonadministrative-record establishments	N	X	X	9 487	N	X	X	N
325132WYWW	Organic dyes and pigments, nsk, for administrative-record establishments	N	X	X	52 513	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3251321	SYNTHETIC ORGANIC DYES		
	United States	1 012 062	1 341 651
	Georgia	23 205	N
	New Jersey	119 077	236 549
	North Carolina	116 624	171 368
	South Carolina	264 256	309 485
	Tennessee	47 008	N
3251324	SYNTHETIC ORGANIC PIGMENTS, LAKES, AND TONERS		
	United States	1 542 435	1 246 025
	Illinois	85 452	174 089
	Kentucky	138 790	75 550
	New Jersey	174 102	249 428
	North Carolina	19 807	N
	Ohio	337 679	235 444
	Pennsylvania	69 286	55 277
	South Carolina	115 759	66 361

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325132	SYNTHETIC ORGANIC DYE & PIGMENT MFG				
32518807	Hydrochloric acid (100 percent HCl)	41.1	4 318	N	N
32531101	Nitric acid (100 percent HNO ₃)	D	D	N	N
32518805	Sulfuric acid (100 percent H ₂ SO ₄), except spent	13 422.6	4 104	N	N
32531103	Ammonia, synthetic anhydrous (100 percent NH ₃)	D	D	N	N
32518103	Chlorine (100 percent Cl basis)	D	D	N	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	113.2	13 420	N	N
32500071	All other industrial inorganic chemicals	X	214 663	X	N
32512001	Acetylene and other industrial gases (compressed and liquified), including argon, carbon dioxide, nitrogen, etc.	X	678	X	N
32519300	Alcohol, ethyl (pure and denatured)	X	1 688	X	N
32510067	Other alcohols, including amyl, butyl, methyl, and propyl	X	2 417	X	N
32519213	Toluene and xylene (100 percent basis)	4.7	915	N	N
32519205	Phenol (100 percent basis)	1.6	639	N	N
32519231	Ortho and para-xylene (100 percent basis)	D	D	N	N
32519233	Other cyclic crudes and intermediates	S	178 903	N	N
32510075	Acetone (natural and synthetic)	D	D	N	N
325100A5	Other synthetic organic chemicals, n.e.c.	X	281 360	X	N
21111013	Natural gas used as a raw material	D	D	N	N
32411033	Ethylene used as a raw material or feedstock	D	D	N	N
32411035	Propane used as a raw material or feedstock	D	D	N	N
32411037	Propylene used as a raw material or feedstock	D	D	N	N
00190012	Other hydrocarbons used as raw materials or feedstocks	X	D	X	N
21239303	Sulfur	D	D	N	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	S	7 814	N	N
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	D	X	N
33300015	Parts and attachments for machinery and equipment	X	4 889	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	9 097	X	N
33240000	Metal containers	X	9 811	X	N
00970099	All other materials and components, parts, containers, and supplies	X	234 132	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	109 008	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325132 SYNTHETIC ORGANIC DYE AND PIGMENT MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing synthetic organic dyes and pigments, such as lakes and toners (except electrostatic and photographic).

The data published with NAICS code 325132 include the following SIC industry:

2865 Cyclic crudes and intermediates (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222AYVV	2824900	2824900
			325199A100	2869837	2869837	325222D	28248	28248
			325199E	28698 pt	28698 pt	325222D111	2824815	2824815
			325199E111	2869853	2869853	325222D211	2824851	2824851
			325199E121	2869855	2869855	325222D221	2824875	2824875
			325199EYVV	2869800	2869800	325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930			
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A pt	28995 pt	28995 pt
			3253207YVW	2879E00	2879900	325510A000 pt	2851500	2851500
3253114	28732	28732				325510A000 pt	2899586	2899586
3253114000	2873200	2873200	325320W	28790	28790			
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			325411WYVW	2833000	2833000	3255204271	2891448	2891448
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3253140141	2875041	2875000 pt	3254127	28343	28343			
3253140151	2875051	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
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						32552046F1	2891481	2891481
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3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A111	2891711	2891711
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A121	2891721	2891721
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A131	2891731	2891731
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A141	2891746	2891746
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A151	2891771	2891771
						325520AYVW	2891700	2891700
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3253201YVW pt	2879A00 pt	2879800 pt				3256111111 pt	2841120 pt	2841143 pt
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3253204127	2879C27	2879675 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
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3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
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3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
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3253207113	2879E13	2879924	325414AYVW	2836400	2836400			
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MANUFACTURING—INDUSTRY SERIES

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

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U.S. Department of Commerce

William M. Daley,

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Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325181	Alkalies & chlorine mfg	26	39	4 859	272 779	3 348	7 085	175 560	1 421 798	1 064 748	2 465 183	284 549
281200	Alkalies & chlorine	N	39	4 859	272 779	3 348	7 085	175 560	1 421 798	1 064 748	2 465 183	284 549

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325181, ALKALIES & CHLORINE MFG												
United States	—	39	24	4 859	272 779	3 348	7 085	175 560	1 421 798	1 064 748	2 465 183	284 549
Louisiana	—	4	4	591	34 852	398	882	22 558	259 460	231 846	488 935	45 349

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325181, ALKALIES & CHLORINE MFG		325181, ALKALIES & CHLORINE MFG—Con.	
Companies ¹	number.. 26	Value added	\$1,000.. 1 421 798
All establishments	number.. 39	Total inventories, beginning of year	\$1,000.. 215 749
Establishments with 1 to 19 employees	number.. 15	Finished goods inventories, beginning of year	\$1,000.. 123 443
Establishments with 20 to 99 employees	number.. 8	Work-in-process inventories, beginning of year	\$1,000.. 1 715
Establishments with 100 employees or more	number.. 16	Materials and supplies inventories, beginning of year	\$1,000.. 90 591
All employees	number.. 4 859	Total inventories, end of year	\$1,000.. 240 152
Total compensation ²	\$1,000.. 339 677	Finished goods inventories, end of year	\$1,000.. 144 957
Annual payroll	\$1,000.. 272 779	Work-in-process inventories, end of year	\$1,000.. 1 564
Total fringe benefits	\$1,000.. 66 898	Materials and supplies inventories, end of year	\$1,000.. 93 631
Production workers, average for year	number.. 3 348	Gross book value of total assets at beginning of year	\$1,000.. 2 573 966
Production workers on March 12	number.. 3 348	Total capital expenditures (new and used)	\$1,000.. 284 549
Production workers on May 12	number.. 3 373	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 11 231
Production workers on August 12	number.. 3 356	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 273 318
Production workers on November 12	number.. 3 315	Total retirements ²	\$1,000.. 30 946
Production-worker hours	1,000.. 7 085	Gross book value of total assets at end of year	\$1,000.. 2 827 569
Production-worker wages	\$1,000.. 175 560	Total depreciation during year ²	\$1,000.. 145 890
Total cost of materials	\$1,000.. 1 064 748	Total rental payments ²	\$1,000.. 13 862
Cost of materials, parts, containers, etc., consumed	\$1,000.. 471 732	Buildings and other structures rental payments ²	\$1,000.. 1 256
Cost of resales	\$1,000.. D	Machinery and equipment rental payments ²	\$1,000.. 12 606
Cost of fuels	\$1,000.. 145 124	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 4 377
Cost of purchased electricity	\$1,000.. 382 104	Response coverage ratio ⁴	percent.. 100
Cost of contract work	\$1,000.. D	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 45 723
Quantity of electricity purchased for heat and power	1,000 kWh.. 12 638 258	Response coverage ratio ⁴	percent.. 100
Quantity of electricity generated less sold for heat and power	1,000 kWh.. D	Cost of purchased communications services ³	\$1,000.. 1 770
Total value of shipments	\$1,000.. 2 465 183	Response coverage ratio ⁴	percent.. 100
Primary products value of shipments	\$1,000.. 2 201 981	Cost of purchased legal services ³	\$1,000.. 238
Secondary products value of shipments	\$1,000.. 223 106	Response coverage ratio ⁴	percent.. 100
Total miscellaneous receipts	\$1,000.. 40 096	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 521
Value of resales	\$1,000.. D	Response coverage ratio ⁴	percent.. 100
Contract receipts	\$1,000.. D	Cost of purchased advertising services ³	\$1,000.. —
Other miscellaneous receipts	\$1,000.. 221	Response coverage ratio ⁴	percent.. 100
Primary products specialization ratio	percent.. 90	Cost of purchased software and other data processing services ³	\$1,000.. 1 758
Value of primary products shipments made in all industries	\$1,000.. 3 072 729	Response coverage ratio ⁴	percent.. 100
Value of primary products shipments made in this industry	\$1,000.. 2 201 981	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 7 906
Value of primary products shipments made in other industries	\$1,000.. 870 748	Response coverage ratio ⁴	percent.. 100
Coverage ratio	percent.. 71		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325181, ALKALIES & CHLORINE MFG												
All establishments	—	39	24	4 859	272 779	3 348	7 085	175 560	1 421 798	1 064 748	2 465 183	284 549
Establishments with 1 to 4 employees	9	6	—	11	425	9	13	282	2 232	1 833	4 048	277
Establishments with 5 to 9 employees	8	6	—	40	2 183	30	58	1 455	9 942	8 179	18 052	1 302
Establishments with 10 to 19 employees	5	3	—	39	2 066	29	55	1 362	15 898	8 933	24 836	D
Establishments with 20 to 49 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 50 to 99 employees	—	8	8	614	29 906	434	887	21 374	216 919	132 720	350 475	20 100
Establishments with 100 to 249 employees	—	11	11	1 615	88 178	1 113	2 433	56 011	464 337	507 429	944 509	82 655
Establishments with 250 to 499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	3	3	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	11	—	49	2 406	36	65	1 602	12 624	10 381	22 916	1 562

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325181	Alkalies & chlorine mfg ...	39	4 859	272 779	3 348	7 085	175 560	1 421 798	1 064 748	2 465 183	284 549
3251811	Chlorine, compressed or liquefied ...	9	2 098	127 044	1 456	3 201	84 181	663 009	573 275	1 222 680	D
3251814	Sodium hydroxide (caustic soda)	10	1 925	102 527	1 281	2 653	61 883	512 131	243 415	749 350	42 552
3251817	Alkalies other than chlorine and sodium hydroxide.....	8	709	38 142	506	1 024	25 396	227 045	237 024	462 666	26 452

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325181	Alkalies and chlorine	N	X	X	3 072 729	N	X	X	2 789 754
3251811	Chlorine, compressed or liquefied @	N	X	X	1 219 527	N	X	X	198 397
32518110	Chlorine, compressed or liquefied	N	X	X	1 219 527	N	X	X	N
3251811000	Chlorine, compressed or liquefied	17	X	X	1 219 527	16	X	X	198 397
3251814	Sodium hydroxide (caustic soda) @	N	X	X	1 441 113	N	X	X	2 206 609
32518140	Sodium hydroxide (caustic soda)	N	X	X	1 441 113	N	X	X	N
3251814000	Sodium hydroxide (caustic soda)	29	X	X	1 441 113	25	X	X	2 206 609
3251817	Alkalies other than chlorine and sodium hydroxide @	N	X	X	389 286	N	X	X	365 383
32518170	Alkalies other than chlorine and sodium hydroxide	N	X	X	389 286	N	X	X	N
3251817000	Alkalies other than chlorine and sodium hydroxide	15	X	X	389 286	17	X	X	365 383
325181W	Alkalies and chlorine, nsk, total	N	X	X	22 803	N	X	X	19 365
325181WY	Alkalies and chlorine, nsk, total	N	X	X	22 803	N	X	X	N
325181WYWW	Alkalies and chlorine, nsk, for nonadministrative-record establishments	N	X	X	104	N	X	X	17 235
325181WYWY	Alkalies and chlorine, nsk, for administrative-record establishments	N	X	X	22 699	N	X	X	2 130

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3251811	CHLORINE, COMPRESSED OR LIQUEFIED @		
	United States	1 219 527	198 397
	Louisiana	396 406	64 332
	New York	94 070	N
	Washington	60 188	14 676
3251814	SODIUM HYDROXIDE (CAUSTIC SODA) @		
	United States	1 441 113	2 206 609
	Louisiana	588 170	915 493
	Washington	71 294	112 645
3251817	ALKALIES OTHER THAN CHLORINE AND SODIUM HYDROXIDE @		
	United States	389 286	365 383

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325181	ALKALIES & CHLORINE MFG				
32531201	Phosphoric acid, except spent (100 percent P2O5)	D	D	N	N
32518805	Sulfuric acid (100 percent H2SO4), except spent	P53.5	3 284	P85.3	5 171
32518103	Chlorine (100 percent Cl basis)	D	D	N	N
32518837	Phosphorus, elemental (technical)	D	D	N	N
32518105	Sodium carbonate (soda ash) (58 percent Na2O)	D	D	N	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	D	D	^a 17.2	1 678
00190031	Salt in brine	5 664.3	67 912	P7 039.9	120 961
325000A5	Other industrial inorganic chemicals	X	D	X	9 625
32510091	Synthetic organic chemicals	X	D	X	D
21229903	Bauxite	—	—	N	N
21239200	Phosphate rock	—	—	N	N
21239303	Sulfur	D	D	D	N
21220021	Iron and ferroalloy ores, including tungsten, chromite, manganese, molybdenum, and cobalt	X	—	X	N
21220023	Nonferrous metal ores, including copper, mercury, vanadium, titanium, platinum, etc.	X	354	X	N
21239001	All other crude chemical nonmetallic minerals, including barite, borate, potash, fluorspar, rock salt, etc.	X	44 709	X	N
32419903	Coke including breeze, used as a raw material	—	—	N	N
33300015	Parts and attachments for machinery and equipment	X	22 297	X	D
32221001	Paperboard containers, boxes, and corrugated paperboard	X	D	X	D
33240000	Metal containers	X	D	X	5 335
00970099	All other materials and components, parts, containers, and supplies	X	98 875	X	D
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	56 327	X	D

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; ^a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325181 ALKALIES AND CHLORINE MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing chlorine, sodium hydroxide (i.e., caustic soda), and other alkalies often using an electrolysis process.

The data published with NAICS code 325181 include the following SIC industry:

2812 Alkalies and chlorine

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3251811	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@3251814	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@3251817	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
			3254114	28333	28333	3255201	28913	28913
3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312W	28740	28740				32552044E1	2891471	2891471
325312WYWW	2874000	2874000	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
325312WYVY	2874002	2874002	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
						3255204551	2891445	2891445
3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046B1	2891457	2891457
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
			325412G000	2834600	2834600	3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt	325412L	28347	28347			
			325412L000	2834700	2834700	3255207	28916	28916
3253201 pt	2879A pt	28797 pt				3255207111	2891610	2891610
			325412P	28348	28348	3255207121	2891625	2891625
3253201111	2879A pt	28798 pt	325412P000	2834800	2834800	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt				3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt	325412T	28349	28349			
3253201725	2879A25	2879665 pt	325412T000	2834900	2834900	325520A	28917	28917
3253201A15	2879A15	2879561 pt				325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt	325412V	28352	28352	325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412YVWV	2835200	2835200	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt						
			325412W pt	28340	28340	325520W	28910	28910
3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
						3256111121 pt	2841122 pt	2841145 pt
3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841146 pt
			3254130221	2835115	2835115	3256111121 pt	2841122 pt	2841149 pt
3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841178 pt
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3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841145 pt
			3254130461	2835135	2835135			
3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
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3253204117	2879C17	2879581 pt				3256111211 pt	2841129 pt	2841143 pt
3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
3253204129	2879C29	2879685 pt				3256111311 pt	2841131 pt	2841123
3253204131	2879C31	2879721 pt				3256111311 pt	2841131 pt	2841141 pt
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3253204133	2879C33	2879751 pt	3254144100	2836200	2836200	3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
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3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
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			325414A241	2836430	2836430			
			325414AYVW	2836400	2836400			
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3253207121	2879E21	2879912	325414WYVY	2836002	2836002			
3253207123	2879E23	2879917				3256111511 pt	2841134	

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U.S. Census Bureau, 1997 Economic Census

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWW pt...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ..	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ..	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ..	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ..	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Manufacturing

Industry Series



U.S. Department of Commerce

William M. Daley,

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Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325182	Carbon black mfg	8	22	1 769	90 694	1 123	2 733	53 892	547 537	445 282	990 391	89 107
281620	Inorganic pigments (pt)	N	—	—	—	—	—	—	—	—	—	—
289500	Carbon black	N	22	1 769	90 694	1 123	2 733	53 892	547 537	445 282	990 391	89 107

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325182, CARBON BLACK MFG												
United States	—	22	20	1 769	90 694	1 123	2 733	53 892	547 537	445 282	990 391	89 107
Louisiana	—	5	5	632	33 236	341	858	16 727	214 045	165 407	376 679	49 341

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325182, CARBON BLACK MFG		325182, CARBON BLACK MFG—Con.	
Companies ¹	number.. 8	Value added	\$1,000.. 547 537
All establishments	number.. 22	Total inventories, beginning of year	\$1,000.. 83 376
Establishments with 1 to 19 employees	number.. 2	Finished goods inventories, beginning of year	\$1,000.. 52 877
Establishments with 20 to 99 employees	number.. 14	Work-in-process inventories, beginning of year	\$1,000.. 440
Establishments with 100 employees or more	number.. 6	Materials and supplies inventories, beginning of year	\$1,000.. 30 059
All employees	number.. 1 769	Total inventories, end of year	\$1,000.. 87 816
Total compensation ²	\$1,000.. 117 458	Finished goods inventories, end of year	\$1,000.. 55 745
Annual payroll	\$1,000.. 90 694	Work-in-process inventories, end of year	\$1,000.. —
Total fringe benefits	\$1,000.. 26 764	Materials and supplies inventories, end of year	\$1,000.. 32 071
Production workers, average for year	number.. 1 123	Gross book value of total assets at beginning of year	\$1,000.. 688 593
Production workers on March 15	number.. 1 126	Total capital expenditures (new and used)	\$1,000.. 89 107
Production workers on May 15	number.. 1 113	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 2 563
Production workers on August 15	number.. 1 128	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 86 544
Production workers on November 15	number.. 1 125	Total retirements ²	\$1,000.. 9 817
Production-worker hours	1,000.. 2 733	Gross book value of total assets at end of year	\$1,000.. 767 883
Production-worker wages	\$1,000.. 53 892	Total depreciation during year ²	\$1,000.. 48 007
Total cost of materials	\$1,000.. 445 282	Total rental payments ²	\$1,000.. 2 352
Cost of materials, parts, containers, etc., consumed	\$1,000.. 368 595	Buildings and other structures rental payments ²	\$1,000.. 518
Cost of resales	\$1,000.. D	Machinery and equipment rental payments ²	\$1,000.. 1 834
Cost of fuels	\$1,000.. D	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 3 724
Cost of purchased electricity	\$1,000.. 30 755	Response coverage ratio ⁴	percent.. 100
Cost of contract work	\$1,000.. D	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 48 553
Quantity of electricity purchased for heat and power	1,000 kWh.. 653 103	Response coverage ratio ⁴	percent.. 100
Quantity of electricity generated less sold for heat and power	1,000 kWh.. D	Cost of purchased communications services ³	\$1,000.. 936
Total value of shipments	\$1,000.. 990 391	Response coverage ratio ⁴	percent.. 100
Primary products value of shipments	\$1,000.. D	Cost of purchased legal services ³	\$1,000.. 186
Secondary products value of shipments	\$1,000.. D	Response coverage ratio ⁴	percent.. 100
Total miscellaneous receipts	\$1,000.. D	Cost of purchased accounting and bookkeeping services ³	\$1,000.. —
Value of resales	\$1,000.. D	Response coverage ratio ⁴	percent.. 100
Contract receipts	\$1,000.. —	Cost of purchased advertising services ³	\$1,000.. 21
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 100
Primary products specialization ratio	percent.. D	Cost of purchased software and other data processing services ³	\$1,000.. 199
Value of primary products shipments made in all industries	\$1,000.. 948 290	Response coverage ratio ⁴	percent.. 100
Value of primary products shipments made in this industry	\$1,000.. D	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 1 964
Value of primary products shipments made in other industries	\$1,000.. D	Response coverage ratio ⁴	percent.. 100
Coverage ratio	percent.. D		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325182, CARBON BLACK MFG												
All establishments	—	22	20	1 769	90 694	1 123	2 733	53 892	547 537	445 282	990 391	89 107
Establishments with 1 to 4 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 5 to 9 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 10 to 19 employees	—	2	—	D	D	D	D	D	D	D	D	D
Establishments with 20 to 49 employees	5	2	2	D	D	D	D	D	D	D	D	D
Establishments with 50 to 99 employees	1	12	12	832	40 530	579	1 410	26 390	253 181	226 052	479 154	25 540
Establishments with 100 to 249 employees	—	6	6	826	45 085	477	1 160	24 589	273 377	201 833	472 437	57 281
Establishments with 250 to 499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 500 to 999 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	—	—	—	—	—	—	—	—	—	—	—	—

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325182	Carbon black mfg	22	1 769	90 694	1 123	2 733	53 892	547 537	445 282	990 391	89 107

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325182	Carbon black	N	X	X	948 290	N	X	X	N
3251820	Carbon black, all processes	N	X	X	948 290	N	X	X	N
32518201	Carbon black, all processes	N	X	X	948 290	N	X	X	N
3251820100	Carbon black, all processes mil lb..	12	X	^P 3 795.7	948 290	N	X	N	N
3251820Y	Carbon black, nsk	N	X	X	—	N	X	X	N
3251820YWW	Carbon black, (all processes) nsk, for nonadministrative-record establishments	N	X	X	—	N	X	X	N
3251820YWY	Carbon black, nsk, for administrative-record establishments	N	X	X	—	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325182	CARBON BLACK MFG				
32411023	Carbon black feedstock	13.9	245 546	13.5	179 783
21111013	Natural gas used as a raw material	^P 20.0	49 985	16.4	34 190
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	9 070	X	7 316
00970099	All other materials and components, parts, containers, and supplies	X	38 545	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	25 449	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325182 CARBON BLACK MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing carbon black, bone black, and lamp black.

The data published with NAICS code 325182 include the following SIC industries:

2816 Inorganic pigments (pt)
2895 Carbon black

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
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325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
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325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
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3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
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3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
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3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
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325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
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3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
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325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
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325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
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3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
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325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
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			325199E	28698 pt	28698 pt	325222D111	2824815	2824815
			325199E111	2869853	2869853	325222D211	2824851	2824851
			325199E121	2869855	2869855	325222D221	2824875	2824875
			325199EYVV	2869800	2869800	325222D231	2824879	2824879
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
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			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
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3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
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			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
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3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
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						32552046G1	2891483	2891483
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			325412P	28348	28348	3255207121	2891625	2891625
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3253201A17	2879A17	2879581 pt	325412V	28352	28352	325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
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3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
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3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
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			325414A241	2836430	2836430			
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3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841146 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111411 pt	284	

MANUFACTURING—INDUSTRY SERIES

U.S. Census Bureau, 1997 Economic Census

APPENDIX G G-3

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998WYWWW pt...	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt	325998H181	2899572	2899572	325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H191	2899581	2899581	325998WYWY pt ...	3999000 pt	3999000 pt
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325998H pt	39524 pt	39524 pt	325998H1B1	2899593	2899593	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1C1	2899595	2899595	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1D1	2899598	2899598	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

All Other Basic Inorganic Chemical Manufacturing

1997

Issued October 1999

EC97M-3251G

1997 Economic Census

Manufacturing

Industry Series



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The Geography Division staff developed geographic coding procedures and associated computer programs.

The Economic Statistical Methods and Programming Division, **Charles P. Pautler Jr.**, Chief, developed and coordinated the computer processing systems. **Martin S. Harahush**, Assistant Chief for Quinquennial Programs, assisted by **Barbara Lambert** and **Christina Arledge** were responsible for design and implementation of the computer systems. **Gary T. Sheridan**, Chief, Manufacturing and Construction Branch, **Lori A. Guido** and **Roy A. Smith**, Section Chiefs, supervised the preparation of the computer programs.

Computer Services Division, **Debra Williams**, Chief, performed the computer processing.

The staff of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, performed planning, design, composition, editorial review, and printing planning and procurement for publications, Internet products, and report forms. **Cynthia G. Brooks** provided publication coordination and editing.

All Other Basic Inorganic Chemical Manufacturing

1997

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1997 Economic Census

Manufacturing

Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325188	All other basic inorganic chemical mfg	387	638	53 419	2 607 420	27 259	55 028	1 241 780	10 752 383	6 447 557	17 255 506	838 980
281920	Industrial inorganic chemicals, n.e.c. (pt)	N	636	53 130	2 591 435	27 106	54 694	1 234 148	10 646 380	6 407 864	17 102 836	828 839
286930	Industrial organic chemicals, n.e.c. (pt)	N	2	D	D	D	D	D	D	D	D	D

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325188, ALL OTHER BASIC INORGANIC CHEMICAL MFG												
United States	—	638	308	53 419	2 607 420	27 259	55 028	1 241 780	10 752 383	6 447 557	17 255 506	838 980
Alabama	—	21	12	1 294	61 362	763	1 802	34 331	402 241	215 138	614 726	27 954
Arizona	—	8	2	424	11 356	129	228	2 726	19 921	34 271	56 665	8 087
Illinois	—	33	23	2 405	113 767	1 567	3 304	63 559	437 031	373 788	807 397	40 371
Indiana	—	21	11	672	30 897	426	996	17 742	138 797	109 542	248 330	16 863
Kentucky	—	8	7	2 937	139 918	1 588	3 932	69 578	559 480	381 800	948 945	18 293
Louisiana	—	24	11	1 502	71 074	1 058	2 383	46 679	349 577	321 970	656 602	53 898
Maryland	—	13	6	1 248	59 421	713	1 547	28 699	113 901	198 903	323 913	28 812
Massachusetts	3	12	5	346	15 854	238	501	9 627	73 782	45 052	118 538	9 167
Ohio	—	38	22	4 380	208 590	2 258	4 911	103 855	764 106	481 837	1 251 294	39 603
Pennsylvania	—	31	12	1 078	49 557	723	1 605	30 616	237 639	241 600	481 030	36 447
Texas	—	55	27	2 129	106 529	1 324	2 973	63 981	454 311	426 168	887 976	103 123
Virginia	—	9	3	1 821	91 694	1 448	2 782	71 226	349 095	48 657	397 746	8 144

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325188, ALL OTHER BASIC INORGANIC CHEMICAL MFG		325188, ALL OTHER BASIC INORGANIC CHEMICAL MFG—Con.	
Companies ¹	number.. 387	Value added	\$1,000.. 10 752 383
All establishments	number.. 638	Total inventories, beginning of year	\$1,000.. 1 584 126
Establishments with 1 to 19 employees	number.. 330	Finished goods inventories, beginning of year	\$1,000.. 753 723
Establishments with 20 to 99 employees	number.. 212	Work-in-process inventories, beginning of year	\$1,000.. 241 539
Establishments with 100 employees or more	number.. 96	Materials and supplies inventories, beginning of year	\$1,000.. 588 864
All employees	number.. 53 419	Total inventories, end of year	\$1,000.. 1 564 347
Total compensation ²	\$1,000.. 3 320 746	Finished goods inventories, end of year	\$1,000.. 717 221
Annual payroll	\$1,000.. 2 607 420	Work-in-process inventories, end of year	\$1,000.. 222 475
Total fringe benefits	\$1,000.. 713 326	Materials and supplies inventories, end of year	\$1,000.. 624 651
Production workers, average for year	number.. 27 259	Gross book value of total assets at beginning of year	\$1,000.. 12 324 070
Production workers on March 12	number.. 27 305	Total capital expenditures (new and used)	\$1,000.. 838 980
Production workers on May 12	number.. 27 280	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 119 671
Production workers on August 12	number.. 27 381	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 719 309
Production workers on November 12	number.. 27 070	Total retirements ²	\$1,000.. 165 812
Production-worker hours	1,000.. 55 028	Gross book value of total assets at end of year	\$1,000.. 12 997 238
Production-worker wages	\$1,000.. 1 241 780	Total depreciation during year ²	\$1,000.. 706 420
Total cost of materials	\$1,000.. 6 447 557	Total rental payments ²	\$1,000.. 80 023
Cost of materials, parts, containers, etc., consumed	\$1,000.. 4 742 024	Buildings and other structures rental payments ²	\$1,000.. 20 233
Cost of resales	\$1,000.. D	Machinery and equipment rental payments ²	\$1,000.. 59 790
Cost of fuels	\$1,000.. D	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 68 730
Cost of purchased electricity	\$1,000.. 893 349	Response coverage ratio ⁴	percent.. 61
Cost of contract work	\$1,000.. 216 403	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 266 894
Quantity of electricity purchased for heat and power	1,000 kWh.. 36 144 947	Response coverage ratio ⁴	percent.. 61
Quantity of electricity generated less sold for heat and power	1,000 kWh.. 52 199	Cost of purchased communications services ³	\$1,000.. 18 217
Total value of shipments	\$1,000.. 17 255 506	Response coverage ratio ⁴	percent.. 61
Primary products value of shipments	\$1,000.. 11 353 894	Cost of purchased legal services ³	\$1,000.. 12 750
Secondary products value of shipments	\$1,000.. 965 153	Response coverage ratio ⁴	percent.. 61
Total miscellaneous receipts	\$1,000.. 4 936 459	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 6 548
Value of resales	\$1,000.. D	Response coverage ratio ⁴	percent.. 61
Contract receipts	\$1,000.. D	Cost of purchased advertising services ³	\$1,000.. 6 804
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 61
Primary products specialization ratio	percent.. 92	Cost of purchased software and other data processing services ³	\$1,000.. 11 349
Value of primary products shipments made in all industries	\$1,000.. 15 286 606	Response coverage ratio ⁴	percent.. 61
Value of primary products shipments made in this industry	\$1,000.. 11 353 894	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 43 835
Value of primary products shipments made in other industries	\$1,000.. 3 932 712	Response coverage ratio ⁴	percent.. 61
Coverage ratio	percent.. 74		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325188, ALL OTHER BASIC INORGANIC CHEMICAL MFG												
All establishments	—	638	308	53 419	2 607 420	27 259	55 028	1 241 780	10 752 383	6 447 557	17 255 506	838 980
Establishments with 1 to 4 employees	3	140	—	322	12 072	246	432	8 036	76 337	76 228	152 362	5 644
Establishments with 5 to 9 employees	2	95	—	630	26 665	424	909	17 543	177 245	185 800	365 458	13 470
Establishments with 10 to 19 employees	2	95	—	1 292	50 419	836	1 654	29 482	243 179	250 088	491 926	21 565
Establishments with 20 to 49 employees	1	139	139	4 352	189 788	2 824	6 117	113 033	1 057 475	793 413	1 852 702	115 767
Establishments with 50 to 99 employees	—	73	73	5 207	238 894	3 330	7 305	135 083	1 007 105	1 065 281	2 074 804	133 076
Establishments with 100 to 249 employees	—	63	63	9 254	449 265	5 505	11 803	242 283	2 184 630	2 193 729	4 394 940	269 718
Establishments with 250 to 499 employees	—	21	21	6 929	315 491	4 191	9 159	177 736	1 357 467	797 561	2 151 584	159 469
Establishments with 500 to 999 employees	—	6	6	4 122	212 056	2 451	5 538	109 923	695 877	465 365	1 187 770	D
Establishments with 1,000 to 2,499 employees	—	3	3	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	3	3	D	D	D	D	D	D	D	D	—
Administrative records ²	9	109	—	525	16 900	359	561	10 615	73 244	71 797	145 334	9 214

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325188	All other basic inorganic chemical mfg	638	53 419	2 607 420	27 259	55 028	1 241 780	10 752 383	6 447 557	17 255 506	838 980
3251881	Sulfuric acid, gross (new and fortified)	27	1 506	63 771	982	2 283	38 174	282 876	172 170	454 452	50 327
3251884	Inorganic acids, except nitric, phosphoric, and sulfuric	17	1 232	60 475	825	1 717	38 261	170 902	295 337	491 567	39 007
3251887	Other inorganic aluminum compounds	72	1 774	78 753	1 144	2 471	42 432	220 484	301 895	520 836	27 141
325188A	Inorganic potassium and sodium compounds, except alkalies, alums, and bleaches	65	5 168	249 506	3 310	6 891	145 069	1 363 928	897 363	2 256 592	147 392
325188D	Chemical catalytic preparations	31	5 032	247 908	2 907	6 747	134 473	958 692	879 686	1 841 981	122 808
325188G	All other inorganic chemicals, nec (including nuclear fuel, titanium tetrachloride, and other titanium compounds)	217	15 534	716 358	9 765	20 881	406 823	3 603 846	2 992 695	6 620 345	379 423

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325188	All other basic inorganic chemicals	N	X	X	15 286 606	N	X	X	N
3251881	Sulfuric acid, gross (new and fortified) @	N	X	X	609 703	N	X	X	548 952
32518810	Sulfuric acid, gross (new and fortified)	N	X	X	609 703	N	X	X	N
3251881000	Sulfuric acid, gross (new and fortified)	41	X	X	609 703	46	X	X	548 952
3251884	Inorganic acids, except nitric, sulfuric, and phosphoric @	N	X	X	726 727	N	X	X	537 790
32518840	Inorganic acids, except nitric, sulfuric, and phosphoric	N	X	X	726 727	N	X	X	N
3251884000	Inorganic acids, except nitric, sulfuric, and phosphoric	43	X	X	726 727	51	X	X	537 790
3251887	Other inorganic aluminum compounds @	N	X	X	787 223	N	X	X	601 514
32518870	Other inorganic aluminum compounds	N	X	X	787 223	N	X	X	N
3251887000	Other inorganic aluminum compounds	39	X	X	787 223	46	X	X	601 514
325188A	Inorganic potassium and sodium compounds, except alkalis, alums, and bleaches @	N	X	X	2 134 630	N	X	X	1 921 942
325188A0	Inorganic potassium and sodium compounds, except alkalis, alums, and bleaches	N	X	X	2 134 630	N	X	X	N
325188A000	Inorganic potassium and sodium compounds, except alkalis, alums, and bleaches	81	X	X	2 134 630	75	X	X	1 921 942
325188D	Chemical catalytic preparations (excluding silica gel catalyst) @	N	X	X	1 827 674	N	X	X	1 358 191
325188D0	Chemical catalytic preparations (excluding silica gel catalyst)	N	X	X	1 827 674	N	X	X	N
325188D000	Chemical catalytic preparations (excluding silica gel catalyst)	32	X	X	1 827 674	34	X	X	1 358 191
325188G	All other inorganic chemicals, nec (including nuclear fuel, titanium tetrachloride, other titanium compounds, and carbon bisulfide (disulfide)) @	N	X	X	8 515 033	N	X	X	N
325188G0	All other inorganic chemicals, nec (including nuclear fuel, titanium tetrachloride, other titanium compounds, and carbon bisulfide (disulfide))	N	X	X	8 515 033	N	X	X	N
325188G000	All other inorganic chemicals, nec (including nuclear fuel, titanium tetrachloride, other titanium compounds, and carbon bisulfide (disulfide))	236	X	X	8 515 033	N	X	X	N
325188W	Inorganic chemicals, nsk, total	N	X	X	685 616	N	X	X	N
325188WY	Inorganic chemicals, nsk, total	N	X	X	685 616	N	X	X	N
325188WYWW	Inorganic chemicals, nsk, for nonadministrative-record establishments	N	X	X	547 948	N	X	X	N
325188WYWY	Inorganic chemicals, nsk, for administrative-record establishments	N	X	X	137 668	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3251881	SULFURIC ACID, GROSS (NEW AND FORTIFIED) @		
	United States	609 703	548 952
	Arizona	46 785	30 532
	Florida	29 480	11 863
	Georgia	21 037	23 900
	Louisiana	117 644	97 167
	Pennsylvania	2 850	N
	Texas	113 606	115 440
3251884	INORGANIC ACIDS, EXCEPT NITRIC, SULFURIC, AND PHOSPHORIC @		
	United States	726 727	537 790
	California	130 872	108 740
	Illinois	19 397	N
	Louisiana	125 797	119 518
	Ohio	34 134	21 174
	Texas	149 205	101 467
3251887	OTHER INORGANIC ALUMINUM COMPOUNDS @		
	United States	787 223	601 514
	Georgia	53 084	35 007
	Illinois	28 609	18 477
	Louisiana	176 733	94 282
	Mississippi	8 767	N
	Ohio	5 672	10 352
	Tennessee	26 815	N
	Texas	210 524	175 903
325188A	INORGANIC POTASSIUM AND SODIUM COMPOUNDS, EXCEPT ALKALIES, ALUMS, AND BLEACHES @		
	United States	2 134 630	1 921 942
	Alabama	54 778	41 974
	Florida	9 664	7 965
	Georgia	124 699	80 464
	Illinois	112 109	143 381
	Kansas	87 272	N
	Louisiana	42 431	53 662
	Maryland	6 523	N
	Mississippi	166 339	127 740
	Missouri	88 417	N
	New Jersey	84 609	64 270
	New York	122 180	94 307
	Ohio	38 163	47 155
	Pennsylvania	40 490	24 925
	Tennessee	207 683	N
	Texas	45 628	46 062
	Utah	91 589	N
	Washington	111 861	68 996
325188D	CHEMICAL CATALYTIC PREPARATIONS (EXCLUDING SILICA GEL CATALYST) @		
	United States	1 827 674	1 358 191
	California	211 603	193 743
	Illinois	80 362	N
	New Jersey	99 450	N
	Ohio	120 983	N
	Tennessee	49 438	N
	Texas	194 093	131 051
325188G	ALL OTHER INORGANIC CHEMICALS, NEC (INCLUDING NUCLEAR FUEL, TITANIUM TETRACHLORIDE, OTHER TITANIUM COMPOUNDS, AND CARBON BISULFIDE (DISULFIDE)) @		
	United States	8 515 033	N
	Alabama	558 190	N
	Arkansas	63 155	N
	California	196 691	N
	Colorado	10 711	N
	Delaware	25 255	N
	Georgia	126 200	N
	Illinois	410 184	N
	Indiana	143 547	N
	Kansas	48 298	N
	Kentucky	114 257	N
	Louisiana	69 588	N
	Maine	15 241	N
	Maryland	187 440	N
	Massachusetts	144 596	N
	Michigan	131 190	N
	Mississippi	56 859	N
	Missouri	120 145	N
	New Jersey	700 072	N
	New York	358 463	N
	North Carolina	432 809	N
	Ohio	385 902	N
	Oklahoma	61 396	N
	Oregon	14 934	N
	Pennsylvania	297 446	N
	South Carolina	239 063	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325188G	ALL OTHER INORGANIC CHEMICALS, NEC (INCLUDING NUCLEAR FUEL, TITANIUM TETRACHLORIDE, OTHER TITANIUM COMPOUNDS, AND CARBON BISULFIDE (DISULFIDE)) @—Con.		
	Tennessee	315 628	N
	Texas	1 966 736	N
	Utah	24 707	N
	Washington	94 625	N
	West Virginia	74 033	N
	Wisconsin	45 601	N
	Wyoming	17 219	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325188	ALL OTHER BASIC INORGANIC CHEMICAL MFG				
32531201	Phosphoric acid, except spent (100 percent P ₂ O ₅)	362.6	142 653	N	N
32518805	Sulfuric acid (100 percent H ₂ SO ₄), except spent	2 120.8	71 533	N	N
32518103	Chlorine (100 percent Cl basis)	223.0	42 689	N	N
32518837	Phosphorus, elemental (technical)	^P 102.2	145 962	N	N
32518105	Sodium carbonate (soda ash) (58 percent Na ₂ O)	^q 583.8	87 113	N	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	608.9	113 211	N	N
00190031	Salt in brine	D	D	N	N
325000A5	Other industrial inorganic chemicals	X	719 113	X	N
32510091	Synthetic organic chemicals	X	90 344	X	N
21229903	Bauxite	S	26 883	N	N
21239200	Phosphate rock	2 415.2	72 510	N	N
21239303	Sulfur	1 746.4	65 434	N	N
21220021	Iron and ferroalloy ores, including tungsten, chromite, manganese, molybdenum, and cobalt	X	171 449	X	N
21220023	Nonferrous metal ores, including copper, mercury, vanadium, titanium, platinum, etc.	X	286 260	X	N
21239001	All other crude chemical nonmetallic minerals, including barite, borate, potash, fluorspar, rock salt, etc.	X	135 757	X	N
32419903	Coke including breeze, used as a raw material	D	D	N	N
33300015	Parts and attachments for machinery and equipment	X	131 055	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	45 861	X	N
33240000	Metal containers	X	25 973	X	N
00970099	All other materials and components, parts, containers, and supplies	X	1 489 860	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	805 693	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325188 ALL OTHER BASIC INORGANIC CHEMICAL MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing basic inorganic chemicals (except industrial gases, inorganic dyes and pigments, alkalies and chlorine, and carbon black).

The data published with NAICS code 325188 include the following SIC industries:

- 2819 Industrial inorganic chemicals, n.e.c. (pt)
- 2869 Industrial organic chemicals, n.e.c. (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3251881	For additional detail, see Current Industrial Report MA325B, Fertilizer Materials.
@3251884	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@3251887	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@325188A	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@325188D	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.
@325188G	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
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325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
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3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
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325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
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325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
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3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
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3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
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3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
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3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
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325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
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325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
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3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
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325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
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			325199E121	2869855	2869855	325222D211	2824851	2824851
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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			3253207155	2879E55	2879971	325510A pt	28515	28515
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			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
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			325320WYVY	2879002	2879002			
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325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
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			3254114161	2833344	2833344	3255201161	2891380	2891380
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3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
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3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
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3253140131	2875021	2875021	3254127	28343	28343			
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3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
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3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
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3253201A15	2879A15	2879561 pt				325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt	325412V	28352	28352	325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412YVWV	2835200	2835200	325520AYVW	2891700	2891700
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3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYWW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
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3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
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3253204115	2879C15	2879561 pt	3254130YVY			3256111211 pt	2841129 pt	2841143 pt
3253204117	2879C17	2879581 pt				3256111221 pt	2841130 pt	2841145 pt
3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841146 pt
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3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841131 pt	2841123
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
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3253204131	2879C31	2879721 pt						
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3253204141	2879C41	2879812 pt				3256111311 pt	2841131 pt	2841143 pt
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841121
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841145 pt
3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841146 pt
3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841126 pt
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			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841143 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400	3256111411 pt	2841133 pt	2841145 pt
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841146 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841177
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MANUFACTURING—INDUSTRY SERIES

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
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325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
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325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
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			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

Gum and Wood Chemical Manufacturing

1997

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1997 Economic Census

Manufacturing

Industry Series



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Manufacturing

Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325191 286100	Gum & wood chemical mfg Gum & wood chemicals	45 N	63 63	2 267 2 267	84 353 84 353	1 708 1 708	3 785 3 785	56 532 56 532	469 827 469 827	348 617 348 617	815 201 815 201	33 601 33 601

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325191, GUM & WOOD CHEMICAL MFG												
United States	—	63	17	2 267	84 353	1 708	3 785	56 532	469 827	348 617	815 201	33 601
Missouri	—	8	2	245	6 658	218	439	5 303	63 004	31 481	93 156	5 067

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325191, GUM & WOOD CHEMICAL MFG		325191, GUM & WOOD CHEMICAL MFG—Con.	
Companies ¹	45	Value added	\$1,000 .. 469 827
All establishments	63	Total inventories, beginning of year	\$1,000 .. 146 788
Establishments with 1 to 19 employees	46	Finished goods inventories, beginning of year	\$1,000 .. 85 915
Establishments with 20 to 99 employees	9	Work-in-process inventories, beginning of year	\$1,000 .. 18 627
Establishments with 100 employees or more	8	Materials and supplies inventories, beginning of year	\$1,000 .. 42 246
All employees	2 267	Total inventories, end of year	\$1,000 .. 155 672
Total compensation ²	104 928	Finished goods inventories, end of year	\$1,000 .. 84 789
Annual payroll	84 353	Work-in-process inventories, end of year	\$1,000 .. 22 996
Total fringe benefits	20 575	Materials and supplies inventories, end of year	\$1,000 .. 47 887
Production workers, average for year	1 708	Gross book value of total assets at beginning of year	\$1,000 .. 509 637
Production workers on March 12	1 741	Total capital expenditures (new and used)	\$1,000 .. 33 601
Production workers on May 12	1 756	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 3 559
Production workers on August 12	1 670	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 30 042
Production workers on November 12	1 665	Total retirements ²	\$1,000 .. 9 066
Production-worker hours	3 785	Gross book value of total assets at end of year	\$1,000 .. 534 172
Production-worker wages	56 532	Total depreciation during year ²	\$1,000 .. 24 573
Total cost of materials	348 617	Total rental payments ²	\$1,000 .. 6 773
Cost of materials, parts, containers, etc., consumed	311 901	Buildings and other structures rental payments ²	\$1,000 .. 1 806
Cost of resales	8 454	Machinery and equipment rental payments ²	\$1,000 .. 4 967
Cost of fuels	17 269	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 1 036
Cost of purchased electricity	9 464	Response coverage ratio ⁴	percent .. 100
Cost of contract work	1 529	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 13 054
Quantity of electricity purchased for heat and power	220 467	Response coverage ratio ⁴	percent .. 100
Quantity of electricity generated less sold for heat and power	—	Cost of purchased communications services ³	\$1,000 .. 1 051
Total value of shipments	815 201	Response coverage ratio ⁴	percent .. 100
Primary products value of shipments	723 634	Cost of purchased legal services ³	\$1,000 .. 357
Secondary products value of shipments	81 247	Response coverage ratio ⁴	percent .. 100
Total miscellaneous receipts	10 320	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 497
Value of resales	10 320	Response coverage ratio ⁴	percent .. 100
Contract receipts	—	Cost of purchased advertising services ³	\$1,000 .. 783
Other miscellaneous receipts	—	Response coverage ratio ⁴	percent .. 100
Primary products specialization ratio	89	Cost of purchased software and other data processing services ³	\$1,000 .. 36
Value of primary products shipments made in all industries	966 020	Response coverage ratio ⁴	percent .. 100
Value of primary products shipments made in this industry	723 634	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 2 001
Value of primary products shipments made in other industries	242 386	Response coverage ratio ⁴	percent .. 100
Coverage ratio	74		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325191, GUM & WOOD CHEMICAL MFG												
All establishments	—	63	17	2 267	84 353	1 708	3 785	56 532	469 827	348 617	815 201	33 601
Establishments with 1 to 4 employees	5	32	—	67	1 952	59	125	1 438	9 187	10 168	19 564	580
Establishments with 5 to 9 employees	8	7	—	49	1 423	42	89	1 073	4 653	6 149	10 779	511
Establishments with 10 to 19 employees	4	7	—	96	2 711	79	164	1 949	15 117	11 997	27 174	844
Establishments with 20 to 49 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 50 to 99 employees	—	8	8	586	18 653	460	996	12 870	102 810	83 680	189 134	8 049
Establishments with 100 to 249 employees	—	6	6	768	27 062	579	1 148	17 991	244 903	121 325	363 009	12 686
Establishments with 250 to 499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	31	—	143	3 497	124	254	2 637	15 460	11 712	27 108	1 282

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325191	Gum & wood chemical mfg	63	2 267	84 353	1 708	3 785	56 532	469 827	348 617	815 201	33 601

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325191	Gum and wood chemicals	N	X	X	966 020	N	X	X	796 223
3251910	Gum and wood chemicals, including wood distillation products	N	X	X	966 020	N	X	X	796 223
32519101	Gum and wood chemicals, including wood distillation products	N	X	X	620 399	N	X	X	N
3251910111	Hardwood charcoal and charcoal briquets, including blends with lignite or other materials	8	X	S	356 918	14	X	S	404 963
3251910121	Tall oil, crude	24	X	731.9	263 481	24	X	1 697.9	115 313
32519102	Other gum and wood chemicals, including gum naval stores, natural tanning and dyeing materials, tannic acid, etc., refined tall oil and tall oil rosin	N	X	X	310 066	N	X	X	N
3251910231	Refined tall oil (containing less than 90 percent free fatty acids, including tall oil resins, other than tall oil rosin)	9	X	523.4	50 661	7	X	122.0	14 806
3251910241	Rosin and other tall oil derivatives, including rosin acid salts (except tall oil fatty acids)	3	X	X	20 338	N	X	X	N
3251910291	Other gum and wood chems, incl. gum naval stores, nat. tanning and dyeing materials, tannic acid, nat. acetic acid, methanol, softwood charcoal, veg. pitches, wood tar and tar oil, pine oil, etc.	14	X	X	239 067	N	X	X	N
3251910Y	Gum and wood chemicals, nsk.	N	X	X	35 555	N	X	X	N
3251910YWW	Gum and wood chemicals, nsk, for nonadministrative-record establishments.	N	X	X	16 672	N	X	X	38 667
3251910YWY	Gum and wood chemicals, nsk, for administrative-record establishments	N	X	X	18 883	N	X	X	6 554

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325191	GUM & WOOD CHEMICAL MFG				
32519103	Tall oil and rosin	X	D	X	72 751
32500001	Industrial organic and inorganic chemicals, including acids and alcohols, but excluding fatty acids	X	47 913	X	14 466
32100007	Chips, slabs, edgings, shavings, sawdust, and other wood waste	X	73 539	X	D
21211100	Lignite, raw or prepared, used as a raw material	X	D	X	D
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	23 323	X	10 692
33240000	Metal containers	X	3 811	X	4 054
00970099	All other materials and components, parts, containers, and supplies	X	96 717	X	111 095
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	9 760	X	34 312

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325191 GUM AND WOOD CHEMICAL MANUFACTURING

This U.S. industry comprises establishments primarily engaged in (1) distilling wood or gum into products, such as tall oil and wood distillates, and (2) manufacturing wood or gum chemicals, such as naval stores, natural tanning materials, charcoal briquettes, and charcoal (except activated).

The data published with NAICS code 325191 include the following SIC industry:

2861 Gum and wood chemicals

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
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325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
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325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
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			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997

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1997 Economic Census

Manufacturing

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Economics

and Statistics

Administration

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Under Secretary for
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U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



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Robert J. Shapiro,
Under Secretary
for Economic Affairs



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Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325192	Cyclic crude & intermediate mfg	35	50	8 020	423 876	4 859	10 856	244 080	2 734 987	3 228 317	5 975 157	651 921
286530	Cyclic crudes & intermediates (pt)	N	50	8 020	423 876	4 859	10 856	244 080	2 734 987	3 228 317	5 975 157	651 921

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325192, CYCLIC CRUDE & INTERMEDIATE MFG												
United States	—	50	38	8 020	423 876	4 859	10 856	244 080	2 734 987	3 228 317	5 975 157	651 921
Texas	—	7	6	1 303	70 246	594	1 395	34 412	593 340	1 331 635	1 953 680	76 091

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325192, CYCLIC CRUDE & INTERMEDIATE MFG		325192, CYCLIC CRUDE & INTERMEDIATE MFG—	
Companies ¹	35	Con.	
All establishments	50	Value added	\$1,000.. 2 734 987
Establishments with 1 to 19 employees	12	Total inventories, beginning of year	\$1,000.. 543 540
Establishments with 20 to 99 employees	20	Finished goods inventories, beginning of year	\$1,000.. 330 341
Establishments with 100 employees or more	18	Work-in-process inventories, beginning of year	\$1,000.. 50 704
All employees	8 020	Materials and supplies inventories, beginning of year	\$1,000.. 162 495
Total compensation ²	547 591	Total inventories, end of year	\$1,000.. 528 616
Annual payroll	423 876	Finished goods inventories, end of year	\$1,000.. 315 194
Total fringe benefits	123 715	Work-in-process inventories, end of year	\$1,000.. 53 998
Production workers, average for year	4 859	Materials and supplies inventories, end of year	\$1,000.. 159 424
Production workers on March 12	4 812	Gross book value of total assets at beginning of year	\$1,000.. 4 500 332
Production workers on May 12	4 830	Total capital expenditures (new and used)	\$1,000.. 651 921
Production workers on August 12	4 904	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 48 286
Production workers on November 12	4 890	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 603 635
Production-worker hours	10 856	Total retirements ²	\$1,000.. 43 164
Production-worker wages	244 080	Gross book value of total assets at end of year	\$1,000.. 5 109 089
Total cost of materials	3 228 317	Total depreciation during year ²	\$1,000.. 233 802
Cost of materials, parts, containers, etc., consumed	2 846 980	Total rental payments ²	\$1,000.. 12 711
Cost of resales	97 013	Buildings and other structures rental payments ²	\$1,000.. 1 803
Cost of fuels	151 462	Machinery and equipment rental payments ²	\$1,000.. 10 908
Cost of purchased electricity	103 910	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 21 397
Cost of contract work	28 952	Response coverage ratio ⁴	percent.. 90
Quantity of electricity purchased for heat and power	2 434 647	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 55 840
Quantity of electricity generated less sold for heat and power	319 652	Response coverage ratio ⁴	percent.. 90
Total value of shipments	5 975 157	Cost of purchased communications services ³	\$1,000.. 3 258
Primary products value of shipments	4 826 338	Response coverage ratio ⁴	percent.. 90
Secondary products value of shipments	1 030 459	Cost of purchased legal services ³	\$1,000.. 2 734
Total miscellaneous receipts	118 360	Response coverage ratio ⁴	percent.. 90
Value of resales	107 885	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 3 432
Contract receipts	D	Response coverage ratio ⁴	percent.. 90
Other miscellaneous receipts	D	Cost of purchased advertising services ³	\$1,000.. 119
Primary products specialization ratio	82	Response coverage ratio ⁴	percent.. 90
Value of primary products shipments made in all industries	9 272 367	Cost of purchased software and other data processing services ³	\$1,000.. 3 491
Value of primary products shipments made in this industry	4 826 338	Response coverage ratio ⁴	percent.. 90
Value of primary products shipments made in other industries	4 446 029	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 14 491
Coverage ratio	52	Response coverage ratio ⁴	percent.. 90

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325192, CYCLIC CRUDE & INTERMEDIATE MFG												
All establishments	—	50	38	8 020	423 876	4 859	10 856	244 080	2 734 987	3 228 317	5 975 157	651 921
Establishments with 1 to 4 employees	9	2	—	D	D	D	D	D	D	D	D	D
Establishments with 5 to 9 employees	5	5	—	33	1 064	25	45	751	4 763	7 607	12 349	611
Establishments with 10 to 19 employees	2	5	—	71	2 905	48	104	1 715	22 592	17 634	39 714	1 621
Establishments with 20 to 49 employees	1	9	9	269	11 600	168	333	6 352	60 649	110 552	169 684	8 487
Establishments with 50 to 99 employees	—	11	11	805	37 074	507	1 014	20 547	120 389	195 365	316 470	14 046
Establishments with 100 to 249 employees	—	7	7	1 103	58 152	626	1 493	31 255	309 378	607 011	942 949	59 232
Establishments with 250 to 499 employees	—	7	7	2 543	136 890	1 544	3 503	81 377	987 170	834 031	1 829 203	429 348
Establishments with 500 to 999 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	6	—	40	1 661	25	44	938	6 161	8 494	14 570	1 146

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325192	Cyclic crude & intermediate mfg	50	8 020	423 876	4 859	10 856	244 080	2 734 987	3 228 317	5 975 157	651 921
3251921	Cyclic (coal tar) intermediates	30	6 809	375 858	4 270	9 700	222 774	2 573 596	2 946 045	5 532 463	624 477
3251924	Tar, tar crudes, and tar pitches	12	1 133	45 018	538	1 068	19 508	147 768	269 065	416 379	25 472

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325192	Cyclic crudes and intermediates	N	X	X	9 272 367	N	X	X	N
3251921	Cyclic (coal tar) intermediates	N	X	X	8 490 908	N	X	X	7 679 909
32519211	Cyclic (coal tar) intermediates	N	X	X	8 490 908	N	X	X	N
3251921100	Cyclic (coal tar) intermediates	53	X	X	8 490 908	72	X	X	7 679 909
3251924	Tar, tar crudes, and tar pitches	N	X	X	748 716	N	X	X	493 173
32519241	Tar, tar crudes, and tar pitches	N	X	X	748 716	N	X	X	N
3251924100	Tar, tar crudes, and tar pitches	10	X	X	748 716	15	X	X	493 173
325192W	Cyclic crudes and intermediates, nsk, total	N	X	X	32 743	N	X	X	N
325192WY	Cyclic crudes and intermediates, nsk, total	N	X	X	32 743	N	X	X	N
325192WYWW	Cyclic crudes and intermediates, nsk, for nonadministrative-record establishments	N	X	X	18 533	N	X	X	N
325192WYWY	Cyclic crudes and intermediates, nsk, for administrative-record establishments	N	X	X	14 210	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3251921	CYCLIC (COAL TAR) INTERMEDIATES		
	United States	8 490 908	7 679 909
	Georgia	27 541	N
	Louisiana	532 688	497 626
	Ohio	285 039	N
	Pennsylvania	352 772	285 704
	Texas	4 443 177	3 238 321
3251924	TAR, TAR CRUDES, AND TAR PITCHES		
	United States	748 716	493 173
	Ohio	66 378	75 631

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325192	CYCLIC CRUDE & INTERMEDIATE MFG				
32518807	Hydrochloric acid (100 percent HCl)	1,000 s tons..	D	N	N
32518809	Hydrofluoric acid (100 percent HF)	1,000 s tons..	D	N	N
32531101	Nitric acid (100 percent HNO3)	1,000 s tons..	350.6	26 358	N
32518805	Sulfuric acid (100 percent H2SO4), except spent	1,000 s tons..	714.5	15 315	N
32531103	Ammonia, synthetic anhydrous (100 percent NH3)	1,000 s tons..	130.1	24 301	N
32518103	Chlorine (100 percent Cl basis)	1,000 s tons..	P239.5	45 375	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	1,000 s tons..	112.0	24 546	N
32500071	All other industrial inorganic chemicals	X	28 023	X	N
32512001	Acetylene and other industrial gases (compressed and liquified), including argon, carbon dioxide, nitrogen, etc.	X	19 100	X	N
32519300	Alcohol, ethyl (pure and denatured)	X	D	X	N
32510067	Other alcohols, including amyl, butyl, methyl, and propyl	X	892	X	N
32519213	Toluene and xylene (100 percent basis)	.mil lb..	D	N	N
32519205	Phenol (100 percent basis)	.mil lb..	D	N	N
32519231	Ortho and para-xylene (100 percent basis)	.mil lb..	D	N	N
32411013	Benzol (benzene) (100 percent C6H6)	.mil lb..	1 899.0	259 366	N
32519223	Tar, crude	1,000 s tons..	S	129 681	N
32519233	Other cyclic crudes and intermediates	.mil lb..	56.7	28 379	N
32510075	Acetone (natural and synthetic)	.mil lb..	D	N	N
325100A5	Other synthetic organic chemicals, n.e.c.	X	203 362	X	N
21111013	Natural gas used as a raw material	bil cu ft..	8.3	19 109	N
32411033	Ethylene used as a raw material or feedstock	.mil lb..	746.3	174 373	N
32411035	Propane used as a raw material or feedstock	.mil lb..	D	N	N
32411037	Propylene used as a raw material or feedstock	.mil lb..	D	N	N
32411039	Butane and iso-butane used as a raw material or feedstock	.mil lb..	D	N	N
32411041	Butylene and iso-butylene used as a raw material or feedstock	.mil lb..	D	N	N
00190012	Other hydrocarbons used as raw materials or feedstocks	X	D	X	N
21239303	Sulfur	1,000 l tons..	D	N	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	.mil lb..	D	N	N
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	D	X	N
33300015	Parts and attachments for machinery and equipment	X	18 471	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	648	X	N
33240000	Metal containers	X	6 069	X	N
00970099	All other materials and components, parts, containers, and supplies	X	582 765	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	19 598	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325192 CYCLIC CRUDE AND INTERMEDIATE
MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in (1) distilling coal tars and/or (2) manufacturing cyclic crudes or, cyclic intermediates (i.e., hydrocarbons, except aromatic petrochemicals) from refined petroleum or natural gas.

The data published with NAICS code 325192 include the following SIC industry:

2865 Cyclic crudes and intermediates (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
			3254114	28333	28333	3255201	28913	28913
3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312W	28740	28740	3254121	28341	28341	32552044E1	2891471	2891471
325312WYWW	2874000	2874000	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891441
325312WYVY	2874002	2874002				3255204541 pt	2891437 pt	2891443
			3254124	28342	28342	3255204551	2891445	2891445
3253140	28750	28750	3254124000	2834200	2834200	3255204561	2891447	2891447
3253140111	2875010	2875010				3255204621	2891424	2891424
3253140121	2875011	2875011	3254127	28343	28343	3255204631	2891433	2891433
3253140131	2875021	2875021	3254127000	2834300	2834300			
3253140141	2875041	2875000 pt				3255204681	2891453	2891453
3253140151	2875051	2875000 pt	325412A	28344	28344	3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A000	2834400	2834400	32552046A1	2891455	2891455
3253140241	2875031	2875031	325412D	28345	28345	32552046B1	2891457	2891457
3253140YVW	2875000	2875000 pt	325412D000	2834500	2834500	32552046C1	2891461	2891461
3253140YVY	2875002	2875002				32552046F1	2891481	2891481
			325412G	28346	28346	32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G000	2834600	2834600	32552046H1	2891499	2891499
						3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt	325412L	28347	28347			
			325412L000	2834700	2834700	3255207	28916	28916
3253201 pt	2879A pt	28797 pt				3255207111	2891610	2891610
			325412P	28348	28348	3255207121	2891625	2891625
3253201111	2879A pt	28798 pt	325412P000	2834800	2834800	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt				3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt	325412T	28349	28349			
3253201725	2879A25	2879665 pt	325412T000	2834900	2834900	325520A	28917	28917
3253201A15	2879A15	2879561 pt				325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt	325412V	28352	28352	325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412VYVW	2835200	2835200	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt						
			325412W pt	28340	28340	325520W	28910	28910
3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
						3256111121 pt	2841122 pt	2841145 pt
3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841146 pt
			3254130221	2835115	2835115	3256111121 pt	2841122 pt	2841149 pt
3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841178 pt
			3254130341	2835125	2835125	3256111121 pt	2841122 pt	2841179 pt
3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841125 pt
			3254130461	2835135	2835135	3256111131 pt	2841127 pt	2841145 pt
3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204 pt	2879C pt	28798 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835100	2835100	3256111131 pt	2841127 pt	2841178 pt
3253204113	2879C13	2879541 pt	3254130YVW pt	2835002 pt	2835002 pt	3256111211 pt	2841129 pt	2841141 pt
3253204115	2879C15	2879561 pt	3254130YVY			3256111211 pt	2841129 pt	2841143 pt
3253204117	2879C17	2879581 pt				3256111221 pt	2841130 pt	2841145 pt
3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt . . .		

MANUFACTURING—INDUSTRY SERIES

U.S. Census Bureau, 1997 Economic Census

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325193 286940	Ethyl alcohol mfg Industrial organic chemicals, n.e.c. (pt)	32 N	38 38	1 756 1 756	73 154 73 154	1 185 1 185	2 476 2 476	46 885 46 885	250 031 250 031	976 335 976 335	1 230 017 1 230 017	33 965 33 965

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325193, ETHYL ALCOHOL MFG												
United States	-	38	19	1 756	73 154	1 185	2 476	46 885	250 031	976 335	1 230 017	33 965
Minnesota	1	7	4	135	4 548	90	209	3 115	26 008	68 677	94 334	2 962

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325193, ETHYL ALCOHOL MFG		325193, ETHYL ALCOHOL MFG—Con.	
Companies ¹	32	Value added	\$1,000 .. 250 031
All establishments	38	Total inventories, beginning of year	\$1,000 .. 86 392
Establishments with 1 to 19 employees	19	Finished goods inventories, beginning of year	\$1,000 .. 43 646
Establishments with 20 to 99 employees	14	Work-in-process inventories, beginning of year	\$1,000 .. 16 475
Establishments with 100 employees or more	5	Materials and supplies inventories, beginning of year	\$1,000 .. 26 271
All employees	1 756	Total inventories, end of year	\$1,000 .. 80 821
Total compensation ²	90 582	Finished goods inventories, end of year	\$1,000 .. 42 947
Annual payroll	73 154	Work-in-process inventories, end of year	\$1,000 .. 13 523
Total fringe benefits	17 428	Materials and supplies inventories, end of year	\$1,000 .. 24 351
Production workers, average for year	1 185	Gross book value of total assets at beginning of year	\$1,000 .. 988 573
Production workers on March 12	1 177	Total capital expenditures (new and used)	\$1,000 .. 33 965
Production workers on May 12	1 173	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 13 387
Production workers on August 12	1 193	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 20 578
Production workers on November 12	1 197	Total retirements ²	\$1,000 .. 12 787
Production-worker hours	2 476	Gross book value of total assets at end of year	\$1,000 .. 1 009 751
Production-worker wages	46 885	Total depreciation during year ²	\$1,000 .. 40 135
Total cost of materials	976 335	Total rental payments ²	\$1,000 .. 1 143
Cost of materials, parts, containers, etc., consumed	807 843	Buildings and other structures rental payments ²	\$1,000 .. 100
Cost of resales	D	Machinery and equipment rental payments ²	\$1,000 .. 1 043
Cost of fuels	84 073	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 2 117
Cost of purchased electricity	20 438	Response coverage ratio ⁴	percent .. 97
Cost of contract work	D	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 40 965
Quantity of electricity purchased for heat and power	435 545	Response coverage ratio ⁴	percent .. 97
Quantity of electricity generated less sold for heat and power	498 762	Cost of purchased communications services ³	\$1,000 .. 45 236
Total value of shipments	1 230 017	Response coverage ratio ⁴	percent .. 97
Primary products value of shipments	994 286	Cost of purchased legal services ³	\$1,000 .. 3 072
Secondary products value of shipments	167 533	Response coverage ratio ⁴	percent .. 97
Total miscellaneous receipts	68 198	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 1 226
Value of resales	D	Response coverage ratio ⁴	percent .. 97
Contract receipts	D	Cost of purchased advertising services ³	\$1,000 .. 417
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent .. 97
Primary products specialization ratio	85	Cost of purchased software and other data processing services ³	\$1,000 .. 1 573
Value of primary products shipments made in all industries	2 263 852	Response coverage ratio ⁴	percent .. 97
Value of primary products shipments made in this industry	994 286	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 4 374
Value of primary products shipments made in other industries	1 269 566	Response coverage ratio ⁴	percent .. 97
Coverage ratio	43		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325193, ETHYL ALCOHOL MFG												
All establishments	—	38	19	1 756	73 154	1 185	2 476	46 885	250 031	976 335	1 230 017	33 965
Establishments with 1 to 4 employees	9	4	—	7	205	5	5	113	1 021	1 359	2 384	179
Establishments with 5 to 9 employees	3	7	—	49	1 810	34	47	1 114	15 181	25 241	40 455	1 243
Establishments with 10 to 19 employees	2	8	—	106	4 424	66	130	2 410	45 515	34 587	80 358	3 497
Establishments with 20 to 49 employees	—	9	9	263	8 349	205	499	6 568	42 975	132 042	174 829	8 072
Establishments with 50 to 99 employees	—	5	5	296	8 081	224	498	5 168	46 836	110 630	157 871	6 943
Establishments with 100 to 249 employees	—	4	4	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	13	—	100	3 747	63	98	2 076	18 657	24 835	43 570	3 261

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325193	Ethyl alcohol mfg	38	1 756	73 154	1 185	2 476	46 885	250 031	976 335	1 230 017	33 965

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325193	Ethyl alcohol	N	X	X	2 263 852	N	X	X	N
3251930	Ethyl alcohol	N	X	X	2 263 852	N	X	X	N
32519301	Ethyl alcohol, manufactured by the wet mill process, fuel ethanol (fuel-grade ethyl alcohol)	N	X	X	1 120 918	N	X	X	N
3251930111	Fuel ethanol (fuel-grade ethyl alcohol), manufactured by the wet mill process	11	X	X	1 120 918	10	X	X	860 134
32519302	Ethyl alcohol, manufactured by the wet mill process, pure and other denatured (special or complete)	N	X	X	233 408	N	X	X	N
3251930211	Pure (natural) (proof gal basis) ethyl alcohol, manufactured by the wet mill process	7	X	X	146 931	5	X	X	62 550
3251930221	Other denatured (special or complete) ethyl alcohol, including natural and synthetic, for uses other than rubbing, manufactured by the wet mill process	5	X	X	86 477	5	X	X	105 266
32519303	Ethyl alcohol, manufactured by other processes (dry mill-distillation), fuel ethanol	N	X	X	456 731	N	X	X	N
3251930311	Fuel ethanol, manufactured by other processes (dry mill-distillation)	16	X	X	456 731	8	X	X	216 172
32519304	Ethyl alcohol, manufactured by other processes (dry mill-distillation), pure (natural) (proof gal basis)	N	X	X	195 251	N	X	X	N
3251930411	Pure (natural) ethyl alcohol, manufactured by other processes (dry mill-distillation), (proof gal basis)	7	X	X	195 251	7	X	X	104 077
32519305	Other denatured (special or complete) ethyl alcohol, incl natural and synthetic, for uses other than rubbing, manufactured by other processes (dry mill-distillation)	N	X	X	226 703	N	X	X	N
3251930511	Other denatured (special or complete) ethyl alcohol, incl natural and synthetic, for uses other than rubbing, manufactured by other processes (dry mill-distillation)	7	X	X	226 703	9	X	X	85 161
3251930Y	Ethyl alcohol, nsk	N	X	X	30 841	N	X	X	N
3251930YWW	Ethyl alcohol, nsk, for nonadministrative-record establishments	N	X	X	3 398	N	X	X	N
3251930YWY	Ethyl alcohol, nsk, for administrative-record establishments	N	X	X	27 443	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325193	ETHYL ALCOHOL MFG				
32518807	Hydrochloric acid (100 percent HCl)	1,000 s tons..	D	N	N
32531101	Nitric acid (100 percent HNO3)	D	D	N	N
32518805	Sulfuric acid (100 percent H2SO4), except spent	1,000 s tons..	5 2 665	N	N
32531103	Ammonia, synthetic anhydrous (100 percent NH3)	1,000 s tons..	3 4 1 013	N	N
32518103	Chlorine (100 percent Cl basis)	1,000 s tons..	D	N	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	1,000 s tons..	76 5 5 307	N	N
32500071	All other industrial inorganic chemicals	X	D	X	N
32512001	Acetylene and other industrial gases (compressed and liquified), including argon, carbon dioxide, nitrogen, etc.	X	D	X	N
32519300	Alcohol, ethyl (pure and denatured)	X	D	X	N
32510067	Other alcohols, including amyl, butyl, methyl, and propyl	X	D	X	N
32411013	Benzol (benzene) (100 percent C6H6)	.mil lb..	D	N	N
32519233	Other cyclic crudes and intermediates	.mil lb..	D	N	N
32510075	Acetone (natural and synthetic)	.mil lb..	D	N	N
325100A5	Other synthetic organic chemicals, n.e.c.	X	D	X	N
21111013	Natural gas used as a raw material	bil cu ft..	3 1 4 647	N	N
32411033	Ethylene used as a raw material or feedstock	.mil lb..	D	N	N
32411035	Propane used as a raw material or feedstock	.mil lb..	D	N	N
32411039	Butane and iso-butane used as a raw material or feedstock	.mil lb..	D	N	N
00190012	Other hydrocarbons used as raw materials or feedstocks	X	D	X	N
21239303	Sulfur	1,000 l tons..	D	N	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	.mil lb..	D	N	N
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	515 655	X	N
33300015	Parts and attachments for machinery and equipment	X	6 790	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	D	X	N
33240000	Metal containers	X	D	X	N
00970099	All other materials and components, parts, containers, and supplies	X	62 205	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	21 040	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325193 ETHYL ALCOHOL MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing nonpotable ethyl alcohol.

The data published with NAICS code 325193 include the following SIC industry:

2869 Industrial organic chemicals, n.e.c. (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nisk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
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325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
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325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
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3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
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3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
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3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
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3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
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3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
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325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
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			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
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3253111	28731	28731	3253207155	2879E55	2879971	325510A pt	28995 pt	28995 pt
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3253117	28733	28733	325320W	28790	28790	325510W pt	28990 pt	28990 pt
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3253121000	2874100	2874100	3254111YVW	2833100	2833100	3255201111	2891311	2891311
3253124	28742	28742	3254114	28333	28333	3255201112	2891326	2891326
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3253127	28744	28744	3254114121	2833318	2833318	3255201131	2891351	2891351
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3253140151	2875051	2875000 pt	3254127	28343	28343	3255204621	2891424	2891424
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3253140241	2875031	2875031	325412A	28344	28344	3255204681	2891453	2891453
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3253140YVY	2875002	2875002	325412D	28345	28345	32552046A1	2891455	2891455
3253201 pt	2879A pt	28795 pt	325412D000	2834500	2834500	32552046B1	2891457	2891457
3253201 pt	2879A pt	28796 pt	325412G	28346	28346	32552046C1	2891461	2891461
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3253201 pt	2879A pt	28798 pt	325412L	28347	28347	32552046G1	2891483	2891483
3253201111	2879A11	2879531 pt	325412L000	2834700	2834700	32552046H1	2891499	2891499
3253201413	2879A13	2879541 pt	325412P	28348	28348	3255204YVW	2891400	2891400
3253201725	2879A25	2879665 pt	325412P000	2834800	2834800	3255207	28916	28916
3253201A15	2879A15	2879561 pt	325412T	28349	28349	3255207111	2891610	2891610
3253201A17	2879A17	2879581 pt	325412T000	2834900	2834900	3255207121	2891625	2891625
3253201A21	2879A21	2879641 pt	325412V	28352	28352	3255207131	2891650	2891650
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	3255207YVW	2891600	2891600
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A	28917	28917
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A111	2891711	2891711
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A121	2891721	2891721
3253201A43	2879A43	2879818 pt	325412W pt	28340	28340	325520A131	2891731	2891731
3253201A45	2879A45	2879822 pt	325412W pt	28350 pt	28350 pt	325520A141	2891746	2891746
3253201A47	2879A47	2879885 pt	325412WYWW pt	2834000	2834000	325520A151	2891771	2891771
3253201D33	2879A33	2879721 pt	325412WYVY pt	2835000 pt	2835000 pt	325520AYVW	2891700	2891700
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			3256127YVW	2842400	2842400	3259107221	2893342	2893342
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3256111721	2841114	2841114	325612WYVW	2842000	2842000	325910A111	2893482	2893482
3256111731	2841119	2841119	325612WYVY	2842002	2842002	325910A121	2893483	2893483
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3256111741 pt	2841136 pt	2841128 pt				325910A141	2893489	2893489
3256111741 pt	2841136 pt	2841141 pt				325910AYVW	2893400	2893400
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325611A	28414	28414	3256207271	2844341	2844341	3259912	30872	30870 pt
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			325620A	28444 pt	28444 pt	3259921101	3861503	3861503
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			325620A121	2844498	2844498	3259921111	3861600	3861600
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			325620D131	2844615	2844615	3259923 pt	38617	38617
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3256124421	2842313	2842311 pt	325620G361	2844765	2844765			
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
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325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
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			325998H1E1 pt....	2899597	2899597			

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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Companies ¹	All establishments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325199	All other basic organic chemical mfg	487	676	89 261	4 806 930	52 793	113 233	2 556 427	23 182 319	30 375 429	53 542 377	3 787 908
286950	Industrial organic chemicals, n.e.c. (pt)	N	653	86 688	4 683 087	51 180	109 852	2 488 051	22 756 889	29 524 673	52 285 142	3 702 426
289920	Chemical preparations, n.e.c. (pt)	N	23	2 573	123 843	1 613	3 381	68 376	425 430	850 756	1 257 235	85 482

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325199, ALL OTHER BASIC ORGANIC CHEMICAL MFG												
United States	—	676	425	89 261	4 806 930	52 793	113 233	2 556 427	23 182 319	30 375 429	53 542 377	3 787 908
Arkansas	—	7	5	2 219	103 689	1 524	3 410	66 426	574 875	488 787	1 036 362	97 977
Delaware	—	3	3	344	18 103	189	421	9 341	123 309	88 632	215 044	5 404
Georgia	—	23	12	1 705	72 263	1 014	1 959	40 729	528 272	436 014	976 672	31 230
Illinois	—	43	27	2 594	121 906	1 353	2 692	55 013	841 041	920 198	1 764 136	72 570
Maryland	7	8	4	581	28 044	319	709	14 279	225 867	347 514	570 557	17 994
Michigan	—	20	13	4 247	246 701	2 191	4 047	102 217	802 794	794 260	1 609 772	190 603
Missouri	1	14	8	605	26 287	406	939	15 686	148 336	165 743	316 141	18 895
New Jersey	1	62	47	4 636	245 847	2 597	5 357	113 744	1 009 014	1 298 262	2 320 485	113 684
Ohio	—	38	27	4 012	195 751	2 497	5 155	108 958	835 027	1 213 416	2 041 565	107 393
Pennsylvania	1	28	14	1 292	52 363	759	1 540	27 749	311 751	415 608	724 736	27 856
Texas	—	95	67	20 800	1 253 919	13 067	28 880	729 759	6 799 280	12 458 224	19 239 018	1 396 945
Virginia	—	5	3	1 545	79 738	1 228	2 569	52 147	428 506	401 717	812 870	51 106

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325199, ALL OTHER BASIC ORGANIC CHEMICAL MFG		325199, ALL OTHER BASIC ORGANIC CHEMICAL MFG—Con.	
Companies ¹	487	Value added	\$1,000.. 23 182 319
All establishments	676	Total inventories, beginning of year	\$1,000.. 5 721 869
Establishments with 1 to 19 employees	251	Finished goods inventories, beginning of year	\$1,000.. 3 410 516
Establishments with 20 to 99 employees	236	Work-in-process inventories, beginning of year	\$1,000.. 754 045
Establishments with 100 employees or more	189	Materials and supplies inventories, beginning of year	\$1,000.. 1 557 308
All employees	89 261	Total inventories, end of year	\$1,000.. 5 904 072
Total compensation ²	6 074 149	Finished goods inventories, end of year	\$1,000.. 3 406 791
Annual payroll	4 806 930	Work-in-process inventories, end of year	\$1,000.. 773 141
Total fringe benefits	1 267 219	Materials and supplies inventories, end of year	\$1,000.. 1 724 140
Production workers, average for year	52 793	Gross book value of total assets at beginning of year	\$1,000.. 42 049 674
Production workers on March 12	53 148	Total capital expenditures (new and used)	\$1,000.. 3 787 908
Production workers on May 12	53 177	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 322 283
Production workers on August 12	52 430	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 3 465 625
Production workers on November 12	52 420	Total retirements ²	\$1,000.. 937 884
Production-worker hours	113 233	Gross book value of total assets at end of year	\$1,000.. 44 899 698
Production-worker wages	2 556 427	Total depreciation during year ²	\$1,000.. 2 403 460
Total cost of materials	30 375 429	Total rental payments ²	\$1,000.. 685 072
Cost of materials, parts, containers, etc., consumed	25 679 741	Buildings and other structures rental payments ²	\$1,000.. 151 590
Cost of resales	1 368 626	Machinery and equipment rental payments ²	\$1,000.. 533 482
Cost of fuels	1 631 707	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 263 174
Cost of purchased electricity	839 050	Response coverage ratio ⁴	percent.. 91
Cost of contract work	856 305	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 920 085
Quantity of electricity purchased for heat and power	22 446 085	Response coverage ratio ⁴	percent.. 91
Quantity of electricity generated less sold for heat and power	10 056 547	Cost of purchased communications services ³	\$1,000.. 47 285
Total value of shipments	53 542 377	Response coverage ratio ⁴	percent.. 91
Primary products value of shipments	40 307 736	Cost of purchased legal services ³	\$1,000.. 39 950
Secondary products value of shipments	11 243 717	Response coverage ratio ⁴	percent.. 91
Total miscellaneous receipts	1 990 924	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 13 669
Value of resales	1 713 706	Response coverage ratio ⁴	percent.. 91
Contract receipts	231 787	Cost of purchased advertising services ³	\$1,000.. 126 759
Other miscellaneous receipts	45 431	Response coverage ratio ⁴	percent.. 91
Primary products specialization ratio	percent.. 78	Cost of purchased software and other data processing services ³	\$1,000.. 72 003
Value of primary products shipments made in all industries	47 622 415	Response coverage ratio ⁴	percent.. 91
Value of primary products shipments made in this industry	40 307 736	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 214 131
Value of primary products shipments made in other industries	7 314 679	Response coverage ratio ⁴	percent.. 91
Coverage ratio	percent.. 84		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325199, ALL OTHER BASIC ORGANIC CHEMICAL MFG												
All establishments	—	676	425	89 261	4 806 930	52 793	113 233	2 556 427	23 182 319	30 375 429	53 542 377	3 787 908
Establishments with 1 to 4 employees	4	111	—	231	9 528	154	257	5 259	87 764	89 835	178 379	6 937
Establishments with 5 to 9 employees	2	60	—	424	17 914	238	439	8 498	150 578	170 367	321 248	8 443
Establishments with 10 to 19 employees	6	80	—	1 125	48 353	695	1 332	23 769	377 608	468 779	844 852	19 212
Establishments with 20 to 49 employees	3	136	136	4 360	195 283	2 541	4 947	92 268	1 113 918	1 094 515	2 211 738	120 108
Establishments with 50 to 99 employees	1	100	100	7 043	326 675	3 766	8 062	152 618	1 887 895	2 479 489	4 364 888	265 014
Establishments with 100 to 249 employees	1	118	118	18 351	895 836	10 446	22 275	462 523	4 598 782	6 353 147	10 905 431	781 631
Establishments with 250 to 499 employees	—	33	33	11 553	627 170	7 263	15 780	359 704	3 408 568	4 121 137	7 592 198	313 300
Establishments with 500 to 999 employees	—	25	25	17 519	1 014 714	10 962	25 028	563 296	5 641 979	7 074 769	12 695 794	1 232 122
Establishments with 1,000 to 2,499 employees	—	12	12	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	1	1	D	D	D	D	D	D	D	D	D
Administrative records ²	9	97	—	485	18 388	304	470	10 190	90 865	120 687	211 944	15 737

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325199	All other basic organic chemical mfg	676	89 261	4 806 930	52 793	113 233	2 556 427	23 182 319	30 375 429	53 542 377	3 787 908
3251991	Fatty acid esters	19	2 121	107 773	1 268	2 669	59 776	486 486	1 046 522	1 527 026	117 978
3251994	Bulk pesticides and other bulk synthetic organic agricultural chemicals, except preparations	16	4 467	235 807	2 350	4 722	108 194	535 533	864 546	1 401 926	143 967
3251997	Other industrial organic chemicals ...	4	475	26 999	243	477	11 555	78 653	135 276	227 342	D
325199A	Reagent and high purity grades of organic chemicals refined from purchased technical grades	6	971	46 622	575	1 200	24 094	284 296	181 296	479 639	18 587
325199E	Natural organic chemicals, nec	42	1 509	73 228	879	1 815	35 601	434 063	566 254	997 939	40 580
325199H	Synthetic organic chemicals, flavor and perfume materials	38	3 739	193 184	2 141	4 787	95 851	983 970	879 574	1 859 036	89 724
325199K	Synthetic organic chemicals, nec, rubber-processing chemicals	11	1 020	58 058	638	1 382	30 931	141 847	293 978	446 036	20 590
325199N	Synthetic organic chemicals, nec, plasticizers	13	813	41 367	402	861	17 579	136 960	304 108	449 171	16 637
325199R	Other synthetic organic chemicals, nec	44	4 463	218 609	2 713	5 775	116 004	1 048 254	1 070 509	2 132 638	248 137
325199T	Other industrial organic chemicals, flavor oil mixtures and blends	161	18 314	947 499	10 223	21 818	490 181	6 004 776	6 510 237	12 491 586	776 955
325199U	Other miscellaneous cyclic and acyclic chemicals and chemical products	129	47 455	2 691 124	28 937	63 166	1 479 553	12 275 015	17 696 362	29 943 839	2 190 192

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325199	All other basic organic chemicals	N	X	X	47 622 415	N	X	X	N
3251991	Fatty acids	N	X	X	1 164 192	N	X	X	N
32519911	Fatty acids (produced for sale as such)	N	X	X	1 148 164	N	X	X	N
3251991111	Saturated stearic fatty acids (40 to 50 percent stearic content)	2	X	D	D	7	X	318.6	110 137
3251991121	Saturated hydrogenated animal and vegetable fatty acids	4	X	S	110 759	6	X	214.7	52 979
3251991131	Other saturated fatty acids, including hydrogenated fish and marine mammal fatty acids	5	X	D	D	7	X	497.3	172 162
3251991141	Unsaturated oleic fatty acids, including white oleic acid and red oil	2	X	D	D	5	X	139.4	59 365
3251991151	Other unsaturated fatty acids	4	X	P136.7	16 210	3	X	D	D
3251991161	Tall oil fatty acids containing less than 2 percent rosin acids and more than 95 percent fatty acids	9	X	S	95 491	6	X	933.4	60 414
3251991171	Tall oil fatty acids containing 2 percent or more rosin acids	5	X	P217.4	44 117	4	X	D	D
3251991181	Fatty acid esters	8	X	X	D	N	X	X	N
3251991Y	Fatty acids (produced for sale as such), nsk	N	X	X	16 028	N	X	X	N
3251991YWV	Fatty acids (produced for sale as such), nsk	N	X	X	16 028	N	X	X	N
3251994	Bulk pesticides and other bulk synthetic organic agricultural chemicals, except preparations	N	X	X	1 203 403	N	X	X	1 243 141
32519941	Bulk pesticides and other bulk synthetic organic agricultural chemicals, except preparations	N	X	X	1 203 403	N	X	X	N
3251994100	Bulk pesticides and other bulk synthetic organic agricultural chemicals, except preparations	40	X	X	1 203 403	42	X	X	1 243 141
3251997	Industrial organic flavor oil mixtures and blends	N	X	X	227 946	N	X	X	N
32519971	Industrial organic flavor oil mixtures and blends	N	X	X	227 946	N	X	X	N
3251997100	Industrial organic flavor oil mixtures and blends	10	X	X	227 946	14	X	X	205 050
325199A	Reagent and high purity grades of organic chemicals refined from purchased technical grades	N	X	X	407 223	N	X	X	N
325199A1	Reagent and high purity grades of organic chemicals refined from purchased technical grades	N	X	X	407 223	N	X	X	N
325199A100	Reagent and high purity grades of organic chemicals refined from purchased technical grades	9	X	X	407 223	13	X	X	344 390
325199E	Natural organic chemicals, nec	N	X	X	932 020	N	X	X	N
325199E1	Natural organic chemicals, including derivatives of fatty substances, except plasticizers	N	X	X	871 102	N	X	X	N
325199E111	Natural organic chemical derivatives of fatty substances, incl salts, alcohols, and esters, except plasticizers and surface active agents	17	X	X	411 876	20	X	X	302 132
325199E121	Other natural organic chemicals, nec	15	X	X	459 226	27	X	X	355 935
325199EY	Other industrial organic chemicals, nsk	N	X	X	60 918	N	X	X	N
325199EYWV	Other industrial organic chemicals, nsk	N	X	X	60 918	N	X	X	13 062
325199H	Synthetic organic chemicals for use as flavor and perfume materials	N	X	X	1 614 237	N	X	X	N
325199H1	Synthetic organic chemicals, for use as flavor and perfume materials, mixed and unmixed	N	X	X	1 578 645	N	X	X	N
325199H111	Synthetic organic chemical compounds for use as flavor and perfume materials, unmixed	29	X	X	1 146 633	27	X	X	1 556 812
325199H121	Synthetic organic chemical compounds for use as flavor and perfume materials, mixed	17	X	X	432 012	17	X	X	270 969
325199HY	Synthetic organic chemicals, nec, nsk	N	X	X	35 592	N	X	X	N
325199HYWV	Synthetic organic chemicals, nec, nsk	N	X	X	35 592	N	X	X	N
325199K	Synthetic organic rubber-processing chemicals	N	X	X	614 776	N	X	X	N
325199K1	Synthetic organic rubber-processing chemicals	N	X	X	614 776	N	X	X	N
325199K100	Synthetic organic rubber-processing chemicals	22	X	X	614 776	22	X	X	623 632
325199N	Synthetic organic plasticizers	N	X	X	958 211	N	X	X	N
325199N1	Synthetic organic plasticizers	N	X	X	958 211	N	X	X	N
325199N100	Synthetic organic plasticizers	34	X	X	958 211	42	X	X	915 817

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325199	All other basic organic chemicals—Con.								
325199R	Other synthetic organic chemicals, nec	N	X	X	2 076 002	N	X	X	N
325199R1	Other synthetic organic chemicals, nec	N	X	X	2 076 002	N	X	X	N
325199R100	Other synthetic organic chemicals, nec	63	X	X	2 076 002	N	X	X	N
325199T	Miscellaneous end-use chemicals and chemical products (excluding urea), and other industrial organic chemicals, nec	N	X	X	13 151 246	N	X	X	N
325199T1	Miscellaneous end-use chemicals and chemical products (excluding urea), and other industrial organic chemicals, nec	N	X	X	13 151 246	N	X	X	N
325199T100	Miscellaneous end-use chemicals and chemical products (excluding urea), and other industrial organic chemicals, nec	240	X	X	13 151 246	N	X	X	N
325199U	Miscellaneous cyclic and acyclic chemicals and chemical products, except fluorocarbon gases, carbon bisulfide (disulfide), and fatty acid esters	N	X	X	23 247 904	N	X	X	N
325199U1	Miscellaneous cyclic and acyclic chemicals and chemical products, except fluorocarbon gases, carbon bisulfide (disulfide), and fatty acid esters	N	X	X	23 247 904	N	X	X	N
325199U100	Miscellaneous cyclic and acyclic chemicals and chemical products, except fluorocarbon gases, carbon bisulfide (disulfide), and fatty acid esters	148	X	X	23 247 904	N	X	X	N
325199W	All other basic organic chemicals, nsk, total	N	X	X	2 025 255	N	X	X	N
325199WY	All other basic organic chemicals, nsk, total	N	X	X	2 025 255	N	X	X	N
325199WYWW	All other basic organic chemicals, nec, nsk, for nonadministrative-record establishments	N	X	X	1 840 904	N	X	X	N
325199WYWY	All other basic organic chemicals, nec, nsk, for administrative-record establishments	N	X	X	184 351	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3251991	FATTY ACIDS		
	United States	1 164 192	N
	Illinois	122 066	N
	New Jersey	13 278	N
	Ohio	186 411	N
3251994	BULK PESTICIDES AND OTHER BULK SYNTHETIC ORGANIC AGRICULTURAL CHEMICALS, EXCEPT PREPARATIONS		
	United States	1 203 403	1 243 141
	California	14 544	N
	Ohio	13 154	5 977
	Tennessee	52 692	41 223
3251997	INDUSTRIAL ORGANIC FLAVOR OIL MIXTURES AND BLENDS		
	United States	227 946	N
325199A	REAGENT AND HIGH PURITY GRADES OF ORGANIC CHEMICALS REFINED FROM PURCHASED TECHNICAL GRADES		
	United States	407 223	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325199E	NATURAL ORGANIC CHEMICALS, NEC		
	United States	932 020	N
	Illinois	115 026	N
	New Jersey	40 707	N
	Pennsylvania	71 056	N
325199H	SYNTHETIC ORGANIC CHEMICALS FOR USE AS FLAVOR AND PERFUME MATERIALS		
	United States	1 614 237	N
	New Jersey	530 324	N
	Texas	95 765	N
	Wisconsin	33 294	N
325199K	SYNTHETIC ORGANIC RUBBER-PROCESSING CHEMICALS		
	United States	614 776	N
	Alabama	15 014	N
	Texas	89 905	N
325199N	SYNTHETIC ORGANIC PLASTICIZERS		
	United States	958 211	N
	North Carolina	43 547	N
	Texas	88 535	N
325199R	OTHER SYNTHETIC ORGANIC CHEMICALS, NEC		
	United States	2 076 002	N
	Connecticut	40 078	N
	New Jersey	77 032	N
	New York	74 897	N
	Ohio	191 576	N
	Pennsylvania	156 417	N
	South Carolina	85 311	N
	Tennessee	227 775	N
325199T	MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS (EXCLUDING UREA), AND OTHER INDUSTRIAL ORGANIC CHEMICALS, NEC		
	United States	13 151 246	N
	Alabama	198 463	N
	Arkansas	24 332	N
	California	118 260	N
	Florida	103 978	N
	Georgia	207 660	N
	Illinois	740 857	N
	Iowa	151 853	N
	Louisiana	1 901 442	N
	Massachusetts	60 593	N
	Michigan	902 848	N
	Minnesota	51 212	N
	Missouri	135 101	N
	New Jersey	877 183	N
	New York	151 866	N
	North Carolina	338 426	N
	Ohio	551 900	N
	Pennsylvania	309 972	N
	South Carolina	464 332	N
	Texas	3 845 026	N
	Virginia	10 730	N
	West Virginia	538 734	N
	Wisconsin	90 821	N
325199U	MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS AND CHEMICAL PRODUCTS, EXCEPT FLUOROCARBON GASES, CARBON BISULFIDE (DISULFIDE), AND FATTY ACID ESTERS		
	United States	23 247 904	N
	Arkansas	740 031	N
	California	422 093	N
	Connecticut	5 144	N
	Florida	282 313	N
	Illinois	262 451	N
	Kansas	135 699	N
	Kentucky	1 182 769	N
	Louisiana	4 485 654	N
	Michigan	341 289	N
	Minnesota	21 287	N
	Missouri	74 929	N
	New Jersey	134 853	N
	New York	365 297	N
	North Carolina	27 187	N
	Ohio	492 583	N
	Oregon	6 972	N
	Pennsylvania	162 114	N
	South Carolina	100 708	N
	Tennessee	814 522	N
	Texas	10 888 975	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325199	ALL OTHER BASIC ORGANIC CHEMICAL MFG				
32518807	Hydrochloric acid (100 percent HCl)	1,000 s tons..	280.6	28 628	N
32518809	Hydrofluoric acid (100 percent HF)	1,000 s tons..	D	D	N
32531101	Nitric acid (100 percent HNO3)	1,000 s tons..	P153.7	23 706	N
32518805	Sulfuric acid (100 percent H2SO4), except spent	1,000 s tons..	3 097.8	64 589	N
32531103	Ammonia, synthetic anhydrous (100 percent NH3)	1,000 s tons..	1 636.8	256 318	N
32518103	Chlorine (100 percent Cl basis)	1,000 s tons..	2 562.2	379 162	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	1,000 s tons..	P2 727.7	262 487	N
32500071	All other industrial inorganic chemicals	X	1 169 101	X	N
32512001	Acetylene and other industrial gases (compressed and liquified), including argon, carbon dioxide, nitrogen, etc.	X	226 630	X	N
32519300	Alcohol, ethyl (pure and denatured)	X	296 179	X	N
32510067	Other alcohols, including amyl, butyl, methyl, and propyl	X	785 040	X	N
32519213	Toluene and xylene (100 percent basis)	mil lb..	P754.0	122 141	N
32519205	Phenol (100 percent basis)	mil lb..	P2 995.4	186 253	N
32519231	Ortho and para-xylene (100 percent basis)	mil lb..	862.0	177 886	N
32411013	Benzol (benzene) (100 percent C6H6)	mil lb..	S 431 116	N	N
32519223	Tar, crude	1,000 s tons..	D	D	N
32519233	Other cyclic crudes and intermediates	mil lb..	2 013.2	555 957	N
32510075	Acetone (natural and synthetic)	mil lb..	S	155 472	N
325100A5	Other synthetic organic chemicals, n.e.c.	X	3 295 799	X	N
21111013	Natural gas used as a raw material	bil cu ft..	P212.7	356 514	N
32411031	Ethane used as a raw material or feedstock	mil lb..	q4 746.7	392 517	N
32411033	Ethylene used as a raw material or feedstock	mil lb..	10 413.2	2 194 693	N
32411035	Propane used as a raw material or feedstock	mil lb..	5 873.9	511 440	N
32411037	Propylene used as a raw material or feedstock	mil lb..	q8 703.7	1 449 924	N
32411039	Butane and iso-butane used as a raw material or feedstock	mil lb..	3 871.1	387 602	N
32411041	Butylene and iso-butylenes used as a raw material or feedstock	mil lb..	S	138 594	N
00190012	Other hydrocarbons used as raw materials or feedstocks	X	1 394 815	X	N
21239303	Sulfur	1,000 l tons..	q1 262.8	31 570	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	mil lb..	S	65 268	N
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	71 449	X	N
33300015	Parts and attachments for machinery and equipment	X	411 324	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	137 185	X	N
33240000	Metal containers	X	104 305	X	N
00970099	All other materials and components, parts, containers, and supplies	X	6 171 385	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	3 333 722	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325199 ALL OTHER BASIC ORGANIC CHEMICAL MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing basic organic chemical products (except aromatic petrochemicals, industrial gases, synthetic organic dyes and pigments, gum and wood chemicals, cyclic crudes and intermediates, and ethyl alcohol).

The data published with NAICS code 325199 include the following SIC industries:

- 2869 Industrial organic chemicals, n.e.c. (pt)
- 2899 Chemical preparations, n.e.c. (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
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3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
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3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
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3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
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			325199E111	2869853	2869853	325222D111	2824815	2824815
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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			3253207155	2879E55	2879971	325510A pt	28515	28515
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325311WYWW	2873000	2873000	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
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3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
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			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
			325414A241	2836430	2836430			
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3253207123	2879E23	2879917	325414WYVY	2836002	2836002	32		

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325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325211 282100	Plastics material & resin mfg .. Plastics materials & resins.....	301 N	532 532	61 035 61 035	3 134 011 3 134 011	37 504 37 504	81 762 81 762	1 773 678 1 773 678	16 796 236 16 796 236	27 908 115 27 908 115	44 574 918 44 574 918	2 920 961 2 920 961

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325211, PLASTICS MATERIAL & RESIN MFG												
United States	—	532	417	61 035	3 134 011	37 504	81 762	1 773 678	16 796 236	27 908 115	44 574 918	2 920 961
Alabama	—	8	6	851	44 481	639	1 387	31 918	275 511	356 083	637 205	92 962
Arkansas	2	5	4	232	7 917	144	285	4 478	61 167	96 826	157 971	4 146
California	1	51	37	1 959	87 945	1 267	2 826	47 506	315 951	703 165	1 034 089	38 238
Florida	2	16	9	662	25 745	462	1 003	15 755	129 184	240 463	359 864	16 692
Georgia	—	22	19	1 457	52 775	935	1 903	30 434	330 075	488 031	814 615	32 330
Indiana	—	15	13	2 711	126 395	1 795	3 716	81 412	749 929	779 543	1 498 419	68 928
Kentucky	—	14	13	2 986	153 434	1 891	4 192	89 927	1 110 921	1 438 700	2 552 434	124 427
Louisiana	—	21	19	5 152	335 267	3 250	6 917	189 176	1 401 884	4 603 256	5 985 246	383 963
Massachusetts	1	21	18	1 251	58 062	645	1 373	26 777	162 052	294 279	462 928	25 658
Missouri	4	7	5	291	13 136	215	475	10 711	51 568	95 050	152 702	4 977
New Hampshire	1	3	2	167	6 141	94	169	2 991	21 518	45 555	66 166	4 018
New Jersey	1	22	19	1 898	96 403	1 171	2 479	54 512	369 878	596 492	956 201	55 521
Ohio	1	34	29	3 088	150 662	1 961	4 197	91 994	602 202	1 042 691	1 659 312	94 806
Oklahoma	—	3	3	122	4 621	75	157	2 442	30 929	123 033	152 624	4 671
Oregon	—	13	8	450	18 750	259	477	9 003	57 241	133 471	192 467	12 646
Texas	—	68	53	12 920	722 497	7 882	18 083	409 617	5 336 774	9 229 178	14 517 281	990 925
Washington	—	7	3	160	4 761	128	243	3 051	19 809	15 056	35 334	2 049

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325211, PLASTICS MATERIAL & RESIN MFG		325211, PLASTICS MATERIAL & RESIN MFG—Con.	
Companies ¹	301	Value added	\$1,000 .. 16 796 236
All establishments	532	Total inventories, beginning of year	\$1,000 .. 4 114 768
Establishments with 1 to 19 employees	115	Finished goods inventories, beginning of year	\$1,000 .. 2 629 982
Establishments with 20 to 99 employees	274	Work-in-process inventories, beginning of year	\$1,000 .. 391 438
Establishments with 100 employees or more	143	Materials and supplies inventories, beginning of year	\$1,000 .. 1 093 348
All employees	61 035	Total inventories, end of year	\$1,000 .. 4 318 055
Total compensation ²	4 035 778	Finished goods inventories, end of year	\$1,000 .. 2 748 535
Annual payroll	3 134 011	Work-in-process inventories, end of year	\$1,000 .. 402 318
Total fringe benefits	901 767	Materials and supplies inventories, end of year	\$1,000 .. 1 167 202
Production workers, average for year	37 504	Gross book value of total assets at beginning of year	\$1,000 .. 34 999 727
Production workers on March 15	37 415	Total capital expenditures (new and used)	\$1,000 .. 2 920 961
Production workers on May 15	37 503	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 298 214
Production workers on August 15	37 531	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 2 622 747
Production workers on November 15	37 567	Total retirements ²	\$1,000 .. 636 258
Production-worker hours	81 762	Gross book value of total assets at end of year	\$1,000 .. 37 284 430
Production-worker wages	1 773 678	Total depreciation during year ²	\$1,000 .. 2 169 954
Total cost of materials	27 908 115	Total rental payments ²	\$1,000 .. 206 073
Cost of materials, parts, containers, etc., consumed	25 406 907	Buildings and other structures rental payments ²	\$1,000 .. 43 966
Cost of resales	365 064	Machinery and equipment rental payments ²	\$1,000 .. 162 107
Cost of fuels	806 741	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 120 806
Cost of purchased electricity	721 785	Response coverage ratio ⁴	percent .. 87
Cost of contract work	607 618	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 456 162
Quantity of electricity purchased for heat and power	18 153 485	Response coverage ratio ⁴	percent .. 87
Quantity of electricity generated less sold for heat and power	5 537 225	Cost of purchased communications services ³	\$1,000 .. 26 889
Total value of shipments	44 574 918	Response coverage ratio ⁴	percent .. 87
Primary products value of shipments	38 049 913	Cost of purchased legal services ³	\$1,000 .. 15 251
Secondary products value of shipments	5 959 812	Response coverage ratio ⁴	percent .. 87
Total miscellaneous receipts	565 193	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 8 384
Value of resales	421 705	Response coverage ratio ⁴	percent .. 87
Contract receipts	56 706	Cost of purchased advertising services ³	\$1,000 .. 3 722
Other miscellaneous receipts	86 782	Response coverage ratio ⁴	percent .. 87
Primary products specialization ratio	percent .. 86	Cost of purchased software and other data processing services ³	\$1,000 .. 50 515
Value of primary products shipments made in all industries	45 670 096	Response coverage ratio ⁴	percent .. 87
Value of primary products shipments made in this industry	38 049 913	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 114 178
Value of primary products shipments made in other industries	7 620 183	Response coverage ratio ⁴	percent .. 87
Coverage ratio	percent .. 83		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325211, PLASTICS MATERIAL & RESIN MFG												
All establishments	—	532	417	61 035	3 134 011	37 504	81 762	1 773 678	16 796 236	27 908 115	44 574 918	2 920 961
Establishments with 1 to 4 employees	7	21	—	37	2 019	33	44	1 112	3 163	7 830	12 289	588
Establishments with 5 to 9 employees	3	38	—	263	11 000	151	303	5 214	91 704	78 603	168 520	5 949
Establishments with 10 to 19 employees	1	56	—	849	33 286	533	1 083	17 892	188 035	295 864	487 547	17 048
Establishments with 20 to 49 employees	1	160	160	5 513	223 449	3 518	7 112	122 631	1 186 748	1 908 508	3 091 210	120 953
Establishments with 50 to 99 employees	1	114	114	7 860	342 993	4 967	10 620	192 485	2 071 694	3 316 919	5 389 133	208 261
Establishments with 100 to 249 employees	—	94	94	14 751	719 218	9 029	20 171	416 612	4 386 369	8 159 860	12 515 888	875 606
Establishments with 250 to 499 employees	—	28	28	10 306	553 586	6 655	14 869	323 734	3 310 696	4 805 752	8 114 428	628 516
Establishments with 500 to 999 employees	—	14	14	9 420	562 093	5 038	11 705	280 646	2 764 752	4 486 328	7 207 718	492 258
Establishments with 1,000 to 2,499 employees	—	6	6	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	1	1	D	D	D	D	D	D	D	D	D
Administrative records ²	—	—	—	—	—	—	—	—	—	—	—	—

¹Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325211	Plastics material & resin mfg	532	61 035	3 134 011	37 504	81 762	1 773 678	16 796 236	27 908 115	44 574 918	2 920 961
3252111	Thermoplastics resins and plastics materials	306	46 917	2 474 007	29 611	65 257	1 449 639	13 213 161	23 643 165	36 736 295	2 452 761
3252114	Thermosetting resins and plastics materials	179	13 096	625 978	7 244	15 295	304 804	3 422 012	4 033 136	7 442 735	438 320

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325211	Plastics materials and resins	N	X	X	45 670 096	N	X	X	33 299 260
3252111	Thermoplastics resins and plastics materials	N	X	X	36 593 786	N	X	X	27 559 787
32521111	Thermoplastics resins and plastics materials	N	X	X	36 593 786	N	X	X	N
3252111100	Thermoplastics resins and plastics materials	259	X	X	36 593 786	203	X	X	27 559 787
3252114	Thermosetting resins and plastics materials	N	X	X	8 588 710	N	X	X	5 564 478
32521141	Thermosetting resins and plastics materials	N	X	X	8 588 710	N	X	X	N
3252114100	Thermosetting resins and plastics materials	153	X	X	8 588 710	128	X	X	5 564 478
325211W	Plastics materials and resins, nsk, total	N	X	X	487 600	N	X	X	174 995
325211WY	Plastics materials and resins, nsk	N	X	X	487 600	N	X	X	N
325211WYWW	Plastics materials and resins, nsk, for nonadministrative-record establishments	N	X	X	487 600	N	X	X	174 995
325211WYWY	Plastics materials and resins, nsk, for administrative-record establishments	N	X	X	—	N	X	X	—

Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3252111	THERMOPLASTICS RESINS AND PLASTICS MATERIALS		
	United States	36 593 786	27 559 787
	Alabama	574 846	N
	Arkansas	65 219	N
	California	562 343	476 922
	Colorado	10 427	N
	Connecticut	243 502	N
	Delaware	128 967	N
	Florida	340 670	N
	Georgia	517 759	N
	Illinois	1 885 927	1 558 003
	Kentucky	1 263 891	N
	Louisiana	4 550 718	2 924 908
	Massachusetts	387 158	N
	Michigan	581 813	762 443
	Mississippi	632 151	N
	Missouri	45 397	N
	New Jersey	807 209	1 013 400
	North Carolina	465 111	N
	Ohio	1 377 094	1 165 760
	Oregon	28 679	18 554
	Pennsylvania	1 194 991	954 883
	South Carolina	1 345 802	N
	Tennessee	1 206 176	N
	Texas	13 637 911	9 610 747
	Washington	8 947	N
	West Virginia	1 916 565	N
	Wisconsin	56 613	N

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3252114	THERMOSETTING RESINS AND PLASTICS MATERIALS		
	United States	8 588 710	5 564 478
	Alabama	226 275	N
	Arkansas	135 296	70 960
	California	396 235	294 001
	Florida	169 248	112 360
	Georgia	194 720	202 416
	Illinois	669 440	423 296
	Kentucky	712 832	388 257
	Louisiana	163 505	120 594
	Maryland	44 340	N
	Massachusetts	92 838	128 943
	Michigan	750 772	470 942
	Minnesota	114 216	N
	Missouri	42 291	56 554
	New Jersey	109 810	127 191
	New York	278 208	201 986
	North Carolina	483 195	237 687
	Ohio	373 222	233 776
	Oregon	150 831	N
	Pennsylvania	290 052	248 169
	Rhode Island	11 241	N
	South Carolina	97 723	84 530
	Tennessee	97 294	N
	Texas	2 029 066	1 442 019
	Washington	18 970	4 023
	Wisconsin	182 134	114 117

Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325211	PLASTICS MATERIAL & RESIN MFG				
32519207	Styrene (100 percent basis) mil lb..	7 184.5	1 838 302	^P 6 219.8	1 345 598
32519205	Phenol (100 percent basis) mil lb..	1 608.4	543 411	1 350.4	365 690
32519229	Other cyclic crudes and intermediates (including melamine, phthalic anhydride, and benzene)	X	798 689	X	554 269
32519217	Synthetic organic dyes, pigments, lakes, and toners (100 percent basis) mil lb..	^P 9.0	20 165	^q 11.3	22 844
32510043	Acrylates and methacrylates, monomers (100 percent basis) mil lb..	S	1 343 042	1 388.0	774 801
32510037	Alcohols, except ethyl (100 percent basis) mil lb..	1 945.9	407 457	1 032.9	188 328
32510041	Formaldehyde (100 percent HCHO) mil lb..	^P 1 365.9	161 629	2 507.9	115 094
32510055	Rubber processing chemicals (accelerators, antioxidants, blowing agents, inhibitors, peptizers, etc.)	X	158 587	X	194 461
32510047	Vinyl acetate, monomer (100 percent basis) mil lb..	^P 1 066.5	290 928	1 170.5	278 839
32510049	Vinyl chloride, monomer (100 percent basis) mil lb..	6 822.4	1 469 781	7 612.3	1 017 639
325100A3	Other synthetic organic chemicals (includes acrylonitrile and cellulose acetate)	X	1 462 352	X	1 871 204
32411031	Ethane used as a raw material or feedstock mil lb..	^q 4 926.3	539 850	N	N
32411033	Ethylene used as a raw material or feedstock mil lb..	^q 20 076.7	4 519 540	16 426.7	2 899 102
32411035	Propane used as a raw material or feedstock mil lb..	^P 4 162.5	516 133	N	N
32411037	Propylene used as a raw material or feedstock mil lb..	9 792.6	1 875 646	^P 5 263.9	746 126
32411043	Butadiene used as a raw material or feedstock mil lb..	^q 595.8	126 792	1 406.8	235 646
32411045	Other refined petroleum products used as a raw material or feedstock (butane, isobutane, butylene, isobutylene, etc.) mil lb..	2 057.6	435 440	N	N
00190002	Other hydrocarbons used as raw materials or feedstocks (including crude oil, natural gas and still gas)	X	870 548	X	239 477
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. mil lb..	S	1 665 089	1 213.0	650 592
325000B7	Inorganic chemicals	X	660 285	X	412 619
32518200	Carbon black mil lb..	^P 30.9	21 804	^P 31.1	14 451
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	130 313	X	167 366
00970099	All other materials and components, parts, containers, and supplies	X	3 219 394	X	3 291 549
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	2 331 730	X	793 335

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325211 PLASTICS MATERIAL AND RESIN
MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in (1) manufacturing resins, plastics materials, and nonvulcanizable thermoplastic elastomers and mixing and blending resins on a custom basis and/or (2) manufacturing noncustomized synthetic resins.

The data published with NAICS code 325211 include the following SIC industry:

2821 Plastics materials and resins

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
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3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
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325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
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3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
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			325199E	28698 pt	28698 pt	325222D	28248	28248
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3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
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			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
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3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
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3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
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3253140121	2875011	2875011				3255204631	2891433	2891433
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3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
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3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
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			325412L000	2834700	2834700	3255207	28916	28916
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3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412YVWV	2835200	2835200	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt						
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3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
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			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841143 pt
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3256124111	2842334	2842332 pt	325620DYVW	2844600	2844600	3259923106 pt	3861747	3861747
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3256124221	2842342	2842344	325620G	28447	28447	3259923YVW	3861700	3861700
3256124231	2842343	2842397 pt	325620G111	2844711	2844711			
3256124241 pt	2842347 pt	2842346	325620G121	2844715	2844715	3259925	38618	38618
3256124241 pt	2842347 pt	2842397 pt	325620G131	2844721	2844721	3259925101	3861812	3861812
3256124251 pt	2842350 pt	2842348	325620G211	2844725	2844725	3259925206	3861814	3861814
3256124251 pt	2842350 pt	2842397 pt	325620G221	2844731	2844731	3259925316	3861815	3861815
3256124261 pt	2842352 pt	2842349	325620G231	2844735	2844735	3259925321	3861819	3861819
			325620G311	2844741	2844741	3259925YVW	3861800	3861800
			325620G321	2844745	2844745			
3256124261 pt	2842352 pt	2842397 pt	325620G331	2844751	2844751	325992W	38610 pt	38610 pt
3256124311	2842382	2842381 pt	325620G341	2844755	2844755	325992WYVW	3861000 pt	3861000 pt
3256124321	2842383	2842381 pt				325992WYVY	3861002 pt	3861002 pt
3256124331	2842386	2842385 pt						
3256124341	2842387	2842385 pt	325620G351	2844761	2844761			
3256124411	2842312	2842311 pt	325620G361	2844765	2844765	3259981	28991 pt	28991 pt
3256124421	2842313	2842311 pt	325620G371	2844771	2844771	3259981100	2899111	2899100 pt
3256124431	2842315	2842315	325620G381	2844775	2844775			
3256124441	2842321	2842321	325620G391	2844781	2844781	3259984	39993	39993
3256124451	2842324	2842326 pt	325620G3A1	2844785	2844785	3259984100	3999300	3999300
			325620G3B1	2844795	2844795			
			325620GYVW	2844700	2844700			
3256124461	2842325	2842326 pt				325998		

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

Synthetic Rubber Manufacturing

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1997 Economic Census

Manufacturing

Industry Series



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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325212	Synthetic rubber mfg	121	143	12 009	621 298	7 667	16 382	359 809	2 727 905	3 340 483	6 059 699	390 992
282200	Synthetic rubber	N	143	12 009	621 298	7 667	16 382	359 809	2 727 905	3 340 483	6 059 699	390 992

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325212, SYNTHETIC RUBBER MFG												
United States	—	143	57	12 009	621 298	7 667	16 382	359 809	2 727 905	3 340 483	6 059 699	390 992
Florida	1	7	4	164	6 658	108	195	3 873	18 044	78 055	95 650	3 305
Indiana	—	7	3	263	8 232	178	372	5 864	28 454	72 060	100 251	3 446
Kentucky	—	3	3	952	49 532	713	1 470	35 673	210 828	205 823	432 367	12 009
Louisiana	—	7	5	1 511	85 305	1 062	2 297	54 546	410 881	583 941	1 007 705	37 040
New Jersey	1	5	3	264	13 441	137	322	6 009	104 023	124 459	230 353	4 631
Ohio	—	10	4	1 035	54 042	594	1 325	30 075	462 533	291 492	757 199	58 850
Texas	—	16	11	3 644	191 251	2 424	5 178	113 947	847 004	1 132 977	1 942 293	135 905

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325212, SYNTHETIC RUBBER MFG		325212, SYNTHETIC RUBBER MFG—Con.	
Companies ¹	121	Value added	\$1,000 .. 2 727 905
All establishments	143	Total inventories, beginning of year	\$1,000 .. 833 306
Establishments with 1 to 19 employees	86	Finished goods inventories, beginning of year	\$1,000 .. 536 268
Establishments with 20 to 99 employees	27	Work-in-process inventories, beginning of year	\$1,000 .. 83 671
Establishments with 100 employees or more	30	Materials and supplies inventories, beginning of year	\$1,000 .. 213 367
All employees	12 009	Total inventories, end of year	\$1,000 .. 841 061
Total compensation ²	825 758	Finished goods inventories, end of year	\$1,000 .. 554 244
Annual payroll	621 298	Work-in-process inventories, end of year	\$1,000 .. 74 384
Total fringe benefits	204 460	Materials and supplies inventories, end of year	\$1,000 .. 212 433
Production workers, average for year	7 667	Gross book value of total assets at beginning of year	\$1,000 .. 3 817 580
Production workers on March 15	7 692	Total capital expenditures (new and used)	\$1,000 .. 390 992
Production workers on May 15	7 731	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 28 060
Production workers on August 15	7 637	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 362 932
Production workers on November 15	7 608	Total retirements ²	\$1,000 .. 97 937
Production-worker hours	16 382	Gross book value of total assets at end of year	\$1,000 .. 4 110 635
Production-worker wages	359 809	Total depreciation during year ²	\$1,000 .. 245 086
Total cost of materials	3 340 483	Total rental payments ²	\$1,000 .. 35 213
Cost of materials, parts, containers, etc., consumed	2 929 030	Buildings and other structures rental payments ²	\$1,000 .. 7 176
Cost of resales	122 457	Machinery and equipment rental payments ²	\$1,000 .. 28 037
Cost of fuels	135 233	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 16 475
Cost of purchased electricity	84 102	Response coverage ratio ⁴	percent .. 78
Cost of contract work	69 661	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 63 193
Quantity of electricity purchased for heat and power	1 897 850	Response coverage ratio ⁴	percent .. 78
Quantity of electricity generated less sold for heat and power	160 516	Cost of purchased communications services ³	\$1,000 .. 3 549
Total value of shipments	6 059 699	Response coverage ratio ⁴	percent .. 78
Primary products value of shipments	5 069 158	Cost of purchased legal services ³	\$1,000 .. 1 915
Secondary products value of shipments	832 219	Response coverage ratio ⁴	percent .. 78
Total miscellaneous receipts	158 322	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 347
Value of resales	148 884	Response coverage ratio ⁴	percent .. 78
Contract receipts	D	Cost of purchased advertising services ³	\$1,000 .. 939
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent .. 78
Primary products specialization ratio	85	Cost of purchased software and other data processing services ³	\$1,000 .. 4 923
Value of primary products shipments made in all industries	6 159 754	Response coverage ratio ⁴	percent .. 78
Value of primary products shipments made in this industry	5 069 158	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 8 463
Value of primary products shipments made in other industries	1 090 596	Response coverage ratio ⁴	percent .. 78
Coverage ratio	82		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325212, SYNTHETIC RUBBER MFG												
All establishments	—	143	57	12 009	621 298	7 667	16 382	359 809	2 727 905	3 340 483	6 059 699	390 992
Establishments with 1 to 4 employees	9	56	—	96	3 636	72	118	2 271	13 642	22 188	35 779	1 878
Establishments with 5 to 9 employees	9	11	—	72	2 860	46	88	1 808	9 741	16 171	25 867	1 375
Establishments with 10 to 19 employees	6	19	—	242	8 816	152	270	5 341	35 214	53 921	88 826	3 643
Establishments with 20 to 49 employees	1	13	13	428	19 469	282	533	9 676	72 197	91 203	162 827	11 678
Establishments with 50 to 99 employees	—	14	14	1 018	44 945	648	1 466	26 770	173 401	374 402	543 484	16 193
Establishments with 100 to 249 employees	—	14	14	2 214	104 254	1 368	2 935	61 419	546 614	609 030	1 157 360	67 001
Establishments with 250 to 499 employees	—	11	11	3 829	211 427	2 548	5 482	128 253	1 181 102	1 157 646	2 366 025	117 817
Establishments with 500 to 999 employees	—	4	4	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	68	—	336	12 335	230	383	7 897	45 000	77 302	122 125	6 714

¹Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325212	Synthetic rubber mfg	143	12 009	621 298	7 667	16 382	359 809	2 727 905	3 340 483	6 059 699	390 992

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325212	Synthetic rubber (vulcanizable elastomers)	N	X	X	6 159 754	N	X	X	4 318 104
3252120	Synthetic rubber	N	X	X	6 159 754	N	X	X	4 318 104
32521201	Styrene-butadiene rubber (SBR), except latex	N	X	X	1 090 752	N	X	X	N
3252120111	Styrene-butadiene rubber (SBR), except latex mil lb..	7	X	2 546.0	1 090 752	9	X	2 011.0	725 462
32521202	Styrene-butadiene rubber (SBR), latex	N	X	X	477 767	N	X	X	N
3252120211	Styrene-butadiene rubber (SBR), latex mil lb..	8	X	¶1 267.2	477 767	8	X	764.7	374 494
32521203	Butyl, polychloroprene, and stereo polyisoprene elastomers, and nitrile rubber, including latex	N	X	X	1 116 279	N	X	X	N
3252120311	Nitrile rubber, including latex mil lb..	10	X	¶320.3	322 523	8	X	241.9	181 102
3252120321	Butyl, polychloroprene, and stereo polyisoprene elastomers, including latex mil lb..	8	X	805.9	793 756	7	X	663.8	635 850
32521204	Stereo polybutadiene elastomers, including latex	N	X	X	469 844	N	X	X	N
3252120411	Stereo polybutadiene elastomers, including latex mil lb..	4	X	1 045.0	469 844	7	X	1 112.1	392 916
32521205	Ethylene-propylene elastomers, including latex	N	X	X	671 176	N	X	X	N
3252120511	Ethylene-propylene elastomers, including latex mil lb..	12	X	843.3	671 176	13	X	¶701.1	606 036
32521206	Silicone elastomers	N	X	X	700 350	N	X	X	N
3252120611	Silicone elastomers mil lb..	16	X	S	700 350	13	X	104.6	448 164
32521207	Other synthetic rubber (vulcanizable elastomers), except thermoplastics elastomers, including latex	N	X	X	465 112	N	X	X	N
3252120711	Other synthetic rubber (vulcanizable elastomers), except thermoplastics elastomers, including latex mil lb..	12	X	¶199.8	465 112	12	X	¶147.9	303 496
32521208	Thermoplastics elastomers	N	X	X	962 329	N	X	X	N
3252120811	Thermoplastics elastomers mil lb..	12	X	¶732.9	962 329	10	X	397.1	576 928
3252120Y	Synthetic rubber (vulcanizable elastomers), nsk	N	X	X	206 145	N	X	X	N
3252120YWW	Synthetic rubber (vulcanizable elastomers), nsk, for nonadministrative-record establishments	N	X	X	92 767	N	X	X	58 471
3252120YWY	Synthetic rubber (vulcanizable elastomers), nsk, for administrative-record establishments	N	X	X	113 378	N	X	X	15 185

Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ¶ 10 to 19 percent estimated; ¶ 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325212	SYNTHETIC RUBBER MFG				
32519207	Styrene (100 percent basis) mil lb..	788.3	209 507	700.8	174 738
32519205	Phenol (100 percent basis) mil lb..	D	D	D	D
32519229	Other cyclic crudes and intermediates (including melamine, phthalic anhydride, and benzene)	X	D	X	D
32519217	Synthetic organic dyes, pigments, lakes, and toners (100 percent basis) mil lb..	D	D	D	D
32510043	Acrylates and methacrylates, monomers (100 percent basis) mil lb..	115.9	57 029	22.5	13 745
32510037	Alcohols, except ethyl (100 percent basis) mil lb..	98.4	1 979	S	555
32510041	Formaldehyde (100 percent HCHO) mil lb..	D	D	D	D
32510055	Rubber processing chemicals (accelerators, antioxidants, blowing agents, inhibitors, peptizers, etc.)	X	121 091	X	82 379
32510047	Vinyl acetate, monomer (100 percent basis) mil lb..	D	D	D	D
32510049	Vinyl chloride, monomer (100 percent basis) mil lb..	D	D	N	N
325100A3	Other synthetic organic chemicals (includes acrylonitrile and cellulose acetate)	X	198 035	X	134 410
32411031	Ethane used as a raw material or feedstock mil lb..	D	D	N	N
32411033	Ethylene used as a raw material or feedstock mil lb..	P364.0	83 427	321.3	58 769
32411035	Propane used as a raw material or feedstock mil lb..	D	D	N	N
32411037	Propylene used as a raw material or feedstock mil lb..	S	51 878	640.2	93 291
32411043	Butadiene used as a raw material or feedstock mil lb..	P3 128.4	643 084	2 690.0	446 558
32411045	Other refined petroleum products used as a raw material or feedstock (butane, isobutane, butylene, isobutylene, etc.)	670.6	237 056	311.7	65 218
00190002	Other hydrocarbons used as raw materials or feedstocks (including crude oil, natural gas and still gas)	X	D	X	D
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. mil lb..	228.0	124 349	62.2	26 639
325000B7	Inorganic chemicals	X	71 255	X	89 072
32518200	Carbon black mil lb..	S	48 868	179.2	29 386
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	41 577	X	57 957
00970099	All other materials and components, parts, containers, and supplies	X	676 737	X	524 382
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	164 439	X	21 204

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325212 SYNTHETIC RUBBER MANUFACTURING

This U.S. industry consists of establishments primarily engaged in manufacturing synthetic rubber.

The data published with NAICS code 325212 include the following SIC industry:

2822 Synthetic rubber

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
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3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
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3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
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325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
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3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
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325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
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3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
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325312WYVY	2874002	2874002	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
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3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
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3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
			325412G000	2834600	2834600	3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt						
			325412L	28347	28347	3255207	28916	28916
3253201 pt	2879A pt	28797 pt	325412L000	2834700	2834700	3255207111	2891610	2891610
						3255207121	2891625	2891625
3253201 pt	2879A pt	28798 pt	325412P	28348	28348	3255207131	2891650	2891650
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3253201413	2879A13	2879541 pt						
3253201725	2879A25	2879665 pt	325412T	28349	28349	325520A	28917	28917
3253201A15	2879A15	2879561 pt	325412T000	2834900	2834900	325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt				325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200			
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3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
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3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841178 pt
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			3254130461	2835135	2835135			
3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
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3253204 pt	2879C pt	28798 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
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3253204113	2879C13	2879541 pt	3254130YVW pt	2835002 pt	2835002 pt	3256111211 pt	2841129 pt	2841141 pt
3253204115	2879C15	2879561 pt	3254130YVY			3256111211 pt	2841129 pt	2841143 pt
3253204117	2879C17	2879581 pt				3256111221 pt	2841130 pt	2841145 pt
3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841146 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841149 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841131 pt	2841123
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100	3256111311 pt	2841131 pt	2841141 pt
3253204129	2879C29	2879685 pt						
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3253204133	2879C33	2879751 pt				3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147YVW	2836300	2836300	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt				3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841141 pt
			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841143 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400			
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841145 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841146 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841149 pt
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	3256111511 pt	28	

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998WYWWW pt...	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2899002 pt	2899002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	3952002 pt	3952002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3999002 pt	3999002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595			
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325221	Cellulosic organic fiber mfg ...	4	6	4 802	174 879	3 750	7 875	120 838	603 753	500 989	1 096 983	46 741
282300	Cellulosic manmade fibers	N	6	4 802	174 879	3 750	7 875	120 838	603 753	500 989	1 096 983	46 741

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325221, CELLULOSIC ORGANIC FIBER MFG												
United States	-	6	6	4 802	174 879	3 750	7 875	120 838	603 753	500 989	1 096 983	46 741

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325221, CELLULOSIC ORGANIC FIBER MFG		325221, CELLULOSIC ORGANIC FIBER MFG—Con.	
Companies ¹	number..	4 Value added	\$1,000..
All establishments	number..	6 Total inventories, beginning of year	\$1,000..
Establishments with 1 to 19 employees	number..	— Finished goods inventories, beginning of year	\$1,000..
Establishments with 20 to 99 employees	number..	— Work-in-process inventories, beginning of year	\$1,000..
Establishments with 100 employees or more	number..	6 Materials and supplies inventories, beginning of year	\$1,000..
All employees	number..	4 802 Total inventories, end of year	\$1,000..
Total compensation ²	\$1,000..	236 905 Finished goods inventories, end of year	\$1,000..
Annual payroll	\$1,000..	174 879 Work-in-process inventories, end of year	\$1,000..
Total fringe benefits	\$1,000..	62 026 Materials and supplies inventories, end of year	\$1,000..
Production workers, average for year	number..	3 750 Gross book value of total assets at beginning of year	\$1,000..
Production workers on March 15	number..	3 919 Total capital expenditures (new and used)	\$1,000..
Production workers on May 15	number..	3 843 Capital expenditures for buildings and other structures	
Production workers on August 15	number..	3 784 (new and used)	\$1,000..
Production workers on November 15	number..	3 454 Capital expenditures for machinery and equipment (new	
Production-worker hours	1,000..	7 875 and used)	\$1,000..
Production-worker wages	\$1,000..	120 838 Total retirements ²	\$1,000..
Total cost of materials	\$1,000..	500 989 Gross book value of total assets at end of year	\$1,000..
Cost of materials, parts, containers, etc., consumed	\$1,000..	436 437 Total depreciation during year ²	\$1,000..
Cost of resales	\$1,000..	D Total rental payments ²	\$1,000..
Cost of fuels	\$1,000..	D Buildings and other structures rental payments ²	\$1,000..
Cost of purchased electricity	\$1,000..	D Machinery and equipment rental payments ²	\$1,000..
Cost of contract work	\$1,000..	13 713 Cost of purchased services for the repair of buildings and other	
Quantity of electricity purchased for heat and power	1,000 kWh..	411 544 structures ³	\$1,000..
Quantity of electricity generated less sold for heat and power	1,000 kWh..	D Response coverage ratio ⁴	percent..
Total value of shipments	\$1,000..	D Cost of purchased services for the repair of machinery and	
Primary products value of shipments	\$1,000..	1 096 983 equipment ³	\$1,000..
Secondary products value of shipments	\$1,000..	D Response coverage ratio ⁴	percent..
Total miscellaneous receipts	\$1,000..	D Cost of purchased communications services ³	\$1,000..
Value of resales	\$1,000..	D Response coverage ratio ⁴	percent..
Contract receipts	\$1,000..	D Cost of purchased legal services ³	\$1,000..
Other miscellaneous receipts	\$1,000..	D Response coverage ratio ⁴	percent..
Primary products specialization ratio	percent..	— Cost of purchased accounting and bookkeeping services ³	\$1,000..
Value of primary products shipments made in all industries	\$1,000..	D Response coverage ratio ⁴	percent..
Value of primary products shipments made in this industry	\$1,000..	D Cost of purchased advertising services ³	\$1,000..
Value of primary products shipments made in other		D Response coverage ratio ⁴	percent..
industries	\$1,000..	D Cost of purchased software and other data processing	
Coverage ratio	percent..	D services ³	\$1,000..
		D Response coverage ratio ⁴	percent..
		D Cost of purchased refuse removal (including hazardous waste)	
		D services ³	\$1,000..
		D Response coverage ratio ⁴	percent..

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325221, CELLULOSIC ORGANIC FIBER MFG												
All establishments	-	6	6	4 802	174 879	3 750	7 875	120 838	603 753	500 989	1 096 983	46 741
Establishments with 1 to 4 employees	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 20 to 49 employees	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 50 to 99 employees	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 100 to 249 employees	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 250 to 499 employees	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	-	2	2	D	D	D	D	D	D	D	D	D
Administrative records ²	-	-	-	-	-	-	-	-	-	-	-	-

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325221	Cellulosic organic fiber mfg	6	4 802	174 879	3 750	7 875	120 838	603 753	500 989	1 096 983	46 741

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325221	Manufactured cellulosic fibers	N	X	X	1 728 274	N	X	X	1 692 408
3252210	Rayon, acetate, and lyocell manufactured fibers	N	X	X	1 728 274	N	X	X	1 692 408
32522101	Rayon and acetate manufactured fibers	N	X	X	1 728 274	N	X	X	N
3252210111	Rayon, acetate, and lyocell monofilament yarn, including strip	1	X	D	D	2	X	N	N
3252210121	Rayon, acetate, and lyocell group (multi) filament yarn, including strip	2	X	D	D	3	X	N	N
3252210131	Producer textured rayon, acetate, and lyocell yarn, including strip \$	—	X	—	—	N	X	N	N
3252210141	Rayon, acetate, and lyocell staple, tow, and salable waste	4	X	D	D	5	X	N	N
3252210Y	Manufactured cellulosic fibers, nsk	N	X	X	—	N	X	X	N
3252210YWW	Manufactured cellulosic fibers, nsk, for nonadministrative-record establishments	N	X	X	—	N	X	X	—
3252210YWY	Manufactured cellulosic fibers, nsk, for administrative-record establishments	N	X	X	—	N	X	X	—

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325221	CELLULOSIC ORGANIC FIBER MFG				
32510039	Acrylonitrile (100 percent basis)	—	—	N	N
32510069	Caprolactam (100 percent basis)	—	—	N	N
32510071	Glycols (ethylene, propylene, etc.) (100 percent basis)	—	—	D	D
32519209	Dimethyl terephthalate (DMT) (100 percent basis)	—	—	D	D
32519211	Terephthalic acid (TPA) (100 percent basis)	—	—	D	D
32510087	All other synthetic organic chemicals	X	—	X	D
32521145	Polypropylene resins (dry basis)	—	—	D	D
32521137	Nylon resins (dry basis)	—	—	D	D
32521107	All other plastics resins (dry basis)	—	—	D	D
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	D	X	D
00970099	All other materials and components, parts, containers, and supplies	X	D	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	—	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325221 CELLULOSIC ORGANIC FIBER MANUFACTURING

This U.S. industry comprises establishments primarily engaged in (1) manufacturing cellulosic (i.e., rayon and acetate) fibers and filaments in the form of monofilament, filament yarn, staple, or tow or (2) manufacturing and texturizing cellulosic fibers and filaments.

The data published with NAICS code 325221 include the following SIC industry:

2823 Cellulosic manmade fibers

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3252210131	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
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						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
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325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
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325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997

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1997 Economic Census

Manufacturing

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Manufacturing

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U.S. Department of Commerce

William M. Daley,

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Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
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Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325222	Noncellulosic organic fiber mfg	67	100	37 085	1 434 162	29 212	64 325	1 002 031	6 275 573	5 699 749	11 912 262	594 502
282400	Organic fibers, noncellulosic ...	N	100	37 085	1 434 162	29 212	64 325	1 002 031	6 275 573	5 699 749	11 912 262	594 502

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325222, NONCELLULOSIC ORGANIC FIBER MFG												
United States	—	100	71	37 085	1 434 162	29 212	64 325	1 002 031	6 275 573	5 699 749	11 912 262	594 502
Georgia	2	15	11	3 069	90 115	2 531	5 617	68 300	241 979	337 695	578 539	24 579
North Carolina	—	14	13	6 514	222 041	5 316	11 007	162 044	940 871	832 271	1 782 297	49 018

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325222, NONCELLULOSIC ORGANIC FIBER MFG		325222, NONCELLULOSIC ORGANIC FIBER MFG—	
Companies ¹	67	Con.	
All establishments	100	Value added	\$1,000.. 6 275 573
Establishments with 1 to 19 employees	29	Total inventories, beginning of year	\$1,000.. 1 274 378
Establishments with 20 to 99 employees	16	Finished goods inventories, beginning of year	\$1,000.. 677 044
Establishments with 100 employees or more	55	Work-in-process inventories, beginning of year	\$1,000.. 209 937
All employees	37 085	Materials and supplies inventories, beginning of year	\$1,000.. 387 397
Total compensation ²	1 889 154	Total inventories, end of year	\$1,000.. 1 343 815
Annual payroll	1 434 162	Finished goods inventories, end of year	\$1,000.. 713 879
Total fringe benefits	454 992	Work-in-process inventories, end of year	\$1,000.. 236 162
Production workers, average for year	29 212	Materials and supplies inventories, end of year	\$1,000.. 393 774
Production workers on March 12	29 199	Gross book value of total assets at beginning of year	\$1,000.. 9 377 177
Production workers on May 12	29 097	Total capital expenditures (new and used)	\$1,000.. 594 502
Production workers on August 12	29 253	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 43 026
Production workers on November 12	29 299	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 551 476
Production-worker hours	64 325	Total retirements ²	\$1,000.. 230 524
Production-worker wages	1 002 031	Gross book value of total assets at end of year	\$1,000.. 9 741 155
Total cost of materials	5 699 749	Total depreciation during year ²	\$1,000.. 571 235
Cost of materials, parts, containers, etc., consumed	5 055 440	Total rental payments ²	\$1,000.. 40 354
Cost of resales	D	Buildings and other structures rental payments ²	\$1,000.. 8 286
Cost of fuels	D	Machinery and equipment rental payments ²	\$1,000.. 32 068
Cost of purchased electricity	257 149	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 39 778
Cost of contract work	D	Response coverage ratio ⁴	percent.. 91
Quantity of electricity purchased for heat and power	6 789 807	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 186 466
Quantity of electricity generated less sold for heat and power	1 116 233	Response coverage ratio ⁴	percent.. 91
Total value of shipments	11 912 262	Cost of purchased communications services ³	\$1,000.. 7 474
Primary products value of shipments	9 906 780	Response coverage ratio ⁴	percent.. 91
Secondary products value of shipments	1 945 855	Cost of purchased legal services ³	\$1,000.. 1 495
Total miscellaneous receipts	59 627	Response coverage ratio ⁴	percent.. 91
Value of resales	D	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 1 208
Contract receipts	D	Response coverage ratio ⁴	percent.. 91
Other miscellaneous receipts	8 311	Cost of purchased advertising services ³	\$1,000.. 2 888
Primary products specialization ratio	83	Response coverage ratio ⁴	percent.. 91
Value of primary products shipments made in all industries	10 361 077	Cost of purchased software and other data processing services ³	\$1,000.. 8 339
Value of primary products shipments made in this industry	9 906 780	Response coverage ratio ⁴	percent.. 91
Value of primary products shipments made in other industries	454 297	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 12 537
Coverage ratio	95	Response coverage ratio ⁴	percent.. 91

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325222, NONCELLULOSIC ORGANIC FIBER MFG												
All establishments	—	100	71	37 085	1 434 162	29 212	64 325	1 002 031	6 275 573	5 699 749	11 912 262	594 502
Establishments with 1 to 4 employees	9	17	—	31	964	26	46	683	3 526	3 848	7 381	D
Establishments with 5 to 9 employees	5	3	—	26	560	22	35	452	2 571	3 315	5 845	D
Establishments with 10 to 19 employees	4	9	—	133	5 112	92	152	2 250	7 583	11 315	18 801	19 015
Establishments with 20 to 49 employees	—	6	6	229	6 499	192	383	4 657	17 210	25 147	41 290	1 702
Establishments with 50 to 99 employees	—	10	10	678	20 240	580	1 202	15 451	72 265	87 061	159 621	7 391
Establishments with 100 to 249 employees	3	17	17	2 384	78 881	1 829	3 784	55 788	273 295	299 534	570 457	36 983
Establishments with 250 to 499 employees	—	12	12	4 746	154 304	3 856	7 989	114 817	742 612	590 758	1 297 398	61 675
Establishments with 500 to 999 employees	—	12	12	8 674	317 510	6 910	15 555	221 950	981 609	1 687 063	2 645 199	179 750
Establishments with 1,000 to 2,499 employees	—	14	14	20 184	850 092	15 705	35 179	585 983	4 174 902	2 991 708	7 166 270	287 226
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	7	16	—	69	1 810	56	84	1 305	6 702	7 698	14 411	1 144

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325222	Noncellulosic organic fiber mfg	100	37 085	1 434 162	29 212	64 325	1 002 031	6 275 573	5 699 749	11 912 262	594 502
3252221	Nylon and other polyamide fibers	14	10 340	460 506	7 677	17 223	315 342	1 832 950	1 382 292	3 197 871	168 205
3252224	Polyolefin fibers	11	1 361	38 558	871	1 593	25 499	79 932	114 717	185 000	5 516
3252227	Polyester fibers	25	11 444	409 401	9 094	20 111	285 662	1 808 321	2 125 937	3 923 461	232 286
325222A	Other manufactured noncellulosic fibers (except glass, carbon, and graphite)	12	3 931	178 030	2 968	7 022	109 890	558 618	714 130	1 260 347	45 326
325222D	Producer textured manufactured noncellulosic fibers	12	9 842	342 166	8 471	18 206	263 105	1 983 931	1 347 619	3 318 512	124 973

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325222	Manufactured noncellulosic fibers	N	X	X	10 361 077	N	X	X	9 231 352
3252221	Nylon and other polyamide fibers	N	X	X	2 906 373	N	X	X	2 255 892
32522211	Nylon and other polyamide fibers	N	X	X	2 906 373	N	X	X	N
325222111	Industrial nylon and other polyamide fiber yarns, including strip mil lb..	7	X	363.1	919 895	7	X	N	N
3252221121	Nylon and other polyamide fiber carpet yarns, including strip mil lb..	6	X	385.5	544 983	4	X	N	N
3252221131	Nylon and other polyamide fiber monofilament and fewofilament textile yarns, including strip mil lb..	9	X	211.2	462 483	9	X	N	N
3252221141	Nylon and other polyamide fiber staple mil lb..	4	X	D	D	5	X	D	D
3252221151	Nylon and other polyamide fiber tow and waste mil lb..	2	X	D	D	5	X	D	D
3252221Y	Nylon and other polyamide fibers, nsk	N	X	X	—	N	X	X	N
3252221YVV	Nylon and other polyamide fibers, nsk	N	X	X	—	N	X	X	—
3252224	Polyolefin fibers	N	X	X	185 982	N	X	X	226 600
32522241	Polyolefin fibers	N	X	X	185 982	N	X	X	N
3252224111	Polyolefin monofilament yarn, including strip mil lb..	8	X	52.6	67 000	6	X	S	35 133
3252224121	Polyolefin group (multi) filament yarn, including strip mil lb..	4	X	D	D	4	X	40.5	48 284
3252224131	Polyolefin film yarn, including strip mil lb..	1	X	D	D	1	X	D	D
3252224141	Polyolefin staple mil lb..	2	X	D	D	2	X	D	D
3252224151	Polyolefin tow and waste mil lb..	—	X	D	D	1	X	D	D
3252224Y	Polyolefin, nsk	N	X	X	—	N	X	X	N
3252224YVV	Polyolefin, nsk	N	X	X	—	N	X	X	—
3252227	Polyester fibers	N	X	X	3 343 156	N	X	X	3 298 850
32522271	Industrial polyester yarn, including strip	N	X	X	766 315	N	X	X	N
3252227111	Industrial polyester yarn, including strip mil lb..	7	X	637.5	766 315	9	X	456.5	678 015
32522272	Polyester textile yarn, including strip	N	X	X	1 515 102	N	X	X	N
3252227211	Polyester textile yarn, including strip mil lb..	11	X	1 540.7	1 515 102	7	X	1 040.9	1 001 546
32522273	Polyester fiberfill staple and tow	N	X	X	473 043	N	X	X	N
3252227311	Polyester fiberfill staple and tow mil lb..	7	X	831.6	473 043	6	X	1 241.5	897 685
32522274	Other polyester staple and tow and polyester fiber salable waste	N	X	X	588 696	N	X	X	N
3252227411	Other polyester staple and tow mil lb..	6	X	891.6	578 556	9	X	884.4	698 229
3252227421	Polyester fiber salable waste mil lb..	4	X	91.3	10 140	11	X	89.9	23 375
3252227Y	Polyester, nsk	N	X	X	—	N	X	X	N
3252227YVV	Polyester, nsk	N	X	X	—	N	X	X	—
325222A	Other manufactured noncellulosic fibers (except glass, carbon, and graphite)	N	X	X	1 029 313	N	X	X	942 975
325222A1	Other manufactured noncellulosic fibers (except glass, carbon, and graphite)	N	X	X	1 023 143	N	X	X	N
325222A111	Other manufactured noncellulosic fibers monofilament yarn, including strip (except glass, carbon, and graphite) mil lb..	9	X	D	D	9	X	D	D
325222A121	Other manufactured noncellulosic fibers group (multi) filament yarn, including strip (except glass, carbon, and graphite) mil lb..	2	X	D	D	4	X	D	D
325222A131	Other manufactured noncellulosic fibers staple, tow, and salable waste (except glass, carbon, and graphite) mil lb..	8	X	S	464 291	5	X	462.7	412 704
325222AY	Other manufactured noncellulosic fibers (except glass, carbon, and graphite), nsk	N	X	X	6 170	N	X	X	N
325222AYVV	Other manufactured noncellulosic fibers (except glass, carbon, and graphite), nsk	N	X	X	6 170	N	X	X	—
325222D	Producer textured manufactured noncellulosic fibers	N	X	X	2 867 506	N	X	X	2 503 645
325222D1	Nylon and other polyamide producer textured fibers	N	X	X	2 072 373	N	X	X	N
325222D111	Nylon and other polyamide producer textured fibers \$ mil lb..	5	X	1 181.5	2 072 373	6	X	1 210.5	1 955 180
325222D2	Polyester, polyolefin, and other manufactured noncellulosic producer textured fibers	N	X	X	795 133	N	X	X	N
325222D211	Polyester producer textured fibers \$ mil lb..	4	X	D	D	2	X	D	D
325222D221	Polyolefin producer textured fibers \$ mil lb..	4	X	610.4	666 784	5	X	375.7	454 324
325222D231	Other manufactured noncellulosic producer textured fibers \$ mil lb..	2	X	D	D	4	X	D	D
325222DY	Producer textured manufactured noncellulosic fibers, nsk	N	X	X	—	N	X	X	N
325222DYVV	Producer textured manufactured noncellulosic fibers, nsk	N	X	X	—	N	X	X	—

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325222	Manufactured noncellulosic fibers—Con.								
325222W	Manufactured noncellulosic organic fibers, nsk, total	N	X	X	28 747	N	X	X	3 390
325222WY	Manufactured noncellulosic organic fibers, nsk, total	N	X	X	28 747	N	X	X	N
325222WYWW	Manufactured noncellulosic organic fibers, nsk, for nonadministrative-record establishments	N	X	X	14 563	N	X	X	3 390
325222WYWY	Manufactured noncellulosic organic fibers, nsk, for administrative-record establishments	N	X	X	14 184	N	X	X	—

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3252221	NYLON AND OTHER POLYAMIDE FIBERS		
	United States	2 906 373	2 255 892
	Georgia	16 644	N
	North Carolina	60 228	N
	South Carolina	1 170 139	643 246
3252224	POLYOLEFIN FIBERS		
	United States	185 982	226 600
	Tennessee	33 094	N
3252227	POLYESTER FIBERS		
	United States	3 343 156	3 298 850
	North Carolina	1 739 093	1 788 043
	South Carolina	1 386 012	1 167 213
325222A	OTHER MANUFACTURED NONCELLULOSIC FIBERS (EXCEPT GLASS, CARBON, AND GRAPHITE)		
	United States	1 029 313	942 975
	South Carolina	140 488	N
325222D	PRODUCER TEXTURED MANUFACTURED NONCELLULOSIC FIBERS		
	United States	2 867 506	2 503 645
	Alabama	372 751	N
	Georgia	419 444	N
	South Carolina	940 663	875 938

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325222	NONCELLULOSIC ORGANIC FIBER MFG				
32510039	Acrylonitrile (100 percent basis).....mil lb..	D	D	D	D
32510069	Caprolactam (100 percent basis).....mil lb..	D	D	D	D
32510071	Glycols (ethylene, propylene, etc.) (100 percent basis).....mil lb..	1 244.6	396 836	1 845.5	413 439
32519209	Dimethyl terephthalate (DMT) (100 percent basis).....mil lb..	742.6	215 335	1 148.9	273 005
32519211	Terephthalic acid (TPA) (100 percent basis).....mil lb..	2 760.0	731 624	1 901.9	478 245
32510087	All other synthetic organic chemicals	X	954 882	X	1 300 459
32521145	Polypropylene resins (dry basis)	786.5	367 879	^q 804.9	278 557
32521137	Nylon resins (dry basis)	443.1	322 729	322.9	166 881
32521107	All other plastics resins (dry basis)	928.4	330 843	S	141 174
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies.....	X	97 521	X	91 968
00970099	All other materials and components, parts, containers, and supplies	X	824 542	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	302 120	X	D

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325222 NONCELLULOSIC ORGANIC FIBER
MANUFACTURING**

This U.S. industry consists of establishments primarily engaged in (1) manufacturing noncellulosic (i.e., nylon, polyolefin, and polyester) fibers and filaments in the form of monofilament, filament yarn, staple, or tow or (2) manufacturing and texturizing noncellulosic fibers and filaments.

The data published with NAICS code 325222 include the following SIC industry:

2824 Organic fibers, noncellulosic

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nisk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 325222D111	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 325222D211	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 325222D221	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 325222D231	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
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			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
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3253207123	2879E23	2879917	325414WYVY	2836002	283			

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

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U.S. Department of Commerce

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Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



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Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325311 287300	Nitrogenous fertilizer mfg Nitrogenous fertilizers.....	116 N	143 143	5 483 5 483	269 414 269 414	3 490 3 490	7 686 7 686	160 188 160 188	1 736 557 1 736 557	2 050 825 2 050 825	3 764 089 3 764 089	574 493 574 493

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325311, NITROGENOUS FERTILIZER MFG												
United States	1	143	55	5 483	269 414	3 490	7 686	160 188	1 736 557	2 050 825	3 764 089	574 493
Arkansas.....	—	5	3	287	13 393	181	453	8 532	88 505	88 281	178 090	8 165
California	4	18	4	147	4 677	107	170	3 111	32 182	23 777	56 331	3 019
Florida.....	—	7	2	133	5 216	74	133	2 031	20 581	67 530	89 611	2 963
Iowa.....	—	5	4	337	14 687	225	531	9 339	105 445	104 113	210 496	71 580
Missouri	—	6	3	201	7 014	100	209	4 081	14 352	72 476	86 235	4 874

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325311, NITROGENOUS FERTILIZER MFG		325311, NITROGENOUS FERTILIZER MFG—Con.	
Companies ¹	number.. 116	Value added	\$1,000.. 1 736 557
All establishments	number.. 143	Total inventories, beginning of year	\$1,000.. 337 986
Establishments with 1 to 19 employees	number.. 88	Finished goods inventories, beginning of year	\$1,000.. 160 697
Establishments with 20 to 99 employees	number.. 34	Work-in-process inventories, beginning of year	\$1,000.. 5 858
Establishments with 100 employees or more	number.. 21	Materials and supplies inventories, beginning of year	\$1,000.. 171 431
All employees	number.. 5 483	Total inventories, end of year	\$1,000.. 371 783
Total compensation ²	\$1,000.. 324 290	Finished goods inventories, end of year	\$1,000.. 183 205
Annual payroll	\$1,000.. 269 414	Work-in-process inventories, end of year	\$1,000.. 6 643
Total fringe benefits	\$1,000.. 54 876	Materials and supplies inventories, end of year	\$1,000.. 181 935
Production workers, average for year	number.. 3 490	Gross book value of total assets at beginning of year	\$1,000.. 3 415 364
Production workers on March 12	number.. 3 455	Total capital expenditures (new and used)	\$1,000.. 574 493
Production workers on May 12	number.. 3 504	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 10 868
Production workers on August 12	number.. 3 503	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 563 625
Production workers on November 12	number.. 3 498	Total retirements ²	\$1,000.. 46 708
Production-worker hours	1,000.. 7 686	Gross book value of total assets at end of year	\$1,000.. 3 943 149
Production-worker wages	\$1,000.. 160 188	Total depreciation during year ²	\$1,000.. 134 058
Total cost of materials	\$1,000.. 2 050 825	Total rental payments ²	\$1,000.. 38 081
Cost of materials, parts, containers, etc., consumed	\$1,000.. 1 506 030	Buildings and other structures rental payments ²	\$1,000.. 6 415
Cost of resales	\$1,000.. 10 898	Machinery and equipment rental payments ²	\$1,000.. 31 666
Cost of fuels	\$1,000.. 362 539	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 5 588
Cost of purchased electricity	\$1,000.. 117 185	Response coverage ratio ⁴	percent.. 95
Cost of contract work	\$1,000.. 54 173	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 68 763
Quantity of electricity purchased for heat and power	1,000 kWh.. 2 865 622	Response coverage ratio ⁴	percent.. 95
Quantity of electricity generated less sold for heat and power	1,000 kWh.. 442 677	Cost of purchased communications services ³	\$1,000.. 2 195
Total value of shipments	\$1,000.. 3 764 089	Response coverage ratio ⁴	percent.. 95
Primary products value of shipments	\$1,000.. 3 501 267	Cost of purchased legal services ³	\$1,000.. 1 215
Secondary products value of shipments	\$1,000.. 171 234	Response coverage ratio ⁴	percent.. 95
Total miscellaneous receipts	\$1,000.. 91 588	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 2 319
Value of resales	\$1,000.. 11 347	Response coverage ratio ⁴	percent.. 95
Contract receipts	\$1,000.. D	Cost of purchased advertising services ³	\$1,000.. 1 785
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 95
Primary products specialization ratio	percent.. 95	Cost of purchased software and other data processing services ³	\$1,000.. 1 669
Value of primary products shipments made in all industries	\$1,000.. 4 405 119	Response coverage ratio ⁴	percent.. 95
Value of primary products shipments made in this industry	\$1,000.. 3 501 267	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 1 464
Value of primary products shipments made in other industries	\$1,000.. 903 852	Response coverage ratio ⁴	percent.. 95
Coverage ratio	percent.. 79		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325311, NITROGENOUS FERTILIZER MFG												
All establishments	1	143	55	5 483	269 414	3 490	7 686	160 188	1 736 557	2 050 825	3 764 089	574 493
Establishments with 1 to 4 employees	7	50	—	98	3 250	74	100	2 076	24 593	16 696	41 558	2 205
Establishments with 5 to 9 employees	6	21	—	144	3 880	105	151	2 553	22 867	26 542	49 643	2 739
Establishments with 10 to 19 employees	7	17	—	222	6 600	161	270	4 021	31 840	15 417	47 277	2 536
Establishments with 20 to 49 employees	—	24	24	746	27 544	513	1 108	18 148	258 205	239 970	494 619	59 517
Establishments with 50 to 99 employees	—	10	10	713	33 465	461	987	21 081	210 310	298 590	490 680	27 557
Establishments with 100 to 249 employees	1	19	19	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	64	—	316	7 424	229	262	4 901	51 080	43 305	95 178	5 877

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325311	Nitrogenous fertilizer mfg .	143	5 483	269 414	3 490	7 686	160 188	1 736 557	2 050 825	3 764 089	574 493
3253111	Synthetic ammonia, nitric acid, and ammonium compounds	44	4 031	202 049	2 450	5 677	116 329	1 370 847	1 717 660	3 059 537	442 983
3253114	Urea	5	644	41 528	422	966	25 201	181 671	243 724	425 315	118 834
3253117	Nitrogenous fertilizer materials of organic origin, including activated sewage sludge, processed tankage, etc.	17	361	12 495	282	542	9 381	87 714	39 406	132 325	4 061

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325311	Nitrogenous fertilizers	N	X	X	4 405 119	N	X	X	3 589 014
3253111	Synthetic ammonia, nitric acid, and ammonium compounds @	N	X	X	3 414 110	N	X	X	2 691 397
32531110	Synthetic ammonia, nitric acid, and ammonium compounds	N	X	X	3 414 110	N	X	X	N
3253111000	Synthetic ammonia, nitric acid, and ammonium compounds	64	X	X	3 414 110	72	X	X	2 691 397
3253114	Urea @	N	X	X	785 090	N	X	X	708 809
32531140	Urea	N	X	X	785 090	N	X	X	N
3253114000	Urea	21	X	X	785 090	23	X	X	708 809
3253117	Nitrogenous fertilizer materials of organic origin, including activated sewage sludge, processed tankage, etc.	N	X	X	70 394	N	X	X	155 477
32531171	Nitrogenous fertilizer materials of organic origin, including activated sewage sludge, processed tankage, etc.	N	X	X	70 394	N	X	X	N
3253117100	Nitrogenous fertilizer materials of organic origin, including activated sewage sludge, processed tankage, etc. 1,000 s tons ..	25	X	S	70 394	31	X	S	155 477
325311W	Nitrogenous fertilizers, nsk, total	N	X	X	135 525	N	X	X	33 331
325311WY	Nitrogenous fertilizers, nsk, total	N	X	X	135 525	N	X	X	N
325311WYWW	Nitrogenous fertilizers, nsk, for nonadministrative-record establishments	N	X	X	45 735	N	X	X	16 838
325311WYWY	Nitrogenous fertilizers, nsk, for administrative-record establishments	N	X	X	89 790	N	X	X	16 493

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3253111	SYNTHETIC AMMONIA, NITRIC ACID, AND AMMONIUM COMPOUNDS @		
	United States	3 414 110	2 691 397
	California	16 390	58 410
	Florida	106 908	136 382
	Iowa	212 162	97 411
	Louisiana	820 672	543 263
	Oklahoma	603 689	316 447
	Texas	163 622	150 622
3253114	UREA @		
	United States	785 090	708 809
	Louisiana	330 387	233 570
3253117	NITROGENOUS FERTILIZER MATERIALS OF ORGANIC ORIGIN, INCLUDING ACTIVATED SEWAGE SLUDGE, PROCESSED TANKAGE, ETC.		
	United States	70 394	155 477

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325311	NITROGENOUS FERTILIZER MFG				
32531103	Ammonia, synthetic anhydrous (100 percent NH ₃)	S	263 865	2 162.7	248 082
32531113	Ammoniating or nitrogen solutions, including ammonium nitrate solutions, and mixtures containing urea (100 percent N)	644.7	77 741	S	12 163
32531111	Ammonium nitrate (solid only) (100 percent NH ₄ NO ₃)	D	D	D	D
32531107	Ammonium sulfate (100 percent (NH ₄) ₂ SO ₄)	—	—	D	D
32531115	Urea (solid only) (100 percent CO(NH ₂) ₂)	96.7	18 114	171.4	24 038
32531109	Other nitrogenous materials including calcium cyanamide and limestone mixtures	D	D	P30.5	2 656
32531203	Superphosphate - total used in mixed goods (100 percent P ₂ O ₅)	D	D	D	D
32531201	Phosphoric acid, except spent (100 percent P ₂ O ₅)	D	D	1.9	425
32531205	Other phosphatic materials, including diammonium phosphate and monoammonium phosphate (100 percent P ₂ O ₅)	—	—	D	D
21239101	Muriate of potash (all grades) (60-62 percent K ₂ O)	S	149	D	D
21239103	Other potassic materials, including potassium nitrate and sulfate	P1.0	299	2.4	704
00190029	Inert fillers, secondary plant food, soil conditioners, sand, limestone, peat, nut hulls, etc.	S	2 426	S	6 519
32518803	Sulfuric acid (new and spent) (100 percent H ₂ SO ₄)	P88.2	2 815	Q40.6	1 831
21239200	Phosphate rock	D	D	D	D
21239303	Sulfur	D	D	D	D
21111013	Natural gas used as a raw material	Q393.2	955 807	Q342.7	625 486
32220009	Bags, except textile, including shipping sacks, multiwall bags, and polyethylene liners	X	2 818	X	2 875
00970099	All other materials and components, parts, containers, and supplies	X	116 757	X	197 657
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	42 206	X	104 948

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325311 NITROGENOUS FERTILIZER MANUFACTURING

This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing nitrogenous fertilizer materials and mixing ingredients into fertilizers; (2) manufacturing fertilizers from sewage

or animal waste; and (3) manufacturing nitrogenous materials and mixing them into fertilizers.

The data published with NAICS code 325311 include the following SIC industry:

2873 Nitrogenous fertilizers

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3253111	For additional detail, see Current Industrial Report MA325B, Fertilizer Materials.
@3253114	For additional detail, see Current Industrial Report MA325B, Fertilizer Materials.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930			
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A pt	28995 pt	28995 pt
			3253207YVW	2879E00	2879900	325510A000 pt	2851500	2851500
3253114	28732	28732				325510A000 pt	2899586	2899586
3253114000	2873200	2873200	325320W	28790	28790			
			325320WYWW	2879000	2879000	325510W pt	28510	28510
3253117	28733	28733	325320WYVY	2879002	2879002			
3253117100	2873300	2873300				325510W pt	28990 pt	28990 pt
			3254111	28331	28331	325510WYWW pt	2851000	2851000
325311W	28730	28730	3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311WYWW	2873000	2873000	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYVY	2873002	2873002	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
3253121	28741	28741	3254114	28333	28333	3255201	28913	28913
3253121000	2874100	2874100	3254114111	2833315	2833315	3255201111	2891311	2891311
			3254114121	2833318	2833318	3255201121	2891326	2891326
3253124	28742	28742	3254114131	2833323	2833323	3255201131	2891350	2891350
3253124000	2874200	2874200	3254114141	2833324	2833324	3255201141	2891351	2891351
			3254114151	2833326	2833326	3255201151	2891355	2891355
3253127	28744	28744	3254114161	2833344	2833344	3255201161	2891380	2891380
3253127111	2874410	2874410	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127121	2874411	2874411	3254114291	2833399	2833399			
3253127131	2874421	2874421	3254114YVW	2833300	2833300			
3253127141	2874431	2874431				3255204	28914	28914
3253127YVW	2874400	2874400	325411W	28330	28330	3255204111	2891411	2891411
			325411WYVW	2833000	2833000	3255204271	2891448	2891448
325312W	28740	28740	325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312WYWW	2874000	2874000				32552044E1	2891471	2891471
325312WYVY	2874002	2874002	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
			3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
3253140	28750	28750				3255204551	2891445	2891445
3253140111	2875010	2875010	3254124	28342	28342	3255204561	2891447	2891447
3253140121	2875011	2875011	3254124000	2834200	2834200	3255204621	2891424	2891424
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325312 287400	Phosphatic fertilizer mfg Phosphatic fertilizers	44 N	61 61	8 878 8 878	377 317 377 317	6 188 6 188	14 644 14 644	253 523 253 523	2 151 175 2 151 175	3 639 319 3 639 319	5 749 255 5 749 255	248 002 248 002

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325312, PHOSPHATIC FERTILIZER MFG												
United States	—	61	38	8 878	377 317	6 188	14 644	253 523	2 151 175	3 639 319	5 749 255	248 002
Florida	—	14	14	4 241	185 415	3 201	7 508	128 165	1 227 784	1 936 021	3 154 387	128 684
Louisiana	—	5	4	858	48 121	599	1 303	33 713	281 778	648 404	925 081	25 347

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325312, PHOSPHATIC FERTILIZER MFG		325312, PHOSPHATIC FERTILIZER MFG—Con.	
Companies ¹	44	Value added	\$1,000 .. 2 151 175
All establishments	61	Total inventories, beginning of year	\$1,000 .. 485 553
Establishments with 1 to 19 employees	23	Finished goods inventories, beginning of year	\$1,000 .. 182 108
Establishments with 20 to 99 employees	15	Work-in-process inventories, beginning of year	\$1,000 .. 68 062
Establishments with 100 employees or more	23	Materials and supplies inventories, beginning of year	\$1,000 .. 235 383
All employees	8 878	Total inventories, end of year	\$1,000 .. 539 262
Total compensation ²	481 441	Finished goods inventories, end of year	\$1,000 .. 215 076
Annual payroll	377 317	Work-in-process inventories, end of year	\$1,000 .. 76 333
Total fringe benefits	104 124	Materials and supplies inventories, end of year	\$1,000 .. 247 853
Production workers, average for year	6 188	Gross book value of total assets at beginning of year	\$1,000 .. 4 151 164
Production workers on March 12	6 164	Total capital expenditures (new and used)	\$1,000 .. 248 002
Production workers on May 12	6 181	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 43 654
Production workers on August 12	6 167	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 204 348
Production workers on November 12	6 240	Total retirements ²	\$1,000 .. 48 745
Production-worker hours	14 644	Gross book value of total assets at end of year	\$1,000 .. 4 350 421
Production-worker wages	253 523	Total depreciation during year ²	\$1,000 .. 188 596
Total cost of materials	3 639 319	Total rental payments ²	\$1,000 .. 21 848
Cost of materials, parts, containers, etc., consumed	3 304 148	Buildings and other structures rental payments ²	\$1,000 .. 1 788
Cost of resales	64 355	Machinery and equipment rental payments ²	\$1,000 .. 20 060
Cost of fuels	42 968	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 20 218
Cost of purchased electricity	115 546	Response coverage ratio ⁴	percent .. 88
Cost of contract work	112 302	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 175 717
Quantity of electricity purchased for heat and power	2 806 930	Response coverage ratio ⁴	percent .. 88
Quantity of electricity generated less sold for heat and power	1 721 941	Cost of purchased communications services ³	\$1,000 .. 2 012
Total value of shipments	5 749 255	Response coverage ratio ⁴	percent .. 88
Primary products value of shipments	5 298 893	Cost of purchased legal services ³	\$1,000 .. 1 405
Secondary products value of shipments	345 525	Response coverage ratio ⁴	percent .. 88
Total miscellaneous receipts	104 837	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 413
Value of resales	68 479	Response coverage ratio ⁴	percent .. 88
Contract receipts	D	Cost of purchased advertising services ³	\$1,000 .. 679
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent .. 88
Primary products specialization ratio	93	Cost of purchased software and other data processing services ³	\$1,000 .. 949
Value of primary products shipments made in all industries	5 535 440	Response coverage ratio ⁴	percent .. 88
Value of primary products shipments made in this industry	5 298 893	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 1 993
Value of primary products shipments made in other industries	236 547	Response coverage ratio ⁴	percent .. 88
Coverage ratio	95		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325312, PHOSPHATIC FERTILIZER MFG												
All establishments	—	61	38	8 878	377 317	6 188	14 644	253 523	2 151 175	3 639 319	5 749 255	248 002
Establishments with 1 to 4 employees	9	14	—	29	996	22	44	662	5 778	9 185	14 957	463
Establishments with 5 to 9 employees	3	8	—	58	1 895	44	83	1 374	8 543	39 559	48 504	1 045
Establishments with 10 to 19 employees	9	1	—	D	D	D	D	D	D	D	D	D
Establishments with 20 to 49 employees	—	9	9	299	10 068	200	392	6 331	88 702	82 890	170 048	4 936
Establishments with 50 to 99 employees	—	6	6	453	14 224	327	653	9 565	68 001	152 069	218 557	26 461
Establishments with 100 to 249 employees	—	12	12	2 200	96 810	1 433	3 351	59 735	510 604	736 088	1 223 838	68 089
Establishments with 250 to 499 employees	—	7	7	2 555	126 625	1 860	4 410	87 655	794 758	1 430 142	2 215 519	93 250
Establishments with 500 to 999 employees	—	3	3	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	18	—	65	2 152	51	86	1 461	10 692	21 911	32 606	1 063

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325312	Phosphatic fertilizer mfg . .	61	8 878	377 317	6 188	14 644	253 523	2 151 175	3 639 319	5 749 255	248 002
3253121	Phosphoric acid	5	2 181	89 596	1 560	4 039	61 253	481 718	845 841	1 331 820	64 550
3253124	Superphosphate and other phosphatic fertilizer materials	19	5 089	224 215	3 673	8 569	155 776	1 361 173	2 345 961	3 679 396	153 126
3253127	Mixed fertilizers, made by plants which manufacture fertilizer materials	16	1 383	54 443	797	1 721	30 647	268 833	396 815	647 754	25 863

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325312	Phosphatic fertilizers	N	X	X	5 535 440	N	X	X	3 928 621
3253121	Phosphoric acid @	N	X	X	1 415 789	N	X	X	1 143 955
32531210	Phosphoric acid	N	X	X	1 415 789	N	X	X	N
3253121000	Phosphoric acid	16	X	X	1 415 789	21	X	X	1 143 955
3253124	Superphosphate and other phosphatic fertilizer materials @	N	X	X	3 534 836	N	X	X	2 534 061
32531240	Superphosphate and other phosphatic fertilizer materials	N	X	X	3 534 836	N	X	X	N
3253124000	Superphosphate and other phosphatic fertilizer materials	19	X	X	3 534 836	28	X	X	2 534 061
3253127	Mixed fertilizers, made by plants which manufacture fertilizer materials	N	X	X	496 971	N	X	X	232 413
32531271	Mixed fertilizers, made by plants which manufacture fertilizer materials	N	X	X	489 037	N	X	X	N
3253127111	Mixed fertilizers, in packages, tablets, and similar forms of a gross weight not exceeding 10 kg (22 lb), made by plants which manufacture fertilizer materials \$	5	X	D	D	3	X	D	D
3253127121	Mixed fertilizers, dry, shipped in bulk, made by plants which manufacture fertilizer materials \$	10	X	D	D	8	X	D	D
3253127131	Mixed fertilizers, dry, shipped in bags of a gross weight of 10 kg (22 lb) or more, made by plants which manufacture fertilizer materials \$	9	X	P254.4	74 974	10	X	444.3	88 303
3253127141	Mixed fertilizers, liquid, shipped in bulk or in packages of a gross weight of 10 kg (22 lb) or more, made by plants which manufacture fertilizer materials \$	11	X	1 478.5	217 461	10	X	S	42 727
3253127Y	Mixed fertilizers, nsk	N	X	X	7 934	N	X	X	N
3253127YVW	Mixed fertilizers, nsk	N	X	X	7 934	N	X	X	3 849
325312W	Phosphatic fertilizers, nsk, total	N	X	X	87 844	N	X	X	18 192
325312WY	Phosphatic fertilizers, nsk, total	N	X	X	87 844	N	X	X	N
325312WYWW	Phosphatic fertilizers, nsk, for nonadministrative-record establishments	N	X	X	56 706	N	X	X	13 417
325312WYWY	Phosphatic fertilizers, nsk, for administrative-record establishments	N	X	X	31 138	N	X	X	4 775

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3253121	PHOSPHORIC ACID @		
	United States	1 415 789	1 143 955
	Florida	544 593	409 308
	Louisiana	297 362	312 319
3253124	SUPERPHOSPHATE AND OTHER PHOSPHATIC FERTILIZER MATERIALS @		
	United States	3 534 836	2 534 061
	Florida	2 350 860	1 665 368
3253127	MIXED FERTILIZERS, MADE BY PLANTS WHICH MANUFACTURE FERTILIZER MATERIALS		
	United States	496 971	232 413
	California	109 088	N
	Florida	39 513	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325312	PHOSPHATIC FERTILIZER MFG				
32531103	Ammonia, synthetic anhydrous (100 percent NH ₃)	3 307.2	538 253	3 117.2	333 673
32531113	Ammoniating or nitrogen solutions, including ammonium nitrate solutions, and mixtures containing urea (100 percent N)	D	D	^P 38.7	6 072
32531111	Ammonium nitrate (solid only) (100 percent NH ₄ NO ₃)	S	7 192	D	D
32531107	Ammonium sulfate (100 percent (NH ₄) ₂ SO ₄)	S	4 610	^q 51.4	3 853
32531115	Urea (solid only) (100 percent CO(NH ₂) ₂)	D	D	74.5	11 325
32531109	Other nitrogenous materials including calcium cyanamide and limestone mixtures	D	D	D	D
32531203	Superphosphate - total used in mixed goods (100 percent P ₂ O ₅)	D	D	37.7	6 608
32531201	Phosphoric acid, except spent (100 percent P ₂ O ₅)	1 047.7	226 821	1 944.5	423 630
32531205	Other phosphatic materials, including diammonium phosphate and monoammonium phosphate (100 percent P ₂ O ₅)	107.0	19 072	234.5	34 182
21239101	Muriate of potash (all grades) (60-62 percent K ₂ O)	^q 167.2	16 813	142.3	13 982
21239103	Other potassic materials, including potassium nitrate and sulfate	84.7	12 354	48.8	9 984
00190029	Inert fillers, secondary plant food, soil conditioners, sand, limestone, peat, nut hulls, etc.	^P 640.7	28 330	^P 255.4	6 916
32518803	Sulfuric acid (new and spent) (100 percent H ₂ SO ₄)	1 998.1	63 434	3 402.1	115 651
21239200	Phosphate rock	^P 42 389.9	1 095 309	33 960.4	753 698
21239303	Sulfur	^P 10 330.4	626 119	8 473.9	709 607
21111013	Natural gas used as a raw material	S	132 842	D	D
32220009	Bags, except textile, including shipping sacks, multiwall bags, and polyethylene liners	X	4 158	X	4 439
00970099	All other materials and components, parts, containers, and supplies	X	314 828	X	211 604
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	24 414	X	27 321

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325312 PHOSPHATIC FERTILIZER MANUFACTURING

This U.S. industry comprises establishments primarily engaged in (1) manufacturing phosphatic fertilizer materials or (2) manufacturing phosphatic materials and mixing them into fertilizers.

The data published with NAICS code 325312 include the following SIC industry:

2874 Phosphatic fertilizers

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3253121	For additional detail, see Current Industrial Report MA325B, Fertilizer Materials.
@3253124	For additional detail, see Current Industrial Reports MA325B, Fertilizer Materials, and MA325A, Inorganic Chemicals.
\$ 3253127111	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3253127121	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3253127131	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3253127141	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930			
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A pt	28995 pt	28995 pt
			3253207YVW	2879E00	2879900	325510A000 pt	2851500	2851500
3253114	28732	28732				325510A000 pt	2899586	2899586
3253114000	2873200	2873200	325320W	28790	28790			
			325320WYWW	2879000	2879000	325510W pt	28510	28510
3253117	28733	28733	325320WYVY	2879002	2879002			
3253117100	2873300	2873300				325510W pt	28990 pt	28990 pt
			3254111	28331	28331	325510WYWW pt	2851000	2851000
325311W	28730	28730	3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311WYWW	2873000	2873000	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYVY	2873002	2873002	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
3253121	28741	28741	3254114	28333	28333	3255201	28913	28913
3253121000	2874100	2874100	3254114111	2833315	2833315	3255201111	2891311	2891311
			3254114121	2833318	2833318	3255201121	2891326	2891326
3253124	28742	28742	3254114131	2833323	2833323	3255201131	2891350	2891350
3253124000	2874200	2874200	3254114141	2833324	2833324	3255201141	2891351	2891351
			3254114151	2833326	2833326	3255201151	2891355	2891355
3253127	28744	28744	3254114161	2833344	2833344	3255201161	2891380	2891380
3253127111	2874410	2874410	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127121	2874411	2874411	3254114291	2833399	2833399			
3253127131	2874421	2874421	3254114YVW	2833300	2833300			
3253127141	2874431	2874431				3255204	28914	28914
3253127YVW	2874400	2874400	325411W	28330	28330	3255204111	2891411	2891411
			325411WYVW	2833000	2833000	3255204271	2891448	2891448
325312W	28740	28740	325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312WYWW	2874000	2874000				32552044E1	2891471	2891471
325312WYVY	2874002	2874002	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
			3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
3253140	28750	28750				3255204551	2891445	2891445
3253140111	2875010	2875010	3254124	28342	28342	3255204561	2891447	2891447
3253140121	2875011	2875011	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140131	2875021	2875021				3255204631	2891433	2891433
3253140141	2875041	2875000 pt	3254127	28343	28343			
3253140151	2875051	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140161	2875061	2875000 pt	325412A	28344	28344	3255204691	2891454	2891454
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046A1	2891455	2891455
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046B1	2891457	2891457
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046C1	2891461	2891461
						32552046F1	2891481	2891481
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046G1	2891483	2891483
			325412G000	2834600	2834600	32552046H1	2891499	2891499
3253201 pt	2879A pt	28796 pt				3255204YVW	2891400	2891400
			325412L	28347	28347			
3253201 pt	2879A pt	28797 pt	325412L000	2834700	2834700			
						3255207	28916	28916
3253201 pt	2879A pt	28798 pt	325412P	28348	28348	3255207111	2891610	2891610
3253201111	2879A11	2879531 pt	325412P000	2834800	2834800	3255207121	2891625	2891625
3253201413	2879A13	2879541 pt				3255207131	2891650	2891650
3253201725	2879A25	2879665 pt	325412T	28349	28349	3255207YVW	2891600	2891600
3253201A15	2879A15	2879561 pt	325412T000	2834900	2834900			
3253201A17	2879A17	2879581 pt				325520A	28917	28917
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A111	2891711	2891711
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A121	2891721	2891721
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A131	2891731	2891731
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A141	2891746	2891746
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A151	2891771	2891771
						325520AYVW	2891700	2891700
3253201A43	2879A43	2879818 pt	325412W pt	28340	28340			
3253201A45	2879A45	2879822 pt	325412W pt	28350 pt	28350 pt	325520W	28910	28910
3253201A47	2879A47	2879885 pt	325412WYVW pt	2834000	2834000	325520WYVW	2891000	2891000
3253201D33	2879A31	2879721 pt	325412WYVW pt	2835000 pt	2835000 pt	325520WYVY	2891002	2891002
3253201D33	2879A33	2879751 pt	325412WYVY pt	2834002	2834002			
3253201YVW pt	2879A00 pt	2879500 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879600 pt				3256111111 pt	2841120 pt	2841126 pt
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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325314 287500	Fertilizer (mixing only) mfg Fertilizers, mixing only	332 N	445 445	8 712 8 712	234 048 234 048	5 917 5 917	12 374 12 374	133 063 133 063	1 017 732 1 017 732	2 316 149 2 316 149	3 314 008 3 314 008	71 031 71 031

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325314, FERTILIZER (MIXING ONLY) MFG												
United States	1	445	120	8 712	234 048	5 917	12 374	133 063	1 017 732	2 316 149	3 314 008	71 031
Alabama	—	11	5	538	14 195	413	879	9 638	63 342	191 988	255 801	3 879
California	2	29	9	477	14 414	331	657	8 001	45 998	101 696	148 480	4 214
Florida	1	39	16	827	25 762	497	1 063	11 604	132 249	312 964	440 505	5 656
Missouri	1	14	2	165	5 691	101	191	2 428	20 203	48 312	68 833	1 548
New York	3	17	3	186	5 978	137	279	3 667	16 786	34 483	52 810	1 333
Texas	2	38	8	498	12 776	364	782	7 443	47 635	112 864	159 189	2 989
Virginia	—	15	4	506	10 274	375	745	6 735	46 496	125 107	168 918	1 810
Washington	3	13	5	250	6 939	186	441	4 431	28 232	98 807	125 025	2 429
Wisconsin	4	14	4	176	4 433	117	227	2 575	26 103	38 969	65 019	1 088

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325314, FERTILIZER (MIXING ONLY) MFG		325314, FERTILIZER (MIXING ONLY) MFG—Con.	
Companies ¹	332	Value added	\$1,000 ..
All establishments	445	Total inventories, beginning of year	\$1,000 ..
Establishments with 1 to 19 employees	325	Finished goods inventories, beginning of year	\$1,000 ..
Establishments with 20 to 99 employees	113	Work-in-process inventories, beginning of year	\$1,000 ..
Establishments with 100 employees or more	7	Materials and supplies inventories, beginning of year	\$1,000 ..
All employees	8 712	Total inventories, end of year	\$1,000 ..
Total compensation ²	286 047	Finished goods inventories, end of year	\$1,000 ..
Annual payroll	234 048	Work-in-process inventories, end of year	\$1,000 ..
Total fringe benefits	51 999	Materials and supplies inventories, end of year	\$1,000 ..
Production workers, average for year	5 917	Gross book value of total assets at beginning of year	\$1,000 ..
Production workers on March 12	6 181	Total capital expenditures (new and used)	\$1,000 ..
Production workers on May 12	6 180	Capital expenditures for buildings and other structures (new and used)	\$1,000 ..
Production workers on August 12	5 653	Capital expenditures for machinery and equipment (new and used)	\$1,000 ..
Production workers on November 12	5 654	Total retirements ²	\$1,000 ..
Production-worker hours	12 374	Gross book value of total assets at end of year	\$1,000 ..
Production-worker wages	133 063	Total depreciation during year ²	\$1,000 ..
Total cost of materials	2 316 149	Total rental payments ²	\$1,000 ..
Cost of materials, parts, containers, etc., consumed	1 891 345	Buildings and other structures rental payments ²	\$1,000 ..
Cost of resales	343 322	Machinery and equipment rental payments ²	\$1,000 ..
Cost of fuels	13 160	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 ..
Cost of purchased electricity	17 198	Response coverage ratio ⁴	percent ..
Cost of contract work	51 124	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 ..
Quantity of electricity purchased for heat and power	294 890	Response coverage ratio ⁴	percent ..
Quantity of electricity generated less sold for heat and power	—	Cost of purchased communications services ³	\$1,000 ..
Total value of shipments	3 314 008	Response coverage ratio ⁴	percent ..
Primary products value of shipments	2 861 261	Cost of purchased legal services ³	\$1,000 ..
Secondary products value of shipments	42 288	Response coverage ratio ⁴	percent ..
Total miscellaneous receipts	410 459	Cost of purchased accounting and bookkeeping services ³	\$1,000 ..
Value of resales	405 610	Response coverage ratio ⁴	percent ..
Contract receipts	D	Cost of purchased advertising services ³	\$1,000 ..
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent ..
Primary products specialization ratio	98	Cost of purchased software and other data processing services ³	\$1,000 ..
Value of primary products shipments made in all industries	2 913 311	Response coverage ratio ⁴	percent ..
Value of primary products shipments made in this industry	2 861 261	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 ..
Value of primary products shipments made in other industries	52 050	Response coverage ratio ⁴	percent ..
Coverage ratio	98		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325314, FERTILIZER (MIXING ONLY) MFG												
All establishments	1	445	120	8 712	234 048	5 917	12 374	133 063	1 017 732	2 316 149	3 314 008	71 031
Establishments with 1 to 4 employees	6	135	—	306	8 143	237	481	5 457	42 492	122 762	166 171	1 976
Establishments with 5 to 9 employees	5	94	—	628	17 298	450	939	10 257	70 106	216 108	283 705	4 267
Establishments with 10 to 19 employees	3	96	—	1 315	32 910	892	1 764	18 848	112 827	308 025	423 951	9 889
Establishments with 20 to 49 employees	1	87	87	2 745	73 979	1 903	3 813	42 213	401 094	616 485	1 010 849	25 573
Establishments with 50 to 99 employees	—	26	26	1 773	53 821	1 231	2 737	29 386	262 228	443 533	695 380	11 270
Establishments with 100 to 249 employees	—	4	4	495	16 019	372	778	10 431	47 016	220 237	269 323	3 931
Establishments with 250 to 499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	109	—	381	8 561	298	562	5 627	36 594	143 408	178 363	1 842

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325314	Fertilizer (mixing only) mfg	445	8 712	234 048	5 917	12 374	133 063	1 017 732	2 316 149	3 314 008	71 031

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325314	Fertilizers, mixing only	N	X	X	2 913 311	N	X	X	1 903 528
3253140	Mixed fertilizers, made by plants which do not manufacture fertilizer materials	N	X	X	2 913 311	N	X	X	1 903 528
32531401	Fertilizers, mixing only, dry	N	X	X	2 145 571	N	X	X	N
3253140111	Mixed fertilizers, in packages, tablets, and similar forms of a gross weight not exceeding 10 kg (22 lb), made by plants which do not manufacture fertilizer material \$	24	X	P1 455.8	478 726	27	X	D	D
3253140121	Mixed fertilizers, dry, shipped in bulk, made by plants which do not manufacture fertilizer materials \$	68	X	Q2 845.3	632 322	92	X	D	D
3253140131	Mixed fertilizers, dry, shipped in bags of a gross weight of 10 kg (22 lb) or more, made by plants which do not manufacture fertilizer materials \$	59	X	P2 719.6	706 153	87	X	S	553 470
3253140141	Potting soils (mixed with fertilizers and/or other chemicals)	23	X	1 021.2	208 321	N	X	X	N
3253140151	Compost (mixed with chemicals, etc., for decay control)	12	X	842.5	49 881	N	X	X	N
3253140161	Plant foods, mixed	13	X	83.8	70 168	N	X	X	N
32531402	Fertilizers, mixing only, liquid	N	X	X	300 664	N	X	X	N
3253140241	Mixed fertilizers, liquid, shipped in bulk or in packages of a gross weight of 10 kg (22 lb) or more, made by plants which do not manufacture fertilizer materials \$	68	X	P2 773.1	300 664	77	X	P1 916.3	277 891
3253140Y	Fertilizers, mixing only, nsk	N	X	X	467 076	N	X	X	N
3253140YWW	Fertilizers, mixing only, nsk, for nonadministrative-record establishments	N	X	X	327 011	N	X	X	N
3253140YWY	Fertilizers, mixing only, nsk, for administrative-record establishments	N	X	X	140 065	N	X	X	30 773

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325314	FERTILIZER (MIXING ONLY) MFG				
32531103	Ammonia, synthetic anhydrous (100 percent NH3)	P471.5	92 216	343.1	40 139
32531113	Ammoniating or nitrogen solutions, including ammonium nitrate solutions, and mixtures containing urea (100 percent N)	S	92 536	P574.8	61 510
32531111	Ammonium nitrate (solid only) (100 percent NH4NO3)	P228.8	37 732	232.0	29 954
32531107	Ammonium sulfate (100 percent (NH4)2SO4)	Q831.3	78 117	P334.6	30 444
32531115	Urea (solid only) (100 percent CO(NH2)2)	Q779.8	129 318	376.4	60 032
32531109	Other nitrogenous materials including calcium cyanamide and limestone mixtures	P200.8	59 376	96.0	16 789
32531203	Superphosphate - total used in mixed goods (100 percent P2O5)	S	54 758	P171.2	18 886
32531201	Phosphoric acid, except spent (100 percent P2O5)	P655.7	142 400	176.0	50 037
32531205	Other phosphatic materials, including diammonium phosphate and monoammonium phosphate (100 percent P2O5)	S	119 876	P360.9	61 538
21239101	Muriate of potash (all grades) (60-62 percent K2O)	S	81 586	P674.5	73 141
21239103	Other potassic materials, including potassium nitrate and sulfate	Q259.8	46 778	193.8	34 369
00190029	Inert fillers, secondary plant food, soil conditioners, sand, limestone, peat, nut hulls, etc.	S	100 442	S	34 852
32518803	Sulfuric acid (new and spent) (100 percent H2SO4)	Q110.8	13 773	P150.5	5 917
21239200	Phosphate rock	93.5	1 603	D	D
21239303	Sulfur	D	D	D	D

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1997 and 1992—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325314	FERTILIZER (MIXING ONLY) MFG—Con.				
21111013	Natural gas used as a raw material bil cu ft. .	D	D	D	D
32220009	Bags, except textile, including shipping sacks, multiwall bags, and polyethylene liners	X	75 952	X	23 115
00970099	All other materials and components, parts, containers, and supplies	X	396 963	X	302 726
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	355 900	X	255 653

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325314 FERTILIZER (MIXING ONLY) MANUFACTURING

This U.S. industry comprises establishments primarily engaged in mixing ingredients made elsewhere into fertilizers.

The data published with NAICS code 325314 include the following SIC industry:

2875 Fertilizers, mixing only

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3253140111	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3253140121	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3253140131	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3253140241	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
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3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
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3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A151	2891771	2891771
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3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200			
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3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
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3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841149 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841131 pt	2841123
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
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3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111321 pt	2841132 pt	2841149 pt
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			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841143 pt
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3253207123	2879E23	2						

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U.S. Census Bureau, 1997 Economic Census

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
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325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325320	Pesticide & other agricultural chemical mfg	223	260	13 994	635 620	8 110	17 189	324 428	7 677 916	3 860 134	11 420 250	437 269
287900	Agricultural chemicals, n.e.c.	N	260	13 994	635 620	8 110	17 189	324 428	7 677 916	3 860 134	11 420 250	437 269

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325320, PESTICIDE & OTHER AGRICULTURAL CHEMICAL MFG												
United States	—	260	105	13 994	635 620	8 110	17 189	324 428	7 677 916	3 860 134	11 420 250	437 269
Arizona	4	7	3	133	5 042	67	99	1 484	17 127	13 093	30 225	1 043
Arkansas	2	5	4	443	10 759	249	454	5 734	331 644	128 406	459 686	4 775
California	3	32	7	551	19 603	316	618	9 401	89 098	73 423	162 886	6 879
Florida	—	12	4	359	12 569	194	393	7 327	168 930	118 450	290 099	6 185
Georgia	—	16	10	900	35 216	527	999	11 477	270 860	199 138	466 355	17 907
Illinois	1	8	5	292	12 677	203	394	6 682	249 952	193 960	328 194	12 769
Louisiana	—	11	6	1 370	83 198	840	1 970	47 959	1 359 581	577 633	1 923 860	41 761
Michigan	3	8	2	110	4 129	71	109	2 751	15 964	23 549	40 289	799
Missouri	—	17	9	2 345	115 670	983	2 311	40 586	1 646 713	542 525	2 207 752	77 756
North Carolina	—	9	4	277	12 421	163	337	6 189	367 114	227 652	595 008	6 362
Ohio	2	6	3	132	4 586	75	161	2 387	25 315	17 084	42 522	2 905
Pennsylvania	2	7	2	341	13 076	165	327	4 357	28 518	27 738	55 319	2 055
Tennessee	—	7	4	279	8 214	180	313	4 201	18 420	36 464	54 154	938
Texas	—	27	9	2 101	119 936	1 175	2 694	64 610	789 249	553 442	1 349 593	87 021
Virginia	5	4	3	114	3 665	59	118	1 468	20 794	17 744	37 642	765
Wisconsin	—	6	4	342	10 261	183	306	3 492	34 991	27 482	62 622	1 397

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325320, PESTICIDE & OTHER AGRICULTURAL CHEMICAL MFG		325320, PESTICIDE & OTHER AGRICULTURAL CHEMICAL MFG—Con.	
Companies ¹	number.. 223	Value added	\$1,000.. 7 677 916
All establishments	number.. 260	Total inventories, beginning of year	\$1,000.. 1 144 656
Establishments with 1 to 19 employees	number.. 155	Finished goods inventories, beginning of year	\$1,000.. 501 756
Establishments with 20 to 99 employees	number.. 73	Work-in-process inventories, beginning of year	\$1,000.. 208 190
Establishments with 100 employees or more	number.. 32	Materials and supplies inventories, beginning of year	\$1,000.. 434 710
All employees	number.. 13 994	Total inventories, end of year	\$1,000.. 1 308 080
Total compensation ²	\$1,000.. 811 767	Finished goods inventories, end of year	\$1,000.. 558 621
Annual payroll	\$1,000.. 635 620	Work-in-process inventories, end of year	\$1,000.. 269 125
Total fringe benefits	\$1,000.. 176 147	Materials and supplies inventories, end of year	\$1,000.. 480 334
Production workers, average for year	number.. 8 110	Gross book value of total assets at beginning of year	\$1,000.. 4 824 958
Production workers on March 12	number.. 8 335	Total capital expenditures (new and used)	\$1,000.. 437 269
Production workers on May 12	number.. 8 163	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 39 514
Production workers on August 12	number.. 8 000	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 397 755
Production workers on November 12	number.. 7 942	Total retirements ²	\$1,000.. 115 132
Production-worker hours	1,000.. 17 189	Gross book value of total assets at end of year	\$1,000.. 5 147 095
Production-worker wages	\$1,000.. 324 428	Total depreciation during year ²	\$1,000.. 305 135
Total cost of materials	\$1,000.. 3 860 134	Total rental payments ²	\$1,000.. 29 305
Cost of materials, parts, containers, etc., consumed	\$1,000.. 3 479 919	Buildings and other structures rental payments ²	\$1,000.. 9 604
Cost of resales	\$1,000.. 94 153	Machinery and equipment rental payments ²	\$1,000.. 19 701
Cost of fuels	\$1,000.. 66 575	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 39 897
Cost of purchased electricity	\$1,000.. 70 549	Response coverage ratio ⁴	percent.. 77
Cost of contract work	\$1,000.. 148 938	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 50 163
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 561 433	Response coverage ratio ⁴	percent.. 77
Quantity of electricity generated less sold for heat and power	1,000 kWh.. 35 864	Cost of purchased communications services ³	\$1,000.. 4 553
Total value of shipments	\$1,000.. 11 420 250	Response coverage ratio ⁴	percent.. 77
Primary products value of shipments	\$1,000.. 10 209 233	Cost of purchased legal services ³	\$1,000.. 2 994
Secondary products value of shipments	\$1,000.. 781 683	Response coverage ratio ⁴	percent.. 77
Total miscellaneous receipts	\$1,000.. 429 334	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 2 205
Value of resales	\$1,000.. 289 571	Response coverage ratio ⁴	percent.. 77
Contract receipts	\$1,000.. D	Cost of purchased advertising services ³	\$1,000.. 14 818
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 77
Primary products specialization ratio	percent.. 92	Cost of purchased software and other data processing services ³	\$1,000.. 2 142
Value of primary products shipments made in all industries	\$1,000.. 11 080 645	Response coverage ratio ⁴	percent.. 77
Value of primary products shipments made in this industry	\$1,000.. 10 209 233	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 23 620
Value of primary products shipments made in other industries	\$1,000.. 871 412	Response coverage ratio ⁴	percent.. 77
Coverage ratio	percent.. 92		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325320, PESTICIDE & OTHER AGRICULTURAL CHEMICAL MFG												
All establishments	—	260	105	13 994	635 620	8 110	17 189	324 428	7 677 916	3 860 134	11 420 250	437 269
Establishments with 1 to 4 employees	6	85	—	168	5 973	115	197	3 370	47 308	35 790	83 146	4 288
Establishments with 5 to 9 employees	7	26	—	172	5 914	100	163	2 849	30 594	27 761	58 878	2 532
Establishments with 10 to 19 employees	2	44	—	628	20 842	364	699	10 678	140 052	139 860	280 027	7 098
Establishments with 20 to 49 employees	2	43	43	1 395	43 946	816	1 631	20 824	318 515	356 782	686 177	28 305
Establishments with 50 to 99 employees	1	30	30	2 072	74 076	1 314	2 625	36 878	1 084 762	737 633	1 814 047	21 208
Establishments with 100 to 249 employees	1	20	20	2 958	106 541	1 831	3 812	50 237	1 132 266	717 094	1 728 882	75 099
Establishments with 250 to 499 employees	—	6	6	1 947	94 347	974	2 237	42 607	1 743 566	480 556	2 208 631	130 189
Establishments with 500 to 999 employees	—	5	5	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	111	—	544	15 083	309	494	8 176	93 084	75 579	169 471	8 372

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325320	Pesticide & other agricultural chemical mfg	260	13 994	635 620	8 110	17 189	324 428	7 677 916	3 860 134	11 420 250	437 269
3253201	Agricultural and commercial pesticides and chemicals	86	10 278	523 077	5 839	12 750	271 091	6 669 211	3 148 815	9 800 442	389 229
3253204	Lawn and garden pesticides and chemicals	13	615	17 962	403	773	8 850	66 217	146 025	212 940	5 019
3253207	Household and institutional pesticides and chemicals	26	1 610	52 367	1 011	2 020	23 998	677 006	381 455	957 142	24 024

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325320	Pesticides and other agricultural chemicals	N	X	X	11 080 645	N	X	X	8 224 866
3253201	Agricultural and commercial pesticides and chemicals	N	X	X	9 233 007	N	X	X	N
32532011	Agricultural and commercial insecticides, carbamate preparations	N	X	X	436 615	N	X	X	N
3253201111	Agricultural and commercial insecticides, carbamate preparations mil lb..	10	X	135.8	436 615	N	X	N	N
32532014	Agricultural and commercial insecticides, organo-phosphate preparations	N	X	X	235 424	N	X	X	N
3253201413	Agricultural and commercial insecticides, organo-phosphate preparations mil lb..	20	X	69.2	235 424	N	X	N	N
32532017	Agricultural and commercial insecticides, triazine preparations	N	X	X	924 493	N	X	X	N
3253201725	Agricultural and commercial insecticides, triazine preparations mil lb..	7	X	213.2	924 493	N	X	N	N
3253201A	All other agricultural and commercial pesticides and chemicals	N	X	X	6 786 565	N	X	X	N
3253201A15	Agricultural and commercial biological (botanical, bacterial, etc.) preparations mil lb..	10	X	7.4	98 988	N	X	N	N
3253201A17	All other agricultural and commercial insecticides mil lb..	33	X	S	514 507	N	X	N	N
3253201A21	Agricultural and commercial phenoxy compounds preparations mil lb..	13	X	S	482 352	N	X	N	N
3253201A23	Agricultural and commercial urea preparations mil lb..	5	X	15.1	269 210	N	X	N	N
3253201A27	Agricultural and commercial benzoic preparations mil lb..	—	X	—	—	N	X	N	N
3253201A29	All other agricultural and commercial herbicides mil lb..	26	X	S	3 720 347	N	X	N	N
3253201A41	Agricultural and commercial fumigants, soil mil lb..	6	X	113.2	88 206	N	X	N	N
3253201A43	All other agricultural and commercial fumigants, including space, excluding household mil lb..	1	X	D	D	N	X	N	N
3253201A45	Agricultural and commercial defoliants and desiccants mil lb..	3	X	D	D	N	X	N	N
3253201A47	All other pesticides and chemicals, nec, primarily for agricultural and commercial use	30	X	X	1 496 492	N	X	X	N
3253201D	Agricultural and commercial fungicides, inorganic or organic compounds	N	X	X	562 631	N	X	X	N
3253201D31	Agricultural and commercial fungicides, inorganic compounds mil lb..	6	X	43.5	111 003	N	X	N	N
3253201D33	Agricultural and commercial fungicides, organic compounds mil lb..	13	X	734.7	451 628	N	X	N	N
3253201Y	Agricultural and commercial pesticides and chemicals, nsk	N	X	X	287 279	N	X	X	N
3253201YVV	Agricultural and commercial pesticides and chemicals, nsk	N	X	X	287 279	N	X	X	N
3253204	Lawn and garden pesticides and chemicals	N	X	X	344 380	N	X	X	N
32532041	Lawn and garden pesticides and chemicals	N	X	X	271 988	N	X	X	N
3253204111	Lawn and garden carbamate preparations mil lb..	8	X	7.2	16 808	N	X	N	N
3253204113	Lawn and garden organo-phosphate preparations mil lb..	9	X	18.0	34 487	N	X	N	N
3253204115	Lawn and garden biological (botanical, bacterial, etc.) preparations mil lb..	3	X	0.9	1 500	N	X	N	N
3253204117	All other lawn and garden insecticides mil lb..	8	X	7.8	12 821	N	X	N	N
3253204121	Lawn and garden phenoxy compound preparations mil lb..	6	X	27.3	33 485	N	X	N	N
3253204123	Lawn and garden urea preparations mil lb..	1	X	D	D	N	X	N	N
3253204125	Lawn and garden triazine preparations mil lb..	1	X	D	D	N	X	N	N
3253204127	Lawn and garden benzoic preparations mil lb..	—	X	—	—	N	X	N	N
3253204129	All other lawn and garden herbicides mil lb..	8	X	D	D	N	X	N	N
3253204131	Lawn and garden fungicides, inorganic compounds mil lb..	6	X	D	D	N	X	N	N
3253204133	Lawn and garden fungicides, organic compounds mil lb..	7	X	4.6	22 173	N	X	N	N
3253204141	Lawn and garden soil fumigants mil lb..	1	X	D	D	N	X	N	N
3253204143	All other lawn and garden fumigants including space, excluding household mil lb..	—	X	—	—	N	X	N	N
3253204145	Lawn and garden defoliants and desiccants mil lb..	1	X	D	D	N	X	N	N
3253204147	All other lawn and garden pesticides and chemicals, nec mil lb..	9	X	D	D	N	X	N	N
3253204Y	Lawn and garden pesticides and chemicals, nsk	N	X	X	72 392	N	X	X	N
3253204YVV	Lawn and garden pesticides and chemicals, nsk	N	X	X	72 392	N	X	X	N

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325320	Pesticides and other agricultural chemicals—Con.								
3253207	Household and institutional pesticides and chemicals	N	X	X	1 047 065	N	X	X	874 342
32532071	Household and institutional pesticides and chemicals	N	X	X	1 032 305	N	X	X	N
3253207111	Household and institutional pesticides and chemicals, flying insect (excluding fumigants), aerosol	14	X	X	D	15	X	X	84 382
3253207113	Household and institutional pesticides and chemicals, flying insect (excluding fumigants), nonaerosol	4	X	X	23 326	6	X	X	D
3253207121	Household and institutional pesticides and chemicals, crawling insect, aerosol	14	X	X	D	21	X	X	268 765
3253207123	Household and institutional pesticides and chemicals, crawling insect, nonaerosol	17	X	X	234 927	28	X	X	146 709
3253207125	Household and institutional pesticides and chemicals, crawling insect, total release insect foggers	3	X	X	1 590	N	X	X	N
3253207131	Household and institutional pesticides and chemicals, flea and tick insecticides, aerosol	4	X	X	3 427	N	X	X	N
3253207133	Household and institutional pesticides and chemicals, flea and tick insecticides, nonaerosol	8	X	X	D	N	X	X	N
3253207135	Household and institutional pesticides and chemicals, flea and tick insecticides, pet collars	3	X	X	D	N	X	X	N
3253207137	Household and institutional pesticides and chemicals, flea and tick insecticides, all other flea and tick insecticides	9	X	X	36 498	N	X	X	N
3253207141	Household and institutional pesticides and chemicals, personal insect repellents, aerosols	3	X	X	D	N	X	X	N
3253207143	Household and institutional pesticides and chemicals, personal insect repellents, liquids	2	X	X	D	N	X	X	N
3253207145	Household and institutional pesticides and chemicals, all other personal insect repellents	4	X	X	D	N	X	X	N
3253207151	Household and institutional pesticides and chemicals, moth controls	2	X	X	D	N	X	X	N
3253207155	Household and institutional pesticides and chemicals, rodenticides	6	X	X	46 944	12	X	X	50 986
3253207157	Household and institutional pesticides and chemicals, repellents and attractants for birds, insects, fish, and other animals, except for human use	12	X	X	14 041	11	X	X	22 180
3253207159	All other household and institutional pesticides, nec	7	X	X	40 419	N	X	X	N
3253207Y	Household and institutional pesticides and chemicals, nsk	N	X	X	14 760	N	X	X	N
3253207YVV	Household and institutional pesticides and chemicals, nsk	N	X	X	14 760	N	X	X	11 291
325320W	Pesticide and other agricultural chemical manufacturing, nec, nsk, total	N	X	X	456 193	N	X	X	279 245
325320WY	Pesticide and other agricultural chemical manufacturing, nec, nsk, total	N	X	X	456 193	N	X	X	N
325320WYWW	Pesticide and other agricultural chemical manufacturing, nec, nsk, for nonadministrative-record establishments	N	X	X	297 056	N	X	X	259 488
325320WYWY	Pesticide and other agricultural chemical manufacturing, nec, nsk, for administrative-record establishments	N	X	X	159 137	N	X	X	19 757

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3253201	AGRICULTURAL AND COMMERCIAL PESTICIDES AND CHEMICALS		
	United States	9 233 007	N
	Arizona	13 726	N
	Arkansas	484 683	N
	California	192 197	N
	Georgia	355 803	N
	Illinois	225 446	N
	Minnesota	12 804	N
	Missouri	1 793 436	N
	Tennessee	72 672	N
	Texas	946 092	N
	Wisconsin	16 454	N
3253204	LAWN AND GARDEN PESTICIDES AND CHEMICALS		
	United States	344 380	N
	California	11 480	N
3253207	HOUSEHOLD AND INSTITUTIONAL PESTICIDES AND CHEMICALS		
	United States	1 047 065	874 342
	California	6 946	N
	Georgia	47 453	54 778
	Texas	11 767	111 205

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325320	PESTICIDE & OTHER AGRICULTURAL CHEMICAL MFG				
32411007	Petroleum distillates used as solvents	S	59 618	286.1	75 241
32510045	Other synthetic organic chemical solvents	S	122 626	S	77 962
32510061	Synthetic organic pesticides and related synthetic organic agricultural chemical toxicants	^q 286.6	893 683	^P 350.9	758 349
32518845	Inorganic chemical toxicants	S	123 032	479.9	192 492
32561301	Surfactants	X	66 041	X	62 563
32500013	All other organic and inorganic chemicals, n.e.c.	X	1 057 339	X	831 639
32610029	Plastics containers	X	97 174	X	87 637
32221001	Paperboard containers, boxes, and corrugated paperboard	X	59 354	X	72 356
33240000	Metal containers	X	34 939	X	43 775
00970099	All other materials and components, parts, containers, and supplies	X	723 887	X	D
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	242 226	X	D

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325320 PESTICIDE AND OTHER AGRICULTURAL
CHEMICAL MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in the formulation and preparation of agricultural and household pest control chemicals (except fertilizers).

The data published with NAICS code 325320 include the following SIC industry:

2879 Agricultural chemicals, n.e.c.

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.....	28950	28950	325199H	28693 pt	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K.....	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N.....	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.....	28650 pt	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.....	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt....	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt....	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt....	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt....	2869002 pt	2869002 pt	325188A.....	28197	28197	325199U.....	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.....	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.....	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt	28199 pt	28199 pt	325199WYWW pt....	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt	28697 pt	28697 pt	325199WYWW pt....	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt	2819997	2819900 pt	325199WYWW pt....	2899000 pt	2899000 pt
325120A.....	28136	28136	325188G000 pt	2819900 pt	2819900 pt	325199WYWW pt....	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt	2869713	2869700 pt	325199WYWW pt....	2899002 pt	2899002 pt
325120D pt	28137	28137	325188W pt	28190 pt	28190 pt	3252111.....	28213	28213
325120D pt	28697 pt	28697 pt	325188W pt	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt....	2819000 pt	2819000 pt	3252114.....	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt....	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.....	28130	28130	325188WYWW pt....	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.....	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt....	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt....	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120.....	28220	28220
325120WYWW pt....	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt....	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.....	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.....	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210.....	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.....	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.....	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221.....	28241	28241
325131W pt.....	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.....	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt....	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt....	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt....	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt....	2819002 pt	2819002 pt	3251930YWW pt	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.....	28697 pt	28697 pt	3252224.....	28242	28242
3251321100	2865200	2865200	3251991 pt.....	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227.....	28244	28244
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3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
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325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
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			325199E.....	28698 pt	28698 pt	325222D111	2824815	2824815
			325199E111	2869853	2869853	325222D211	2824851	2824851
			325199E121	2869855	2869855	325222D221	2824875	2824875
			325199EYVV	2869800	2869800	325222D231	2824879	2824879
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
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			3253207155	2879E55	2879971	325510A pt	28515	28515
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3253127141	2874431	2874431				3255204	28914	28914
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			3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
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3253140151	2875051	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
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3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A111	2891711	2891711
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A121	2891721	2891721
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3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A141	2891746	2891746
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A151	2891771	2891771
						325520AYVW	2891700	2891700
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3253201A45	2879A45	2879822 pt	325412W pt	28350 pt	28350 pt	325520W	28910	28910
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3253201YVW pt	2879A00 pt	2879500 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
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3253204111	2879C11	2879531 pt	3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
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3253204131	2879C31	2879721 pt				3256111311 pt	2841131 pt	2841141 pt
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3253204133	2879C33	2879751 pt	3254144100	2836200	2836200	3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
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3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841141 pt
			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
3253207	2879E	28799	325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
3253207111	2879E11	2879921	325414A241	2836430	2836430			
3253207113	2879E13	2879924	325414AYVW	2836400	2836400			
3253207121	2879E21	2879912				3256111411 pt	2841133 pt	2841145 pt
3253207123	2879E23	2879917	325414W	28360	28360	3256111411 pt	2841133 pt	2841146 pt
3253207125	2879E25	2879986 pt	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841149 pt
3253207131	2879E31	2879945 pt				3256111511 pt	2841134 pt	2841177

MANUFACTURING—INDUSTRY SERIES

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt	325998H181	2899572	2899572	325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H191	2899581	2899581	325998WYWWW pt...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1B1	2899593	2899593	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1C1	2899595	2899595	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1D1	2899598	2899598	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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Manufacturing

Industry Series



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Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325411 283300	Medicinal & botanical mfg Medicinals & botanicals	312 N	338 338	23 378 23 378	1 117 689 1 117 689	12 865 12 865	27 566 27 566	536 820 536 820	6 555 861 6 555 861	5 387 694 5 387 694	11 920 571 11 920 571	771 048 771 048

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325411, MEDICINAL & BOTANICAL MFG												
United States	1	338	132	23 378	1 117 689	12 865	27 566	536 820	6 555 861	5 387 694	11 920 571	771 048
Alabama	—	4	2	174	5 084	130	193	3 652	15 065	5 868	20 782	1 933
California	2	68	23	2 673	113 267	1 332	2 947	43 512	401 480	333 775	743 905	57 135
Colorado	5	13	6	726	41 904	501	1 037	26 709	121 690	106 278	213 133	47 250
Iowa	6	6	2	251	11 852	159	355	7 095	102 008	75 051	175 195	10 857
Kansas	—	5	2	243	8 857	126	342	4 123	42 323	25 769	70 459	2 940
Massachusetts	6	11	4	311	15 213	110	220	3 467	31 107	28 513	57 773	5 473
Michigan	—	6	3	505	29 965	261	502	13 282	78 784	82 742	157 992	12 852
Minnesota	2	9	3	481	21 989	225	456	5 990	48 810	75 002	124 875	9 514
Missouri	—	8	5	3 060	122 371	1 284	2 810	49 327	517 402	254 636	793 027	56 045
New Jersey	2	28	13	3 297	204 117	1 491	3 585	88 941	799 928	585 697	1 401 392	118 668
North Carolina	—	9	5	1 027	46 054	748	1 564	28 363	217 054	224 607	455 945	17 545
Ohio	1	8	2	174	7 606	82	177	2 923	22 901	15 718	38 857	6 789
Pennsylvania	—	12	7	1 038	58 313	617	1 267	29 524	502 713	236 363	745 778	51 054
Texas	4	13	5	1 417	52 146	1 225	2 657	46 214	178 411	104 521	280 486	11 938
Utah	2	13	9	1 048	32 946	617	1 072	14 141	118 461	100 554	215 818	24 976

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325411, MEDICINAL & BOTANICAL MFG		325411, MEDICINAL & BOTANICAL MFG—Con.	
Companies ¹	number.. 312	Value added	\$1,000.. 6 555 861
All establishments	number.. 338	Total inventories, beginning of year	\$1,000.. 1 591 611
Establishments with 1 to 19 employees	number.. 206	Finished goods inventories, beginning of year	\$1,000.. 629 280
Establishments with 20 to 99 employees	number.. 82	Work-in-process inventories, beginning of year	\$1,000.. 451 455
Establishments with 100 employees or more	number.. 50	Materials and supplies inventories, beginning of year	\$1,000.. 510 876
All employees	number.. 23 378	Total inventories, end of year	\$1,000.. 1 680 261
Total compensation ²	\$1,000.. 1 371 706	Finished goods inventories, end of year	\$1,000.. 635 437
Annual payroll	\$1,000.. 1 117 689	Work-in-process inventories, end of year	\$1,000.. 468 282
Total fringe benefits	\$1,000.. 254 017	Materials and supplies inventories, end of year	\$1,000.. 576 542
Production workers, average for year	number.. 12 865	Gross book value of total assets at beginning of year	\$1,000.. 6 459 395
Production workers on March 12	number.. 12 797	Total capital expenditures (new and used)	\$1,000.. 771 048
Production workers on May 12	number.. 12 901	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 171 072
Production workers on August 12	number.. 12 848	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 599 976
Production workers on November 12	number.. 12 914	Total retirements ²	\$1,000.. 125 530
Production-worker hours	1,000.. 27 566	Gross book value of total assets at end of year	\$1,000.. 7 104 913
Production-worker wages	\$1,000.. 536 820	Total depreciation during year ²	\$1,000.. 387 478
Total cost of materials	\$1,000.. 5 387 694	Total rental payments ²	\$1,000.. 35 405
Cost of materials, parts, containers, etc., consumed	\$1,000.. 4 807 476	Buildings and other structures rental payments ²	\$1,000.. 16 179
Cost of resales	\$1,000.. 312 818	Machinery and equipment rental payments ²	\$1,000.. 19 226
Cost of fuels	\$1,000.. 74 508	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 38 307
Cost of purchased electricity	\$1,000.. 104 904	Response coverage ratio ⁴	percent.. 89
Cost of contract work	\$1,000.. 87 988	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 56 376
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 986 659	Response coverage ratio ⁴	percent.. 89
Quantity of electricity generated less sold for heat and power	1,000 kWh.. D	Cost of purchased communications services ³	\$1,000.. 5 948
Total value of shipments	\$1,000.. 11 920 571	Response coverage ratio ⁴	percent.. 89
Primary products value of shipments	\$1,000.. 10 300 588	Cost of purchased legal services ³	\$1,000.. 8 615
Secondary products value of shipments	\$1,000.. 1 005 590	Response coverage ratio ⁴	percent.. 89
Total miscellaneous receipts	\$1,000.. 614 393	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 2 779
Value of resales	\$1,000.. 575 663	Response coverage ratio ⁴	percent.. 89
Contract receipts	\$1,000.. 36 938	Cost of purchased advertising services ³	\$1,000.. 29 947
Other miscellaneous receipts	\$1,000.. 1 792	Response coverage ratio ⁴	percent.. 89
Primary products specialization ratio	percent.. 91	Cost of purchased software and other data processing services ³	\$1,000.. 2 708
Value of primary products shipments made in all industries	\$1,000.. 11 541 942	Response coverage ratio ⁴	percent.. 89
Value of primary products shipments made in this industry	\$1,000.. 10 300 588	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 34 372
Value of primary products shipments made in other industries	\$1,000.. 1 241 354	Response coverage ratio ⁴	percent.. 89
Coverage ratio	percent.. 89		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325411, MEDICINAL & BOTANICAL MFG												
All establishments	1	338	132	23 378	1 117 689	12 865	27 566	536 820	6 555 861	5 387 694	11 920 571	771 048
Establishments with 1 to 4 employees	9	117	—	238	8 572	154	238	4 156	26 282	27 143	53 451	8 116
Establishments with 5 to 9 employees	8	39	—	261	10 329	153	273	5 229	31 969	33 277	64 543	10 087
Establishments with 10 to 19 employees	8	50	—	694	27 383	400	747	13 557	253 796	154 520	407 986	20 923
Establishments with 20 to 49 employees	2	53	53	1 727	68 155	1 001	1 841	27 306	206 602	285 763	484 287	30 352
Establishments with 50 to 99 employees	3	29	29	2 059	80 604	1 050	2 018	31 373	233 756	268 511	492 066	59 516
Establishments with 100 to 249 employees	3	28	28	4 345	203 459	2 293	4 722	90 624	588 078	741 754	1 321 281	189 864
Establishments with 250 to 499 employees	—	11	11	3 765	154 970	2 149	4 391	78 794	1 144 845	660 489	1 796 109	94 946
Establishments with 500 to 999 employees	—	6	6	3 994	245 539	2 024	5 161	116 277	2 655 575	2 308 435	4 935 193	244 471
Establishments with 1,000 to 2,499 employees	—	5	5	6 295	318 678	3 641	8 175	169 504	1 414 958	907 802	2 365 655	112 773
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	166	—	903	31 742	534	806	15 173	95 301	94 667	190 071	30 730

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325411	Medicinal & botanical mfg	338	23 378	1 117 689	12 865	27 566	536 820	6 555 861	5 387 694	11 920 571	771 048
3254111	Synthetic organic medicinal chemicals, in bulk	158	12 829	673 229	6 513	14 049	310 241	4 773 183	3 894 191	8 663 039	566 010
3254114	Other medicinal chemicals and botanical products, in bulk, nec	77	9 839	414 893	5 947	12 688	213 547	1 714 348	1 418 191	3 111 817	183 592

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325411	Medicinals and botanicals	N	X	X	11 541 942	N	X	X	7 002 054
3254111	Synthetic organic medicinal chemicals, in bulk	N	X	X	9 030 635	N	X	X	5 774 867
32541111	Synthetic organic antibiotics, including all uses (veterinary, food supplements, food preservation, etc.), except preparations	N	X	X	D	N	X	X	N
3254111111	Synthetic organic antibiotics, including all uses (veterinary, food supplements, food preservation, etc.), except preparations	23	X	X	D	23	X	X	3 169 555
32541112	Other synthetic organic medicinal chemicals, except antibiotics	N	X	X	D	N	X	X	N
3254111221	Other synthetic organic medicinal chemicals, except antibiotics	160	X	X	D	54	X	X	2 523 880
3254111Y	Synthetic organic medicinal chemicals, in bulk, nsk	N	X	X	78 708	N	X	X	N
3254111YWV	Synthetic organic medicinal chemicals, in bulk, nsk	N	X	X	78 708	N	X	X	81 432
3254114	Other medicinal chemicals and botanical products, in bulk, nec (including naturally occurring vitamins, hormones, drugs, and artificial mixtures)	N	X	X	2 390 808	N	X	X	1 129 122
32541141	Botanical alkaloid drugs, other botanical drugs, naturally occurring vitamins, drugs of animal origin, and artificial mixtures of two or more medical or botanical substances	N	X	X	1 730 165	N	X	X	N
3254114111	Botanical drugs, alkaloids, including opium and nicotine	6	X	X	72 401	7	X	X	18 833
3254114121	Other botanical drugs, including glycosides and ginseng extract	21	X	X	292 608	10	X	X	81 739
3254114131	Naturally occurring vitamin C	24	X	X	107 787	16	X	X	63 453
3254114141	Naturally occurring vitamin E	24	X	X	370 491	12	X	X	145 575
3254114151	Medicinals and botanicals, other medicinal and botanical products, in bulk, nec, naturally occurring vitamins, other naturally occurring vitamins (from yeast, fish, liver, etc.)	28	X	X	208 919	12	X	X	66 938
3254114161	Medicinals and botanicals, other medicinal and botanical products, in bulk, nec, drugs of animal origin, including hormones, dried glands, organs, and tissues and extractions thereof	11	X	X	116 693	6	X	X	36 465
3254114171	Medicinals and botanicals, other medicinal and botanical products, in bulk, nec, artificial mixtures of two medicinal or botanical substances or more for therapeutic or prophylactic uses	13	X	X	561 266	12	X	X	254 257
32541142	Medicinals and botanicals, other medicinal and botanical products, in bulk, nec, other organic and inorganic medicinal chemicals, except diagnostics	N	X	X	611 489	N	X	X	N
3254114291	Medicinals and botanicals, other medicinal and botanical products, in bulk, nec, other organic and inorganic medicinal chemicals, except diagnostics	38	X	X	611 489	33	X	X	413 630
3254114Y	Medicinals and botanicals, other medicinal chemicals and botanical products, in bulk, nec, nsk	N	X	X	49 154	N	X	X	N
3254114YWV	Medicinals and botanicals, other medicinal chemicals and botanical products, in bulk, nec, nsk	N	X	X	49 154	N	X	X	48 232
325411W	Medicinals and botanicals, nsk, total	N	X	X	120 499	N	X	X	98 065
325411WY	Medicinals and botanicals, nsk, total	N	X	X	120 499	N	X	X	N
325411WYWW	Medicinals and botanicals, nsk, for nonadministrative-record establishments	N	X	X	96 063	N	X	X	62 585
325411WYWY	Medicinals and botanicals, nsk, for administrative-record establishments	N	X	X	24 436	N	X	X	35 480

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3254111	SYNTHETIC ORGANIC MEDICINAL CHEMICALS, IN BULK		
	United States	9 030 635	5 774 867
	California	163 990	75 166
	Colorado	175 311	N
	Connecticut	3 239	N
	Florida	9 057	N
	Kansas	31 750	N
	Maryland	58 092	N
	Massachusetts	26 523	8 923
	Michigan	125 280	310 253
	Minnesota	20 525	N
	Missouri	179 734	109 985
	Nevada	8 502	N
	New Jersey	1 411 872	1 444 634
	New York	151 201	108 725
	North Carolina	274 778	185 939
	Ohio	15 796	N
	Pennsylvania	739 433	N
	Texas	169 742	N
	Utah	60 300	N
	Washington	5 424	N
	Wisconsin	11 179	N
3254114	OTHER MEDICINAL CHEMICALS AND BOTANICAL PRODUCTS, IN BULK, NEC (INCLUDING NATURALLY OCCURRING VITAMINS, HORMONES, DRUGS, AND ARTIFICIAL MIXTURES)		
	United States	2 390 808	1 129 122
	Arizona	19 983	N
	California	382 044	145 568
	Illinois	313 394	N
	Minnesota	52 029	31 281
	Missouri	149 816	N
	New Jersey	89 172	58 755
	New York	97 940	35 101
	Oregon	13 738	N
	Pennsylvania	35 430	N
	Texas	193 947	55 148
	Utah	137 153	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325411	MEDICINAL & BOTANICAL MFG				
32541113	Antibiotics, in bulk, for human and veterinary use	X	D	X	D
32541115	Antibiotics, in bulk, for animal feeds	X	D	X	D
32541101	Vitamins, natural and synthetic, in bulk, for human and veterinary use	X	224 062	X	52 906
32541103	Vitamins, natural and synthetic, in bulk, for animal feeds	X	36 615	X	84 551
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	209 274	X	63 586
31100001	Processed food and kindred products including lactose, meat packing plant products, yeast, etc.	X	12 661	X	7 759
32541000	Blood derivatives and extenders	X	D	X	D
32541107	All other bulk medicinal and botanical uncompounded drugs, except antibiotics and vitamins	X	335 676	X	661 003
32599807	Gelatin (pharmaceutical grade) and gelatin capsules	X	17 440	X	2 430
325000A7	Industrial inorganic chemicals	X	54 825	X	58 244
32519201	Cyclic crudes and intermediates including organic colors	X	4 108	X	39 694
32510031	Other synthetic organic chemicals including halogenated hydrocarbons	X	91 914	X	223 719
32610015	Fabricated plastics products, including plastics closures, film, and packaging items, except containers	X	51 862	X	1 935
33211500	Metal closures and crowns for containers	X	319	X	D
32310003	Labels, coupons, instructions, and other printed material	X	15 098	X	1 213
32610029	Plastics containers	X	18 687	X	5 837
32721301	Glass containers	X	3 965	X	1 861
33240000	Metal containers	X	1 805	X	4 221
32221001	Paperboard containers, boxes, and corrugated paperboard	X	24 841	X	12 408
00970099	All other materials and components, parts, containers, and supplies	X	541 499	X	257 312
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	418 411	X	166 288

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325411 MEDICINAL AND BOTANICAL MANUFACTURING

This U.S. industry comprises establishments primarily engaged in (1) manufacturing uncompounded medicinal chemicals and their derivatives (i.e., generally for use by pharmaceutical preparation manufacturers) and/or (2) grading, grinding, and milling uncompounded botanicals.

The data published with NAICS code 325411 include the following SIC industry:

2833 Medicinals and botanicals

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
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3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
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			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
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						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
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			3253207155	2879E55	2879971	325510A pt	28515	28515
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			325320WYVY	2879002	2879002			
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325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253201A17	2879A17	2879581 pt				325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A131	2891731	2891731
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3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200			
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3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
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3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
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3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
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3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841146 pt
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3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841178 pt
			3254130341	2835125	2835125	3256111131 pt	2841127 pt	2841125 pt
3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841145 pt
			3254130461	2835135	2835135			
3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204 pt	2879C pt	28798 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
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3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841146 pt
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3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841131 pt	2841123
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100	3256111311 pt	2841131 pt	2841141 pt
3253204129	2879C29	2879685 pt						
3253204131	2879C31	2879721 pt	3254144	28362	28362	3256111311 pt	2841131 pt	2841141 pt
			3254144100	2836200	2836200			
3253204133	2879C33	2879751 pt				3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147YVW	2836300	2836300	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt				3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841126 pt
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3253204YVW pt	2879C00 pt	2879800 pt	325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841141 pt
			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841143 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400			
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841145 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841146 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841149 pt
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	3256111511 pt	28	

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325412	Pharmaceutical preparation mfg	710	837	115 781	5 652 679	62 741	126 724	2 201 365	48 323 493	19 798 251	67 520 044	2 493 872
283400	Pharmaceutical preparations ..	N	806	112 643	5 513 169	61 304	123 856	2 148 321	47 442 273	19 452 513	66 289 388	2 466 152
283510	Diagnostic substances (pt)	N	31	3 138	139 510	1 437	2 868	53 044	881 220	345 738	1 230 656	27 720

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325412, PHARMACEUTICAL PREPARATION MFG												
United States	—	837	442	115 781	5 652 679	62 741	126 724	2 201 365	48 323 493	19 798 251	67 520 044	2 493 872
Arizona	—	9	7	1 033	39 467	794	1 540	23 968	246 037	136 537	375 635	11 500
California	—	120	62	11 955	598 279	6 698	13 448	174 059	3 233 222	1 564 965	4 742 382	301 053
Colorado	1	19	5	1 540	59 228	964	1 650	29 673	224 475	172 160	399 787	18 020
Florida	1	39	18	2 441	95 248	1 459	3 035	45 060	406 458	305 324	708 697	27 711
Georgia	—	14	6	585	29 710	336	672	14 587	161 265	60 269	223 377	26 787
Louisiana	2	6	4	660	24 572	346	495	10 319	81 246	91 278	171 923	4 985
Maryland	1	11	4	789	31 829	494	1 421	18 492	113 490	63 461	170 564	5 280
Massachusetts	—	33	16	5 367	318 595	2 596	6 060	138 815	1 012 777	384 559	1 375 834	137 716
Minnesota	—	15	7	640	25 035	291	527	7 681	405 325	90 409	495 788	5 293
Missouri	—	34	18	3 072	120 022	1 653	3 059	54 207	2 073 576	504 093	2 516 545	23 787
New Jersey	—	99	64	18 719	1 063 195	9 066	19 143	306 485	8 078 499	3 292 628	11 357 855	317 668
New York	—	85	51	14 690	594 754	8 345	16 622	276 798	3 840 893	1 327 296	5 148 721	352 479
North Carolina	—	25	18	5 988	243 625	4 089	9 065	140 566	7 041 443	2 454 342	9 393 669	86 204
Ohio	—	20	13	2 660	104 572	1 547	3 055	51 124	850 958	373 295	1 195 495	74 768
Oregon	6	10	4	343	8 885	218	338	4 503	33 840	17 852	51 626	2 328
Pennsylvania	—	34	22	8 567	512 283	5 021	10 468	252 475	6 616 737	3 279 676	9 954 865	478 569
Texas	—	35	13	4 223	222 557	1 896	3 896	52 423	1 034 266	338 735	1 374 284	46 176
Utah	—	12	6	969	24 950	626	1 059	13 439	197 234	113 429	311 138	5 308
Wisconsin	—	11	6	804	42 192	239	455	8 350	194 890	66 616	274 460	8 666

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325412, PHARMACEUTICAL PREPARATION MFG		325412, PHARMACEUTICAL PREPARATION MFG	
Companies ¹	710	— Con.	
All establishments	837	Value added	\$1,000.. 48 323 493
Establishments with 1 to 19 employees	395	Total inventories, beginning of year	\$1,000.. 7 020 735
Establishments with 20 to 99 employees	223	Finished goods inventories, beginning of year	\$1,000.. 2 663 136
Establishments with 100 employees or more	219	Work-in-process inventories, beginning of year	\$1,000.. 1 877 415
All employees	115 781	Materials and supplies inventories, beginning of year	\$1,000.. 2 480 184
Total compensation ²	7 034 154	Total inventories, end of year	\$1,000.. 7 738 278
Annual payroll	5 652 679	Finished goods inventories, end of year	\$1,000.. 2 909 045
Total fringe benefits	1 381 475	Work-in-process inventories, end of year	\$1,000.. 2 233 206
Production workers, average for year	62 741	Materials and supplies inventories, end of year	\$1,000.. 2 596 027
Production workers on March 12	62 619	Gross book value of total assets at beginning of year	\$1,000.. 19 337 641
Production workers on May 12	63 027	Total capital expenditures (new and used)	\$1,000.. 2 493 872
Production workers on August 12	62 676	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 945 352
Production workers on November 12	62 642	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 1 548 520
Production-worker hours	126 724	Total retirements ²	\$1,000.. 576 240
Production-worker wages	2 201 365	Gross book value of total assets at end of year	\$1,000.. 21 255 273
Total cost of materials	19 798 251	Total depreciation during year ²	\$1,000.. 1 289 678
Cost of materials, parts, containers, etc., consumed	15 311 655	Total rental payments ²	\$1,000.. 164 958
Cost of resales	3 486 213	Buildings and other structures rental payments ²	\$1,000.. 73 984
Cost of fuels	144 746	Machinery and equipment rental payments ²	\$1,000.. 90 974
Cost of purchased electricity	262 389	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 79 770
Cost of contract work	593 248	Response coverage ratio ⁴	percent.. 82
Quantity of electricity purchased for heat and power	4 219 373	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 204 871
Quantity of electricity generated less sold for heat and power	426 958	Response coverage ratio ⁴	percent.. 82
Total value of shipments	67 520 044	Cost of purchased communications services ³	\$1,000.. 83 232
Primary products value of shipments	56 891 474	Response coverage ratio ⁴	percent.. 82
Secondary products value of shipments	2 372 668	Cost of purchased legal services ³	\$1,000.. 136 502
Total miscellaneous receipts	8 255 902	Response coverage ratio ⁴	percent.. 82
Value of resales	7 115 595	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 33 825
Contract receipts	347 731	Response coverage ratio ⁴	percent.. 82
Other miscellaneous receipts	792 576	Cost of purchased advertising services ³	\$1,000.. 1 080 028
Primary products specialization ratio	percent.. 95	Response coverage ratio ⁴	percent.. 82
Value of primary products shipments made in all industries	60 251 738	Cost of purchased software and other data processing services ³	\$1,000.. 79 831
Value of primary products shipments made in this industry	56 891 474	Response coverage ratio ⁴	percent.. 82
Value of primary products shipments made in other industries	3 360 264	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 61 561
Coverage ratio	percent.. 94	Response coverage ratio ⁴	percent.. 82

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325412, PHARMACEUTICAL PREPARATION MFG												
All establishments	—	837	442	115 781	5 652 679	62 741	126 724	2 201 365	48 323 493	19 798 251	67 520 044	2 493 872
Establishments with 1 to 4 employees	9	179	—	355	14 406	239	355	7 281	60 478	29 522	89 978	5 479
Establishments with 5 to 9 employees	8	88	—	579	21 376	348	566	9 991	81 765	50 486	137 484	8 462
Establishments with 10 to 19 employees	5	128	—	1 680	59 411	1 014	1 662	28 073	309 862	141 063	451 611	17 081
Establishments with 20 to 49 employees	4	138	138	4 449	149 182	2 680	4 756	68 620	692 716	389 712	1 078 417	45 185
Establishments with 50 to 99 employees	1	85	85	6 146	244 239	3 536	6 544	105 032	1 820 990	671 645	2 486 141	87 626
Establishments with 100 to 249 employees	—	107	107	17 164	647 801	10 487	20 617	319 194	5 215 251	2 613 191	7 846 787	197 019
Establishments with 250 to 499 employees	—	62	62	22 902	998 137	12 619	25 516	438 322	10 521 626	4 669 843	15 217 055	386 783
Establishments with 500 to 999 employees	—	29	29	20 606	771 495	13 473	28 455	391 735	10 197 878	3 849 851	13 720 805	579 789
Establishments with 1,000 to 2,499 employees	—	15	15	24 385	1 449 150	12 441	25 120	541 250	6 471 161	2 515 666	9 163 264	605 733
Establishments with 2,500 employees or more	—	6	6	17 515	1 297 482	5 904	13 133	291 867	12 951 766	4 867 272	17 328 502	560 715
Administrative records ²	9	315	—	2 286	61 853	1 432	1 902	31 357	259 949	127 129	387 088	23 533

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325412	Pharmaceutical preparation mfg	837	115 781	5 652 679	62 741	126 724	2 201 365	48 323 493	19 798 251	67 520 044	2 493 872
3254121	Pharmaceutical preparations, affecting neoplasms, the endocrine system, and metabolic diseases, for human use	20	4 956	219 680	3 062	5 828	111 438	1 651 620	672 404	2 424 581	102 366
3254124	Pharmaceutical preparations, acting on the central nervous system and the sense organs, for human use ...	71	28 899	1 383 770	17 037	35 245	597 553	13 107 762	4 372 542	16 926 588	674 987
3254127	Pharmaceutical preparations, acting on the cardiovascular system, for human use	29	12 889	740 274	6 128	12 118	248 286	5 199 836	2 225 796	7 332 595	394 650
325412A	Pharmaceutical preparations, acting on the respiratory system, for human use	30	10 912	564 244	4 537	10 044	158 681	4 434 806	1 105 899	5 541 516	201 924
325412D	Pharmaceutical preparations, acting on the digestive or the genito-urinary systems, for human use	25	6 351	367 717	3 917	8 970	189 101	10 814 100	4 819 739	15 570 582	287 292
325412G	Pharmaceutical preparations, acting on the skin, for human use	33	6 191	371 657	2 207	4 299	78 429	2 093 583	919 435	2 933 881	117 335
325412L	Pharmaceutical preparations, vitamin, nutrient, and hematinic preparations, for human use	83	15 961	569 221	10 490	21 749	270 604	2 948 648	2 430 685	5 431 580	248 305
325412P	Pharmaceutical preparations, affecting parasitic and infective diseases, for human use	28	11 166	684 402	3 881	7 836	172 949	4 958 629	1 514 848	6 480 254	185 465
325412T	Pharmaceutical preparations, for veterinary use	31	2 177	96 909	1 016	1 974	34 840	579 105	367 029	962 772	23 514
325412V	Diagnostic substances, in vivo	21	3 013	135 198	1 377	2 778	51 441	868 089	340 800	1 212 695	26 211

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325412	Pharmaceutical preparations	N	X	X	60 251 738	N	X	X	N
3254121	Pharmaceutical preparations, affecting neoplasms, the endocrine system, and metabolic diseases, for human use @	N	X	X	5 350 014	N	X	X	3 532 915
32541210	Pharmaceutical preparations, affecting neoplasms, the endocrine system, and metabolic diseases, for human use	N	X	X	5 350 014	N	X	X	N
3254121000	Pharmaceutical preparations, affecting neoplasms, the endocrine system, and metabolic diseases, for human use	69	X	X	5 350 014	70	X	X	3 532 915
3254124	Pharmaceutical preparations, acting on the central nervous system and the sense organs, for human use, excluding diagnostics @	N	X	X	11 883 276	N	X	X	8 436 542
32541240	Pharmaceutical preparations, acting on the central nervous system and the sense organs, for human use	N	X	X	11 883 276	N	X	X	N
3254124000	Pharmaceutical preparations, acting on the central nervous system and the sense organs, for human use	111	X	X	11 883 276	123	X	X	8 436 542
3254127	Pharmaceutical preparations, acting on the cardiovascular system, for human use, excluding diagnostics @	N	X	X	8 919 681	N	X	X	5 086 990
32541270	Pharmaceutical preparations, acting on the cardiovascular system, for human use	N	X	X	8 919 681	N	X	X	N
3254127000	Pharmaceutical preparations, acting on the cardiovascular system, for human use	67	X	X	8 919 681	76	X	X	5 086 990
325412A	Pharmaceutical preparations, acting on the respiratory system, for human use, excluding diagnostics @	N	X	X	5 743 970	N	X	X	5 046 430
325412A0	Pharmaceutical preparations, acting on the respiratory system, for human use	N	X	X	5 743 970	N	X	X	N
325412A000	Pharmaceutical preparations, acting on the respiratory system, for human use	93	X	X	5 743 970	107	X	X	5 046 430
325412D	Pharmaceutical preparations, acting on the digestive or the genito-urinary systems, for human use, excluding diagnostics @	N	X	X	9 372 507	N	X	X	7 032 904
325412D0	Pharmaceutical preparations, acting on the digestive or the genito-urinary systems, for human use	N	X	X	9 372 507	N	X	X	N
325412D000	Pharmaceutical preparations, acting on the digestive or the genito-urinary systems, for human use	101	X	X	9 372 507	110	X	X	7 032 904
325412G	Pharmaceutical preparations, acting on the skin, for human use (incl burn ointments, acne preparations, hemorrhoidal preparations, rubbing alcohol, etc.) @	N	X	X	1 832 338	N	X	X	1 789 755
325412G0	Pharmaceutical preparations, acting on the skin, for human use	N	X	X	1 832 338	N	X	X	N
325412G000	Pharmaceutical preparations, acting on the skin, for human use	90	X	X	1 832 338	110	X	X	1 789 755
325412L	Pharmaceutical preparations, vitamin, nutrient, and hematonic preparations, for human use @	N	X	X	5 225 967	N	X	X	3 172 869
325412L0	Pharmaceutical preparations, vitamin, nutrient, and hematonic preparations, for human use	N	X	X	5 225 967	N	X	X	N
325412L000	Pharmaceutical preparations, vitamin, nutrient, and hematonic preparations, for human use	129	X	X	5 225 967	133	X	X	3 172 869
325412P	Pharmaceutical preparations, affecting parasitic and infective diseases, for human use (including penicillins, antibiotics, antiseptic mouthwash, etc.) @	N	X	X	7 644 381	N	X	X	7 130 578
325412P0	Pharmaceutical preparations, affecting parasitic and infective diseases, for human use	N	X	X	7 644 381	N	X	X	N
325412P000	Pharmaceutical preparations, affecting parasitic and infective diseases, for human use	73	X	X	7 644 381	80	X	X	7 130 578
325412T	Pharmaceutical preparations, for veterinary use @	N	X	X	1 593 352	N	X	X	1 305 755
325412T0	Pharmaceutical preparations, for veterinary use	N	X	X	1 593 352	N	X	X	N
325412T000	Pharmaceutical preparations, for veterinary use	78	X	X	1 593 352	90	X	X	1 305 755

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325412	Pharmaceutical preparations—Con.								
325412V	Diagnostic substances, in vivo (including angiourographic agents, other contrast media products, radioactive reagents, etc.)	N	X	X	1 177 634	N	X	X	1 053 361
325412V1	Diagnostic substances, in vivo	N	X	X	1 176 436	N	X	X	N
325412V111	Diagnostic contrast media products (both iodinated and barium products), including angiourographic agents	7	X	X	540 907	5	X	X	D
325412V121	Diagnostic substances, in vivo radioactive reagents (both diagnostic and therapeutic)	9	X	X	573 135	7	X	X	323 248
325412V191	Diagnostic substances, in vivo diagnostic substances, other	14	X	X	62 394	10	X	X	D
325412VY	Diagnostic substances, in vivo	N	X	X	1 198	N	X	X	N
325412VYWV	Diagnostic substances, in vivo, nsk	N	X	X	1 198	N	X	X	1 532
325412W	Pharmaceutical preparations, nsk, total	N	X	X	1 508 618	N	X	X	N
325412WY	Pharmaceutical preparations, nsk, total	N	X	X	1 508 618	N	X	X	N
325412WYWW	Pharmaceutical preparations, nsk, for nonadministrative-record establishments	N	X	X	1 181 125	N	X	X	N
325412WYWY	Pharmaceutical preparations, nsk, for administrative-record establishments	N	X	X	327 493	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3254121	PHARMACEUTICAL PREPARATIONS, AFFECTING NEOPLASMS, THE ENDOCRINE SYSTEM, AND METABOLIC DISEASES, FOR HUMAN USE @		
	United States	5 350 014	3 532 915
	Colorado	4 489	7 708
	Florida	24 842	N
	Illinois	90 709	122 916
	New Jersey	989 149	946 844
	New York	911 648	439 916
	North Carolina	156 550	N
	Ohio	330 123	115 650
3254124	PHARMACEUTICAL PREPARATIONS, ACTING ON THE CENTRAL NERVOUS SYSTEM AND THE SENSE ORGANS, FOR HUMAN USE, EXCLUDING DIAGNOSTICS @		
	United States	11 883 276	8 436 542
	California	530 960	455 918
	Connecticut	72 268	N
	Florida	87 834	N
	Illinois	851 193	171 205
	New Jersey	1 489 231	2 129 551
	New York	942 354	994 423
	North Carolina	1 492 313	N
	Ohio	130 267	127 053
	Pennsylvania	781 081	1 173 376
3254127	PHARMACEUTICAL PREPARATIONS, ACTING ON THE CARDIOVASCULAR SYSTEM, FOR HUMAN USE, EXCLUDING DIAGNOSTICS @		
	United States	8 919 681	5 086 990
	California	486 972	365 001
	Illinois	336 673	185 071
	New Jersey	1 554 784	789 547
	New York	891 412	319 826
	North Carolina	774 960	N
	Ohio	39 436	55 134
325412A	PHARMACEUTICAL PREPARATIONS, ACTING ON THE RESPIRATORY SYSTEM, FOR HUMAN USE, EXCLUDING DIAGNOSTICS @		

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325412A	PHARMACEUTICAL PREPARATIONS, ACTING ON THE RESPIRATORY SYSTEM, FOR HUMAN USE, EXCLUDING DIAGNOSTICS @—Con.		
	United States	5 743 970	5 046 430
	California	379 962	167 590
	Florida	42 969	N
	Illinois	164 506	156 396
	Massachusetts	197 199	N
	New York	375 998	143 239
325412D	PHARMACEUTICAL PREPARATIONS, ACTING ON THE DIGESTIVE OR THE GENITO-URINARY SYSTEMS, FOR HUMAN USE, EXCLUDING DIAGNOSTICS @		
	United States	9 372 507	7 032 904
	California	160 190	N
	Connecticut	34 190	N
	Florida	79 199	N
	Illinois	37 047	16 540
	New Jersey	232 649	444 865
	New York	345 099	N
	Ohio	75 397	51 958
	Virginia	100 799	95 548
325412G	PHARMACEUTICAL PREPARATIONS, ACTING ON THE SKIN, FOR HUMAN USE (INCL BURN OINTMENTS, ACNE PREPARATIONS, HEMORRHOIDAL PREPARATIONS, RUBBING ALCOHOL, ETC.) @		
	United States	1 832 338	1 789 755
	California	123 414	137 141
	Connecticut	52 952	117 283
	Florida	19 575	N
	Michigan	38 019	N
	Minnesota	3 290	N
	Missouri	20 250	N
	New Jersey	507 498	334 710
	New York	276 417	259 677
	Ohio	37 783	N
	Pennsylvania	87 713	222 390
	Wisconsin	10 351	N
325412L	PHARMACEUTICAL PREPARATIONS, VITAMIN, NUTRIENT, AND HEMATINIC PREPARATIONS, FOR HUMAN USE @		
	United States	5 225 967	3 172 869
	Arizona	120 630	N
	California	1 762 491	601 740
	Massachusetts	55 444	N
	New Jersey	315 603	267 310
	New York	756 861	493 172
	North Carolina	217 752	582 421
	Ohio	3 270	26 835
	Pennsylvania	22 161	34 868
	Tennessee	19 829	N
	Texas	78 614	N
	Utah	314 441	N
325412P	PHARMACEUTICAL PREPARATIONS, AFFECTING PARASITIC AND INFECTIVE DISEASES, FOR HUMAN USE (INCLUDING PENICILLINS, ANTIBIOTICS, ANTISEPTIC MOUTHWASH, ETC.) @		
	United States	7 644 381	7 130 578
	California	19 872	N
	Florida	74 104	N
	Massachusetts	71 280	N
	New Jersey	1 555 738	975 056
	New York	349 126	704 088
	North Carolina	1 462 753	N
	Pennsylvania	1 003 829	968 539
325412T	PHARMACEUTICAL PREPARATIONS, FOR VETERINARY USE @		
	United States	1 593 352	1 305 755
	California	33 297	N
	Florida	2 532	N
	Illinois	30 097	49 424
	Iowa	178 447	120 555
	Kansas	148 801	97 806
	Missouri	223 340	186 498
	New Jersey	108 955	105 307
	New York	53 250	38 608
	North Carolina	2 278	N
	Texas	3 086	N
325412V	DIAGNOSTIC SUBSTANCES, IN VIVO (INCLUDING ANGIOUROGRAPHIC AGENTS, OTHER CONTRAST MEDIA PRODUCTS, RADIOACTIVE REGENTS, ETC.)		
	United States	1 177 634	1 053 361
	California	25 988	N
	Indiana	22 665	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325412	PHARMACEUTICAL PREPARATION MFG				
32541113	Antibiotics, in bulk, for human and veterinary use	X	2 855 535	X	N
32541115	Antibiotics, in bulk, for animal feeds	X	96 987	X	N
32541101	Vitamins, natural and synthetic, in bulk, for human and veterinary use	X	1 126 229	X	N
32541103	Vitamins, natural and synthetic, in bulk, for animal feeds	X	D	X	N
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	88 997	X	N
31100001	Processed food and kindred products including lactose, meat packing plant products, yeast, etc.	X	95 024	X	N
32541000	Blood derivatives and extenders	X	D	X	N
32541107	All other bulk medicinal and botanical un compounded drugs, except antibiotics and vitamins	X	5 270 348	X	N
32599807	Gelatin (pharmaceutical grade) and gelatin capsules	X	90 258	X	N
325000A7	Industrial inorganic chemicals	X	386 268	X	N
32519201	Cyclic crudes and intermediates including organic colors	X	274 476	X	N
32510031	Other synthetic organic chemicals including halogenated hydrocarbons	X	399 847	X	N
32610015	Fabricated plastics products, including plastics closures, film, and packaging items, except containers	X	318 953	X	N
33211500	Metal closures and crowns for containers	X	51 250	X	N
32310003	Labels, coupons, instructions, and other printed material	X	395 902	X	N
32610029	Plastics containers	X	526 693	X	N
32721301	Glass containers	X	204 198	X	N
33240000	Metal containers	X	52 533	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	627 617	X	N
00970099	All other materials and components, parts, containers, and supplies	X	1 652 311	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	796 474	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; ^a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325412 PHARMACEUTICAL PREPARATION
MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing in-vivo diagnostic substances and pharmaceutical preparations (except biological) intended for internal and external consumption in dose

forms, such as ampoules, tablets, capsules, vials, ointments, powders, solutions, and suspensions.

The data published with NAICS code 325412 include the following SIC industries:

- 2834 Pharmaceutical preparations
- 2835 Diagnostic substances (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nisk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3254121	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@3254124	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@3254127	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@325412A	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@325412D.....	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@325412G.....	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@325412L	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@325412P.....	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.
@325412T	For additional detail, see Current Industrial Report MA325G, Pharmaceutical Preparations.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
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3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
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						3255204551	2891445	2891445
3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046B1	2891457	2891457
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
			325412G000	2834600	2834600	3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt						
			325412L	28347	28347	3255207	28916	28916
3253201 pt	2879A pt	28797 pt	325412L000	2834700	2834700	3255207111	2891610	2891610
						3255207121	2891625	2891625
3253201 pt	2879A pt	28798 pt	325412P	28348	28348	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt	325412P000	2834800	2834800	3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt						
3253201725	2879A25	2879665 pt	325412T	28349	28349	325520A	28917	28917
3253201A15	2879A15	2879561 pt	325412T000	2834900	2834900	325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt				325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200			
						325520W	28910	28910
3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYWW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
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			3254130341	2835125	2835125	3256111131 pt	2841127 pt	2841125 pt
3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841145 pt
			3254130461	2835135	2835135			
3253204 pt	2879C pt	28798 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
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3253204115	2879C15	2879561 pt	3254130YVY	2835002 pt	2835002 pt	3256111211 pt	2841129 pt	2841141 pt
3253204117	2879C17	2879581 pt				3256111211 pt	2841129 pt	2841143 pt
3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100	3256111311 pt	2841131 pt	2841123
3253204129	2879C29	2879685 pt				3256111311 pt	2841131 pt	2841141 pt
3253204131	2879C31	2879721 pt	3254144	28362	28362			
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3253204133	2879C33	2879751 pt				3256111321 pt	2841132 pt	2841121
3253204141	2879C41	2879812 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204143	2879C43	2879818 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204145	2879C45	2879822 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204147	2879C47	2879885 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879500 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879600 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841141 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422			
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400	3256111411 pt	2841133 pt	2841145 pt
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841146 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111511 pt	2841134 pt	2841177
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	3256111511 pt	2841134 pt	2841124
3253207125	2879E25	2879986 pt						

MANUFACTURING—INDUSTRY SERIES

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APPENDIX G G-3

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998WYWWW pt...	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

In-Vitro Diagnostic Substance Manufacturing

1997

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1997 Economic Census

Manufacturing

Industry Series



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In-Vitro Diagnostic Substance Manufacturing

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Manufacturing

Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325413	In-vitro diagnostic substance mfg	202	226	36 502	1 928 657	13 389	26 177	571 101	5 955 568	2 207 199	8 145 884	704 175
283520	Diagnostic substances (pt)	N	226	36 502	1 928 657	13 389	26 177	571 101	5 955 568	2 207 199	8 145 884	704 175

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325413, IN-VITRO DIAGNOSTIC SUBSTANCE MFG												
United States	—	226	132	36 502	1 928 657	13 389	26 177	571 101	5 955 568	2 207 199	8 145 884	704 175
California	—	57	35	5 904	301 599	2 360	4 729	89 130	875 259	284 290	1 156 744	133 065
Maryland	—	13	7	2 426	104 059	1 028	2 132	33 074	262 900	131 046	392 937	17 637
Massachusetts	—	14	12	1 490	68 478	550	1 026	22 825	209 583	103 731	315 428	24 910
Michigan	—	11	4	448	17 696	201	367	6 886	59 802	44 757	104 283	2 942
Minnesota	2	8	4	538	21 040	223	256	7 107	46 367	21 362	67 019	4 845
New Jersey	—	14	11	1 383	83 568	506	886	19 895	456 311	146 578	590 879	51 128
New York	—	9	6	2 355	114 490	678	1 293	38 292	342 723	166 284	526 550	14 768
Oregon	2	5	4	267	9 759	125	220	3 103	19 837	7 288	26 905	1 171
Pennsylvania	—	5	3	217	7 260	143	268	3 487	16 201	6 654	23 402	848
Texas	1	11	5	321	11 373	118	223	3 096	27 779	10 720	38 570	2 327
Wisconsin	—	6	5	241	8 313	115	198	3 450	30 326	27 210	58 025	1 961

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325413, IN-VITRO DIAGNOSTIC SUBSTANCE MFG		325413, IN-VITRO DIAGNOSTIC SUBSTANCE MFG	
Companies ¹	202	— Con.	
All establishments	226	Value added	\$1,000.. 5 955 568
Establishments with 1 to 19 employees	94	Total inventories, beginning of year	\$1,000.. 1 326 719
Establishments with 20 to 99 employees	80	Finished goods inventories, beginning of year	\$1,000.. 538 066
Establishments with 100 employees or more	52	Work-in-process inventories, beginning of year	\$1,000.. 365 872
All employees	36 502	Materials and supplies inventories, beginning of year	\$1,000.. 422 781
Total compensation ²	2 415 670	Total inventories, end of year	\$1,000.. 1 344 601
Annual payroll	1 928 657	Finished goods inventories, end of year	\$1,000.. 534 909
Total fringe benefits	487 013	Work-in-process inventories, end of year	\$1,000.. 385 912
Production workers, average for year	13 389	Materials and supplies inventories, end of year	\$1,000.. 423 780
Production workers on March 12	13 117	Gross book value of total assets at beginning of year	\$1,000.. 4 509 996
Production workers on May 12	13 321	Total capital expenditures (new and used)	\$1,000.. 704 175
Production workers on August 12	13 487	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 165 565
Production workers on November 12	13 631	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 538 610
Production-worker hours	26 177	Total retirements ²	\$1,000.. 201 351
Production-worker wages	571 101	Gross book value of total assets at end of year	\$1,000.. 5 012 820
Total cost of materials	2 207 199	Total depreciation during year ²	\$1,000.. 557 433
Cost of materials, parts, containers, etc., consumed	1 820 491	Total rental payments ²	\$1,000.. 71 048
Cost of resales	301 363	Buildings and other structures rental payments ²	\$1,000.. 40 422
Cost of fuels	15 541	Machinery and equipment rental payments ²	\$1,000.. 30 626
Cost of purchased electricity	54 983	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 22 977
Cost of contract work	14 821	Response coverage ratio ⁴	percent.. 95
Quantity of electricity purchased for heat and power	944 449	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 26 618
Quantity of electricity generated less sold for heat and power	—	Response coverage ratio ⁴	percent.. 95
Total value of shipments	8 145 884	Cost of purchased communications services ³	\$1,000.. 41 640
Primary products value of shipments	5 335 285	Response coverage ratio ⁴	percent.. 95
Secondary products value of shipments	1 877 965	Cost of purchased legal services ³	\$1,000.. 64 404
Total miscellaneous receipts	932 634	Response coverage ratio ⁴	percent.. 95
Value of resales	783 776	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 5 632
Contract receipts	D	Response coverage ratio ⁴	percent.. 95
Other miscellaneous receipts	D	Cost of purchased advertising services ³	\$1,000.. 212 759
Primary products specialization ratio	73	Response coverage ratio ⁴	percent.. 95
Value of primary products shipments made in all industries	5 842 684	Cost of purchased software and other data processing services ³	\$1,000.. 30 570
Value of primary products shipments made in this industry	5 335 285	Response coverage ratio ⁴	percent.. 95
Value of primary products shipments made in other industries	507 399	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 11 535
Coverage ratio	91	Response coverage ratio ⁴	percent.. 95

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325413, IN-VITRO DIAGNOSTIC SUBSTANCE MFG												
All establishments	—	226	132	36 502	1 928 657	13 389	26 177	571 101	5 955 568	2 207 199	8 145 884	704 175
Establishments with 1 to 4 employees	7	42	—	76	2 535	45	65	1 049	8 911	3 017	11 916	822
Establishments with 5 to 9 employees	7	23	—	150	6 880	72	132	2 622	18 987	8 643	27 725	2 454
Establishments with 10 to 19 employees	5	29	—	400	13 854	194	315	5 386	38 168	16 119	54 452	3 214
Establishments with 20 to 49 employees	3	47	47	1 554	60 610	702	1 249	21 032	170 807	83 369	253 730	14 423
Establishments with 50 to 99 employees	1	33	33	2 281	90 947	1 124	2 091	30 393	265 423	113 639	391 829	16 029
Establishments with 100 to 249 employees	—	28	28	4 158	178 280	1 726	3 214	55 015	634 257	247 161	876 395	68 072
Establishments with 250 to 499 employees	—	15	15	5 353	247 861	2 508	4 957	94 616	1 257 949	547 100	1 794 929	133 685
Establishments with 500 to 999 employees	—	6	6	4 217	245 998	1 057	2 055	54 018	718 385	209 081	909 027	75 894
Establishments with 1,000 to 2,499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	1	1	D	D	D	D	D	D	D	D	D
Administrative records ²	9	63	—	438	15 276	204	298	5 507	46 600	17 802	64 726	5 547

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325413	In-vitro diagnostic substance mfg	226	36 502	1 928 657	13 389	26 177	571 101	5 955 568	2 207 199	8 145 884	704 175

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325413	Diagnostic substances, in vitro	N	X	X	5 842 684	N	X	X	N
3254130	Diagnostic substances, in vitro	N	X	X	5 842 684	N	X	X	N
32541301	Diagnostic substances, in vitro diagnostic (clinical chemistry) reagents, including toxicology	N	X	X	3 303 632	N	X	X	N
3254130111	Diagnostic substances, in vitro diagnostic (clinical chemistry) reagents, including toxicology	59	X	X	3 303 632	74	X	X	2 877 534
32541302	Diagnostic substances, in vitro diagnostic (clinical chemistry) reagents, including toxicology	N	X	X	382 269	N	X	X	N
3254130221	Diagnostic substances, in vitro diagnostic (clinical chemistry) standards and controls, including toxicology	29	X	X	382 269	31	X	X	238 909
32541303	Diagnostic substances, in vitro diagnostic blood bank, hematology, and coagulation products	N	X	X	526 085	N	X	X	N
3254130331	Diagnostic substances, in vitro diagnostic blood bank products	8	X	X	297 295	7	X	X	249 730
3254130341	Diagnostic substances, in vitro diagnostic hematology products	12	X	X	67 145	14	X	X	60 202
3254130351	Diagnostic substances, in vitro diagnostic coagulation products	9	X	X	161 645	6	X	X	D
32541304	Diagnostic substances, in vitro diagnostic microbiology, virology, serology, cytology, and histology products	N	X	X	475 513	N	X	X	N
3254130461	Diagnostic substances, in vitro diagnostic microbiology, virology, serology, cytology, and histology products	39	X	X	475 513	42	X	X	355 241
32541305	Diagnostic substances, in vitro, culture media	N	X	X	365 721	N	X	X	N
3254130571	Diagnostic substances, in vitro, culture media	24	X	X	365 721	28	X	X	302 462
32541306	Diagnostic substances, in vitro, other	N	X	X	604 174	N	X	X	N
3254130691	Diagnostic substances, in vitro, other	43	X	X	604 174	55	X	X	698 090
3254130Y	Diagnostic substances, in vitro, nsk	N	X	X	185 290	N	X	X	N
3254130YWW	Diagnostic substances, in vitro, nsk, for nonadministrative-record establishments	N	X	X	126 883	N	X	X	N
3254130YWY	Diagnostic substances, in vitro, nsk, for administrative-record establishments	N	X	X	58 407	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325413	IN-VITRO DIAGNOSTIC SUBSTANCE MFG				
32541113	Antibiotics, in bulk, for human and veterinary use	X	4 180	X	N
32541115	Antibiotics, in bulk, for animal feeds	X	—	X	N
32541101	Vitamins, natural and synthetic, in bulk, for human and veterinary use	X	D	X	N
32541103	Vitamins, natural and synthetic, in bulk, for animal feeds	X	—	X	N
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	D	X	N
31100001	Processed food and kindred products including lactose, meat packing plant products, yeast, etc.	X	37 286	X	N
32541000	Blood derivatives and extenders	X	101 847	X	N
32541107	All other bulk medicinal and botanical uncompounded drugs, except antibiotics and vitamins	X	110 966	X	N
32599807	Gelatin (pharmaceutical grade) and gelatin capsules	X	D	X	N
325000A7	Industrial inorganic chemicals	X	181 375	X	N
32519201	Cyclic crudes and intermediates including organic colors	X	47 566	X	N
32510031	Other synthetic organic chemicals including halogenated hydrocarbons	X	133 589	X	N
32610015	Fabricated plastics products, including plastics closures, film, and packaging items, except containers	X	617 088	X	N
33211500	Metal closures and crowns for containers	X	16 698	X	N
32310003	Labels, coupons, instructions, and other printed material	X	38 950	X	N
32610029	Plastics containers	X	47 842	X	N
32721301	Glass containers	X	43 920	X	N
33240000	Metal containers	X	1 698	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	67 435	X	N
00970099	All other materials and components, parts, containers, and supplies	X	261 656	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	82 050	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325413 IN-VITRO DIAGNOSTIC SUBSTANCE
MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing in-vitro (i.e., not taken internally) diagnostic substances, such as chemical, biological, or radioactive substances. The substances are used for

diagnostic tests that are performed in test tubes, petri dishes, machines, and other diagnostic test-type devices.

The data published with NAICS code 325413 include the following SIC industry:

2835 Diagnostic substances (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251921	28651	28651	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921100	2865100	2865100	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251924	28655	28655	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924100	2865500	2865500	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	325192W	28650 pt	28650 pt	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192WYWW	2865000 pt	2865000 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865002 pt	2865002 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	3251930 pt.	28690 pt	28690 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28692	28692	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930111	2869215	2869215	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930211	2869210	2869210	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930221	2869219	2869219	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930311	2869225	2869225	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930411	2869220	2869220	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930511	2869229	2869229	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869200	2869200	3252221141	2824133	2824133
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325131WYWW pt.	2819002 pt	2819002 pt	3251991 pt.	28697 pt	28697 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28992	28992	3252224	28242	28242
3251321100	2865200	2865200	3251991111	2899211	2899211	3252224111	2824261	2824261
3251324	28653	28653	3251991121	2899224	2899224	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991131	2899259	2899259	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991141	2899261	2899261	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991151	2899283	2899283	3252224151	2824269	2824269
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3251811	28121	28121	3251991171	2899294	2899294	3252227	28244	28244
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3251814	28123	28123	3251991YVV pt	2869700	2869700 pt	3252227121	2824424	2824424
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3251817000	2812500	2812500	3251994100	2869400	2869400	3252227421	2824447	2824447
325181W	28120	28120	3251997	28698 pt	28698 pt	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997100	2869831	2869831	325222A	28249	28249
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3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222A131	2824919	2824919
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			325199E121	2869855	2869855	325222D111	2824815	2824815
			325199EYVV	2869800	2869800	325222D211	2824851	2824851
						325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
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			325320WYVY	2879002	2879002			
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
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			3254114161	2833344	2833344	3255201161	2891380	2891380
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3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
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325312WYWW	2874000	2874000	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
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3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
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			325412L000	2834700	2834700	3255207	28916	28916
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3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412VYVW	2835200	2835200	325520AYVW	2891700	2891700
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3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
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3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
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			325620D251	2844625	2844625	3259923101 pt	3861729	3861729
3256124	28423	28423	325620D261	2844626	2844626	3259923106 pt	3861741	3861741
3256124111	2842334	2842332 pt	325620D271	2844629	2844629	3259923106 pt	3861743	3861743
3256124211 pt	2842340 pt	2842341	325620DYVW	2844600	2844600	3259923106 pt	3861745	3861745
3256124211 pt	2842340 pt	2842397 pt				3259923106 pt	3861747	3861747
3256124221	2842342	2842344				3259923106 pt	3861751	3861751
3256124231	2842343	2842397 pt	325620G	28447	28447	3259923111	3861900	3861900
3256124241 pt	2842347 pt	2842346	325620G111	2844711	2844711	3259923YVW	3861700	3861700
3256124241 pt	2842347 pt	2842397 pt	325620G121	2844715	2844715			
3256124251 pt	2842350 pt	2842348	325620G131	2844721	2844721	3259925	38618	38618
3256124261 pt	2842350 pt	2842397 pt	325620G211	2844725	2844725	3259925101	3861812	3861812
3256124261 pt	2842352 pt	2842349	325620G221	2844731	2844731	3259925206	3861814	3861814
			325620G231	2844735	2844735	3259925316	3861815	3861815
3256124261 pt	2842352 pt	2842397 pt	325620G311	2844741	2844741	3259925321	3861819	3861819
3256124311	2842382	2842381 pt	325620G321	2844745	2844745	3259925YVW	3861800	3861800
3256124321	2842383	2842381 pt	325620G331	2844751	2844751			
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3256124341	2842387	2842385 pt				325992WYVW	3861000 pt	3861000 pt
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3256124421	2842313	2842311 pt	325620G361	2844765	2844765			
3256124431	2842315	2842315	325620G371	2844771	2844771	3259981	28991 pt	28991 pt
3256124441	2842321	2842321	325620G381	2844775	2844775	3259981100	2899111	2899100 pt
3256124451	2842324	2842326 pt	325620G391	2844781	2844781			
			325620G3A1	2844785	2844785	3259984	39993	39993
			325620G3B1	2844795	2844795	3259984100	3999300	3999300
			325620GYVW	2844700	2844700			
3256124461	2842325	2842326 pt				3259987	28994	28994
3256124471	2842328	2842328	325620W	28440 pt	28440 pt	3259987111	2899411	2899411
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3256124491	2842333	2842332 pt	325620WYVY	2844002 pt	2844002 pt	3259987131	2899497	2899497
32561244E1	2842351	2842351				3259987YVW	2899400	2899400
32561244F1	2842353	2842353	3259101	28931	28931			
32561244G1	2842371	2842371	3259101111	2893105	2893105	325998A	28995 pt	28995 pt
32561244H1	2842390	2842390	3259101121	2893115	289			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
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325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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Industry Series



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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325414	Biological product (except diagnostic) mfg	268	364	23 285	1 020 057	12 144	24 971	392 488	3 728 860	2 134 024	5 685 943	430 946
283600	Biological products, except diagnostic	N	364	23 285	1 020 057	12 144	24 971	392 488	3 728 860	2 134 024	5 685 943	430 946

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
		Total	With 20 em- ploy- ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325414, BIOLOGICAL PRODUCT (EXCEPT DIAGNOSTIC) MFG												
United States	1	364	172	23 285	1 020 057	12 144	24 971	392 488	3 728 860	2 134 024	5 685 943	430 946
California	—	60	21	6 490	375 224	2 863	5 737	112 692	1 055 020	600 339	1 605 173	110 238
Florida	7	12	5	532	11 549	295	485	6 067	25 010	16 489	41 240	1 168
Massachusetts	—	13	7	878	26 030	680	1 250	17 102	248 688	126 051	374 965	23 715
Minnesota	2	10	3	233	7 254	134	278	3 835	16 673	8 499	25 082	859
Missouri	3	16	6	708	29 167	491	874	15 392	66 345	42 751	110 099	10 091
New Jersey	4	5	4	482	19 391	285	631	14 434	38 660	33 117	70 980	5 791
Pennsylvania	2	23	16	2 079	106 350	852	1 558	24 565	355 068	223 118	549 068	25 998
Texas	3	35	12	532	14 069	300	583	7 745	37 676	21 691	59 365	1 915
Wisconsin	—	13	9	798	32 274	433	922	12 955	74 778	24 680	97 680	6 568

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325414, BIOLOGICAL PRODUCT (EXCEPT DIAGNOSTIC) MFG		325414, BIOLOGICAL PRODUCT (EXCEPT DIAGNOSTIC) MFG—Con.	
Companies ¹	number.. 268	Value added	\$1,000.. 3 728 860
All establishments	number.. 364	Total inventories, beginning of year	\$1,000.. 1 166 098
Establishments with 1 to 19 employees	number.. 192	Finished goods inventories, beginning of year	\$1,000.. 351 984
Establishments with 20 to 99 employees	number.. 127	Work-in-process inventories, beginning of year	\$1,000.. 551 414
Establishments with 100 employees or more	number.. 45	Materials and supplies inventories, beginning of year	\$1,000.. 262 700
All employees	number.. 23 285	Total inventories, end of year	\$1,000.. 1 332 169
Total compensation ²	\$1,000.. 1 280 894	Finished goods inventories, end of year	\$1,000.. 468 995
Annual payroll	\$1,000.. 1 020 057	Work-in-process inventories, end of year	\$1,000.. 611 344
Total fringe benefits	\$1,000.. 260 837	Materials and supplies inventories, end of year	\$1,000.. 251 830
Production workers, average for year	number.. 12 144	Gross book value of total assets at beginning of year	\$1,000.. 2 555 279
Production workers on March 12	number.. 12 026	Total capital expenditures (new and used)	\$1,000.. 430 946
Production workers on May 12	number.. 12 148	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 186 366
Production workers on August 12	number.. 12 187	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 244 580
Production workers on November 12	number.. 12 215	Total retirements ²	\$1,000.. 38 046
Production-worker hours	1,000.. 24 971	Gross book value of total assets at end of year	\$1,000.. 2 948 179
Production-worker wages	\$1,000.. 392 488	Total depreciation during year ²	\$1,000.. 210 398
Total cost of materials	\$1,000.. 2 134 024	Total rental payments ²	\$1,000.. 50 172
Cost of materials, parts, containers, etc., consumed	\$1,000.. 1 603 270	Buildings and other structures rental payments ²	\$1,000.. 29 713
Cost of resales	\$1,000.. 286 070	Machinery and equipment rental payments ²	\$1,000.. 20 459
Cost of fuels	\$1,000.. 31 474	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 19 153
Cost of purchased electricity	\$1,000.. 53 106	Response coverage ratio ⁴	percent.. 82
Cost of contract work	\$1,000.. 160 104	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 31 897
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 126 064	Response coverage ratio ⁴	percent.. 82
Quantity of electricity generated less sold for heat and power	1,000 kWh.. D	Cost of purchased communications services ³	\$1,000.. 11 729
Total value of shipments	\$1,000.. 5 685 943	Response coverage ratio ⁴	percent.. 82
Primary products value of shipments	\$1,000.. 4 529 092	Cost of purchased legal services ³	\$1,000.. 23 744
Secondary products value of shipments	\$1,000.. 490 226	Response coverage ratio ⁴	percent.. 82
Total miscellaneous receipts	\$1,000.. 666 625	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 2 907
Value of resales	\$1,000.. 568 276	Response coverage ratio ⁴	percent.. 82
Contract receipts	\$1,000.. D	Cost of purchased advertising services ³	\$1,000.. 55 189
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 82
Primary products specialization ratio	percent.. 90	Cost of purchased software and other data processing services ³	\$1,000.. 9 787
Value of primary products shipments made in all industries	\$1,000.. 5 436 906	Response coverage ratio ⁴	percent.. 82
Value of primary products shipments made in this industry	\$1,000.. 4 529 092	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 4 057
Value of primary products shipments made in other industries	\$1,000.. 907 814	Response coverage ratio ⁴	percent.. 82
Coverage ratio	percent.. 83		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325414, BIOLOGICAL PRODUCT (EXCEPT DIAGNOSTIC) MFG												
All establishments	1	364	172	23 285	1 020 057	12 144	24 971	392 488	3 728 860	2 134 024	5 685 943	430 946
Establishments with 1 to 4 employees	5	88	—	172	5 583	135	242	4 098	19 159	12 112	31 144	1 639
Establishments with 5 to 9 employees	9	51	—	352	11 953	220	439	8 623	26 160	19 944	45 936	3 794
Establishments with 10 to 19 employees	5	53	—	770	26 384	495	991	18 206	68 470	46 723	114 987	6 481
Establishments with 20 to 49 employees	2	100	100	2 942	78 433	1 802	3 317	48 489	231 457	183 633	414 600	17 781
Establishments with 50 to 99 employees	2	27	27	1 837	75 668	992	2 221	35 900	183 936	105 964	298 856	43 198
Establishments with 100 to 249 employees	—	21	21	3 315	128 988	1 886	3 761	60 631	632 005	357 803	1 002 734	77 934
Establishments with 250 to 499 employees	2	14	14	4 481	189 384	2 403	5 411	68 820	517 291	266 618	754 291	47 067
Establishments with 500 to 999 employees	1	7	7	5 171	223 787	2 854	6 445	109 087	1 357 521	974 732	2 199 086	161 312
Establishments with 1,000 to 2,499 employees	—	3	3	4 245	279 877	1 357	2 144	38 634	692 861	166 495	824 309	71 740
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	140	—	989	30 401	664	1 346	23 742	71 920	52 068	123 088	10 388

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325414	Biological product (except diagnostic) mfg	364	23 285	1 020 057	12 144	24 971	392 488	3 728 860	2 134 024	5 685 943	430 946
3254141	Blood and blood derivatives, except diagnostics, for human use	8	2 772	116 623	1 542	3 240	53 505	549 056	690 144	1 182 358	53 303
3254144	Vaccines, toxoids, and antigens, except allergens, for human use	24	1 886	89 440	708	1 145	21 785	502 109	203 045	679 514	53 820
3254147	Other biologics, except diagnostic, for human use	31	7 898	418 855	4 034	8 698	130 098	1 056 532	467 325	1 514 627	126 581
325414A	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec.....	93	7 635	318 824	3 909	8 374	132 507	1 398 027	627 962	1 940 740	179 944

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325414	Biological products, except diagnostics	N	X	X	5 436 906	N	X	X	4 512 154
3254141	Blood and blood derivatives, except diagnostics, for human use	N	X	X	1 060 150	N	X	X	1 051 852
32541411	Biological products, except diagnostic, blood and blood derivatives, human blood plasma, for human use	N	X	X	1 060 150	N	X	X	N
3254141111	Biological products, except diagnostic, blood and blood derivatives, human blood plasma, for human use	6	X	X	739 866	6	X	X	D
3254141121	Biological products, except diagnostic, blood and blood derivatives, other blood and blood derivatives or fractions, except those used for passive immunization	11	X	X	320 284	9	X	X	D
3254141Y	Biological products, except diagnostic, blood and blood derivatives, for human use, nsk	N	X	X	—	N	X	X	N
3254141YWV	Biological products, except diagnostic, blood and blood derivatives, for human use, nsk	N	X	X	—	N	X	X	—
3254144	Vaccines, toxoids, and antigens, except allergens, for human use	N	X	X	1 265 460	N	X	X	983 226
32541441	Vaccines, toxoids, and antigens, except allergens, for human use	N	X	X	1 265 460	N	X	X	N
3254144100	Vaccines, toxoids, and antigens, except allergens, for human use	29	X	X	1 265 460	7	X	X	983 226
3254147	Other biologics, except diagnostic, for human use (including antitoxins, antivenoms, blood derivatives for therapeutic use, and allergenic extracts)	N	X	X	1 549 353	N	X	X	1 418 936
32541471	Biological products, except diagnostic, other biologics for human use	N	X	X	1 542 818	N	X	X	N
3254147111	Biological products, except diagnostic, other biologics, antitoxins, antivenoms, immune globulins, therapeutic immune serums, etc., for therapeutic use and passive immunization	28	X	X	1 475 035	17	X	X	1 380 972
3254147121	Biological products, except diagnostic, other biologics, allergenic extracts and other biologics for human use, including poison ivy and oak extracts, except diagnostic allergens	5	X	X	67 783	9	X	X	37 964
3254147Y	Biological products, except diagnostic, other biologics for human use, nsk	N	X	X	6 535	N	X	X	N
3254147YWV	Biological products, except diagnostic, other biologics for human use, nsk	N	X	X	6 535	N	X	X	—
325414A	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec	N	X	X	1 301 197	N	X	X	813 881
325414A1	Biological veterinary vaccines, bacterins, toxoids, other antigens, and other biological products	N	X	X	662 649	N	X	X	N
325414A111	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec, veterinary vaccines, including vaccines against foot-and- mouth disease	19	X	X	505 737	21	X	X	310 272
325414A121	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec, bacterins, toxoids, and other antigens, except allergens, for active immunization	36	X	X	50 689	13	X	X	99 430
325414A131	Biological prods, except diag, for veter, indust, and other uses, nec, other biological prod, includ veterinary blood derivatives, antitoxins, immune serums, and allergens, except diagnostics	13	X	X	106 223	17	X	X	71 209
325414A2	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec, biological products for industrial and other uses, except culture media	N	X	X	559 130	N	X	X	N
325414A241	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec, biological products for industrial and other uses, except culture media	32	X	X	559 130	29	X	X	251 292
325414AY	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec, nsk	N	X	X	79 418	N	X	X	N
325414AYWV	Biological products, except diagnostic, for veterinary, industrial, and other uses, nec, nsk	N	X	X	79 418	N	X	X	81 678

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325414	Biological products, except diagnostics—Con.								
325414W	Biological products, except diagnostic, nsk, total	N	X	X	260 746	N	X	X	244 259
325414WY	Biological products, except diagnostic, nsk, total	N	X	X	260 746	N	X	X	N
325414WYWW	Biological products, except diagnostic, nsk, for nonadministrative-record establishments	N	X	X	232 462	N	X	X	218 198
325414WYWY	Biological products, except diagnostic, nsk, for administrative-record establishments	N	X	X	28 284	N	X	X	26 061

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3254141	BLOOD AND BLOOD DERIVATIVES, EXCEPT DIAGNOSTICS, FOR HUMAN USE		
	United States	1 060 150	1 051 852
3254144	VACCINES, TOXOIDS, AND ANTIGENS, EXCEPT ALLERGENS, FOR HUMAN USE		
	United States	1 265 460	983 226
	California	14 447	N
3254147	OTHER BIOLOGICS, EXCEPT DIAGNOSTIC, FOR HUMAN USE (INCLUDING ANTITOXINS, ANTIVENOMS, BLOOD DERIVATIVES FOR THERAPEUTIC USE, AND ALLERGENIC EXTRACTS)		
	United States	1 549 353	1 418 936
	California	543 360	N
	New Jersey	49 778	N
	Pennsylvania	113 313	22 150
325414A	BIOLOGICAL PRODUCTS, EXCEPT DIAGNOSTIC, FOR VETERINARY, INDUSTRIAL, AND OTHER USES, NEC		
	United States	1 301 197	813 881
	California	276 007	N
	Florida	9 546	N
	Illinois	30 450	N
	Kansas	50 009	45 143
	Massachusetts	12 755	N
	Minnesota	17 352	14 562
	Missouri	62 042	N
	North Carolina	5 984	N
	Ohio	3 447	N
	Pennsylvania	27 247	9 629
	Wisconsin	78 004	81 243

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325414	BIOLOGICAL PRODUCT (EXCEPT DIAGNOSTIC) MFG				
32541113	Antibiotics, in bulk, for human and veterinary use	X	D	X	51 066
32541115	Antibiotics, in bulk, for animal feeds	X	—	X	N
32541101	Vitamins, natural and synthetic, in bulk, for human and veterinary use	X	10 948	X	2 016
32541103	Vitamins, natural and synthetic, in bulk, for animal feeds	X	D	X	D
11100033	Agricultural products (crude), including flowers, grains, seeds, herbs, etc.	X	13 284	X	23 031
31100001	Processed food and kindred products including lactose, meat packing plant products, yeast, etc.	X	32 059	X	28 358
32541000	Blood derivatives and extenders	X	497 800	X	486 656
32541107	All other bulk medicinal and botanical uncompounded drugs, except antibiotics and vitamins	X	28 657	X	25 670
32599807	Gelatin (pharmaceutical grade) and gelatin capsules	X	D	X	D
325000A7	Industrial inorganic chemicals	X	22 476	X	31 458
32519201	Cyclic crudes and intermediates including organic colors	X	D	X	D
32510031	Other synthetic organic chemicals including halogenated hydrocarbons	X	14 947	X	1 775
32610015	Fabricated plastics products, including plastics closures, film, and packaging items, except containers	X	19 247	X	33 526
33211500	Metal closures and crowns for containers	X	2 858	X	3 260
32310003	Labels, coupons, instructions, and other printed material	X	8 938	X	5 895
32610029	Plastics containers	X	10 991	X	14 184
32721301	Glass containers	X	19 527	X	13 025
33240000	Metal containers	X	D	X	D
32221001	Paperboard containers, boxes, and corrugated paperboard	X	12 467	X	18 444
00970099	All other materials and components, parts, containers, and supplies	X	414 587	X	227 992
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	475 131	X	149 252

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

**325414 BIOLOGICAL PRODUCT (EXCEPT
DIAGNOSTIC) MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing vaccines, toxoids, blood fractions, and culture media of plant or animal origin (except diagnostic).

The data published with NAICS code 325414 include the following SIC industry:

2836 Biological products, except diagnostic

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222A131	2824919	2824919
			325199E	28698 pt	28698 pt	325222AYVV	2824900	2824900
			325199E111	2869853	2869853	325222D	28248	28248
			325199E121	2869855	2869855	325222D111	2824815	2824815
			325199EYVV	2869800	2869800	325222D211	2824851	2824851
						325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
			3254114	28333	28333	3255201	28913	28913
3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312W	28740	28740				32552044E1	2891471	2891471
325312WYWW	2874000	2874000	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
325312WYVY	2874002	2874002	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
						3255204551	2891445	2891445
3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046B1	2891457	2891457
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
			325412G000	2834600	2834600	3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt						
			325412L	28347	28347	3255207	28916	28916
3253201 pt	2879A pt	28797 pt	325412L000	2834700	2834700	3255207111	2891610	2891610
						3255207121	2891625	2891625
3253201 pt	2879A pt	28798 pt	325412P	28348	28348	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt	325412P000	2834800	2834800	3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt						
3253201725	2879A25	2879665 pt	325412T	28349	28349	325520A	28917	28917
3253201A15	2879A15	2879561 pt	325412T000	2834900	2834900	325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt				325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200			
						325520W	28910	28910
3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
						3256111121 pt	2841122 pt	2841145 pt
3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841146 pt
			3254130221	2835115	2835115	3256111121 pt	2841122 pt	2841149 pt
3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841178 pt
			3254130341	2835125	2835125	3256111131 pt	2841127 pt	2841125 pt
3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841145 pt
			3254130461	2835135	2835135			
3253204 pt	2879C pt	28798 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
3253204113	2879C13	2879541 pt	3254130YVW pt	2835100	2835100	3256111131 pt	2841127 pt	2841178 pt
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3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100	3256111311 pt	2841131 pt	2841123
3253204129	2879C29	2879685 pt				3256111311 pt	2841131 pt	2841141 pt
3253204131	2879C31	2879721 pt	3254144	28362	28362			
			3254144100	2836200	2836200	3256111311 pt	2841131 pt	2841143 pt
						3256111321 pt	2841132 pt	2841121
3253204133	2879C33	2879751 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204141	2879C41	2879812 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204143	2879C43	2879818 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204145	2879C45	2879822 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204147	2879C47	2879885 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879500 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879600 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841141 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400	3256111411 pt	2841133 pt	2841145 pt
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841146 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841177
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	3256111511 pt	2841134 pt	2841124
3253207125	28							

MANUFACTURING—INDUSTRY SERIES

U.S. Census Bureau, 1997 Economic Census

APPENDIX G G-3

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Manufacturing

Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325510	Paint & coating mfg	1 206	1 495	53 091	2 084 101	28 407	55 817	878 211	9 299 796	9 916 200	19 175 157	414 919
285100	Paints & allied products	N	1 486	52 676	2 067 575	28 190	55 287	870 851	9 243 221	9 871 150	19 073 679	410 997
289930	Chemical preparations, n.e.c. (pt)	N	9	415	16 526	217	530	7 360	56 575	45 050	101 478	3 922

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325510, PAINT & COATING MFG												
United States	1	1 495	583	53 091	2 084 101	28 407	55 817	878 211	9 299 796	9 916 200	19 175 157	414 919
Alabama	1	28	9	996	39 983	373	746	11 771	105 767	165 208	270 582	2 987
Arizona	5	24	3	172	4 650	107	186	2 564	28 557	35 121	62 161	1 546
Arkansas	—	8	4	669	22 600	274	515	6 505	136 933	40 124	168 165	2 764
California	1	180	60	4 651	180 123	2 701	5 235	79 612	832 597	936 746	1 772 812	29 615
Colorado	—	12	4	223	9 264	94	203	2 603	61 204	38 667	96 061	2 119
Connecticut	4	17	6	533	22 397	265	527	7 727	73 233	88 096	162 710	3 286
Florida	2	89	22	1 528	47 948	821	1 433	19 123	223 260	243 035	467 079	8 099
Georgia	—	51	19	1 316	45 547	730	1 354	19 779	347 962	361 199	706 400	12 926
Illinois	—	119	64	5 821	229 880	3 386	6 914	106 237	1 092 034	1 207 386	2 289 705	40 875
Indiana	1	42	24	2 021	73 352	1 260	1 800	35 765	179 235	234 686	419 762	10 274
Iowa	—	13	7	668	23 292	361	689	12 461	162 036	188 566	344 925	5 228
Kansas	1	13	4	314	8 386	220	418	3 445	24 027	30 416	55 100	1 902
Kentucky	—	30	16	1 242	46 044	608	1 177	18 739	384 158	256 109	642 322	7 126
Louisiana	—	11	3	322	10 413	163	259	4 222	56 083	47 983	102 654	1 457
Maryland	—	18	10	1 102	44 647	506	1 077	17 939	339 319	252 698	587 013	13 567
Massachusetts	1	39	14	878	38 185	474	935	15 460	161 587	121 374	283 806	4 310
Michigan	—	73	31	3 261	150 973	2 030	3 890	79 700	546 088	667 764	1 232 501	27 328
Minnesota	2	17	6	486	18 443	171	323	4 735	41 609	49 185	93 895	3 692
Mississippi	—	8	4	580	20 017	365	815	10 397	117 206	70 430	185 704	2 861
Missouri	2	60	21	1 716	66 730	837	1 525	23 540	304 785	280 946	585 263	10 407
Nevada	—	9	2	121	3 740	81	147	1 991	13 228	21 094	33 671	347
New Jersey	2	77	29	2 207	92 515	1 193	2 336	41 162	484 649	450 172	931 857	25 570
New York	3	62	18	1 308	46 882	715	1 355	18 318	110 640	136 765	246 808	6 305
North Carolina	1	29	16	2 018	75 186	1 028	2 131	26 647	273 195	320 399	582 872	21 531
Ohio	—	94	44	6 440	295 805	2 920	6 136	107 321	1 119 595	1 183 508	2 296 331	78 579
Oklahoma	—	16	7	328	12 179	141	267	3 321	41 815	46 991	88 988	842
Oregon	—	18	6	400	14 990	183	350	5 320	57 048	65 032	122 140	1 654
Pennsylvania	1	69	33	3 048	125 796	1 582	2 976	50 617	495 885	517 622	1 016 830	24 495
Rhode Island	1	8	1	125	8 120	35	68	937	12 984	13 263	26 367	862
South Carolina	4	14	5	179	7 003	96	186	2 518	18 398	25 674	42 739	2 450
Tennessee	2	25	12	929	31 455	504	990	11 790	87 862	185 791	276 333	6 595
Texas	—	92	32	3 333	109 232	1 963	4 335	53 897	562 177	770 919	1 327 809	23 199
Virginia	—	17	8	823	35 683	540	1 089	20 736	234 643	279 576	507 807	7 151
Washington	—	31	12	663	23 062	240	450	7 678	76 045	98 750	177 685	3 467
West Virginia	1	4	2	134	2 902	93	175	1 583	16 419	18 208	34 466	282
Wisconsin	—	42	18	2 002	79 247	1 066	2 271	34 077	377 550	327 753	696 849	14 851

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325510, PAINT & COATING MFG		325510, PAINT & COATING MFG—Con.	
Companies ¹	1 206	Value added	\$1,000 .. 9 299 796
All establishments	1 495	Total inventories, beginning of year	\$1,000 .. 2 045 300
Establishments with 1 to 19 employees	912	Finished goods inventories, beginning of year	\$1,000 .. 1 176 213
Establishments with 20 to 99 employees	452	Work-in-process inventories, beginning of year	\$1,000 .. 106 605
Establishments with 100 employees or more	131	Materials and supplies inventories, beginning of year	\$1,000 .. 762 482
All employees	53 091	Total inventories, end of year	\$1,000 .. 2 180 430
Total compensation ²	2 610 400	Finished goods inventories, end of year	\$1,000 .. 1 229 456
Annual payroll	2 084 101	Work-in-process inventories, end of year	\$1,000 .. 94 201
Total fringe benefits	526 299	Materials and supplies inventories, end of year	\$1,000 .. 856 773
Production workers, average for year	28 407	Gross book value of total assets at beginning of year	\$1,000 .. 4 372 266
Production workers on March 15	28 121	Total capital expenditures (new and used)	\$1,000 .. 414 919
Production workers on May 15	28 381	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 81 340
Production workers on August 15	28 744	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 333 579
Production workers on November 15	28 382	Total retirements ²	\$1,000 .. 116 837
Production-worker hours	55 817	Gross book value of total assets at end of year	\$1,000 .. 4 670 348
Production-worker wages	878 211	Total depreciation during year ²	\$1,000 .. 250 072
Total cost of materials	9 916 200	Total rental payments ²	\$1,000 .. 212 816
Cost of materials, parts, containers, etc., consumed	8 970 891	Buildings and other structures rental payments ²	\$1,000 .. 70 602
Cost of resales	713 026	Machinery and equipment rental payments ²	\$1,000 .. 142 214
Cost of fuels	40 298	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 20 467
Cost of purchased electricity	89 112	Response coverage ratio ⁴	percent .. 75
Cost of contract work	102 873	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 60 983
Quantity of electricity purchased for heat and power	1 416 320	Response coverage ratio ⁴	percent .. 75
Quantity of electricity generated less sold for heat and power	S	Cost of purchased communications services ³	\$1,000 .. 34 793
Total value of shipments	19 175 157	Response coverage ratio ⁴	percent .. 75
Primary products value of shipments	17 581 857	Cost of purchased legal services ³	\$1,000 .. 19 019
Secondary products value of shipments	355 614	Response coverage ratio ⁴	percent .. 75
Total miscellaneous receipts	1 237 686	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 10 333
Value of resales	1 218 877	Response coverage ratio ⁴	percent .. 75
Contract receipts	16 016	Cost of purchased advertising services ³	\$1,000 .. 72 358
Other miscellaneous receipts	2 793	Response coverage ratio ⁴	percent .. 75
Primary products specialization ratio	percent .. 98	Cost of purchased software and other data processing services ³	\$1,000 .. 11 899
Value of primary products shipments made in all industries	18 142 064	Response coverage ratio ⁴	percent .. 75
Value of primary products shipments made in this industry	17 581 857	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 39 139
Value of primary products shipments made in other industries	560 207	Response coverage ratio ⁴	percent .. 75
Coverage ratio	percent .. 96		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325510, PAINT & COATING MFG												
All establishments	1	1 495	583	53 091	2 084 101	28 407	55 817	878 211	9 299 796	9 916 200	19 175 157	414 919
Establishments with 1 to 4 employees	8	414	—	855	26 531	581	1 008	11 370	66 434	153 653	220 354	5 700
Establishments with 5 to 9 employees	6	246	—	1 699	55 317	919	1 414	22 056	192 709	241 482	437 769	10 761
Establishments with 10 to 19 employees	3	252	—	3 513	116 036	1 883	3 166	45 677	415 920	500 092	918 576	15 918
Establishments with 20 to 49 employees	1	298	298	9 220	331 358	4 795	9 282	128 025	1 166 468	1 316 917	2 489 302	51 273
Establishments with 50 to 99 employees	—	154	154	10 761	420 014	6 066	11 990	181 860	1 926 411	2 033 645	3 938 694	101 631
Establishments with 100 to 249 employees	—	106	106	16 296	658 034	9 083	19 210	290 285	3 293 912	3 421 739	6 707 531	139 376
Establishments with 250 to 499 employees	—	20	20	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	3	3	1 939	94 277	1 057	1 894	51 780	501 401	425 141	932 744	18 140
Establishments with 1,000 to 2,499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	587	—	2 593	68 311	1 517	1 913	29 107	239 467	320 922	569 027	14 478

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325510	Paint & coating mfg	1 495	53 091	2 084 101	28 407	55 817	878 211	9 299 796	9 916 200	19 175 157	414 919
3255101	Architectural coatings	227	14 928	553 164	8 154	16 862	245 817	3 560 335	3 632 896	7 161 628	105 097
3255104	Product finishes for original equipment manufacturers (OEM), excluding marine coatings	254	18 278	829 033	9 225	18 285	332 015	2 760 842	3 228 682	5 991 139	157 041
3255107	Special-purpose coatings, including all marine coatings, industrial, construction and maintenance coatings, traffic marking paints, etc. .	156	9 199	342 408	5 182	10 293	152 497	1 785 386	1 502 312	3 256 561	68 689
325510A	Miscellaneous allied paint products (including paint and varnish removers, thinners, pigment dispersions, glazing compounds, etc.)	94	4 359	164 112	2 290	4 839	64 834	588 781	726 086	1 319 680	44 632

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325510	Paints and coatings	N	X	X	18 142 064	N	X	X	N
3255101	Architectural coatings @	N	X	X	6 229 530	N	X	X	5 327 848
32551010	Architectural coatings	N	X	X	6 229 530	N	X	X	N
3255101000	Architectural coatings	226	X	X	6 229 530	302	X	X	5 327 848
3255104	Product finishes for original equipment manufacturers (OEM), excluding marine coatings @	N	X	X	5 778 526	N	X	X	4 254 232
32551040	Product finishes for original equipment manufacturers (OEM), excluding marine coatings	N	X	X	5 778 526	N	X	X	N
3255104000	Product finishes for original equipment manufacturers (OEM), excluding marine coatings	263	X	X	5 778 526	324	X	X	4 254 232
3255107	Special-purpose coatings including all marine coatings, industrial, construction and maintenance coatings, traffic marking paints, etc. @	N	X	X	3 012 851	N	X	X	2 886 711
32551070	Special-purpose coatings including all marine coatings, industrial, construction and maintenance coatings, traffic marking paints, etc.	N	X	X	3 012 851	N	X	X	N
3255107000	Special-purpose coatings including all marine coatings, industrial, construction and maintenance coatings, traffic marking paints, etc.	239	X	X	3 012 851	296	X	X	2 886 711
325510A	Miscellaneous allied paint products (including paint and varnish removers, thinners, pigment dispersions, glazing compounds, etc.) @	N	X	X	1 684 003	N	X	X	N
325510A0	Miscellaneous allied paint products (including paint and varnish removers, thinners, pigment dispersions, glazing compounds, etc.)	N	X	X	1 684 003	N	X	X	N
325510A000	Miscellaneous allied paint products (including paint and varnish removers, thinners, pigment dispersions, glazing compounds, etc.)	209	X	X	1 684 003	N	X	X	N
325510W	Paints and coatings, nsk, total	N	X	X	1 437 154	N	X	X	N
325510WY	Paints and coatings, nsk, total	N	X	X	1 437 154	N	X	X	N
325510WYWW	Paints and coatings, nsk, for nonadministrative-record establishments	N	X	X	893 284	N	X	X	N
325510WYWY	Paints and coatings, nsk, for administrative-record establishments	N	X	X	543 870	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3255101	ARCHITECTURAL COATINGS @		
	United States	6 229 530	5 327 848
	Alabama	72 030	54 671
	Arizona	36 552	39 683
	California	928 521	929 914
	Florida	293 469	203 368
	Georgia	524 931	362 081
	Illinois	994 905	781 250
	Indiana	41 504	52 251
	Iowa	58 449	40 070
	Kentucky	201 453	214 415
	Maryland	336 397	274 630
	Massachusetts	131 199	137 790
	Michigan	22 102	40 959
	Missouri	250 898	168 424
	Nevada	9 056	N
	New Jersey	254 032	261 550

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3255101	ARCHITECTURAL COATINGS @—Con.		
	New York	70 548	118 128
	Ohio	381 798	338 792
	Oklahoma	40 266	22 815
	Oregon	40 728	40 005
	Pennsylvania	244 356	227 273
	South Carolina	5 060	N
	Texas	645 929	457 910
	Virginia	46 919	41 430
	Washington	83 138	66 693
	Wisconsin	52 301	59 657
3255104	PRODUCT FINISHES FOR ORIGINAL EQUIPMENT MANUFACTURERS (OEM), EXCLUDING MARINE COATINGS @		
	United States	5 778 526	4 254 232
	Alabama	159 523	107 385
	California	214 993	217 170
	Florida	18 584	13 757
	Georgia	84 735	80 246
	Illinois	635 610	429 079
	Indiana	270 470	237 402
	Iowa	84 191	46 459
	Kentucky	63 106	18 586
	Massachusetts	59 725	36 441
	Michigan	940 213	555 457
	Minnesota	42 813	31 310
	Missouri	130 354	65 800
	New Jersey	214 135	170 160
	New York	74 919	83 982
	North Carolina	400 486	224 808
	Ohio	913 079	861 311
	Oklahoma	19 206	10 037
	Oregon	40 109	29 399
	Pennsylvania	382 975	384 020
	South Carolina	18 052	31 396
	Tennessee	34 526	29 360
	Texas	247 578	148 190
	Virginia	155 005	N
	Wisconsin	372 313	N
3255107	SPECIAL-PURPOSE COATINGS INCLUDING ALL MARINE COATINGS, INDUSTRIAL, CONSTRUCTION AND MAINTENANCE COATINGS, TRAFFIC MARKING PAINTS, ETC. @		
	United States	3 012 851	2 886 711
	Alabama	17 237	13 983
	California	127 657	286 201
	Connecticut	22 143	N
	Florida	11 470	22 086
	Georgia	13 363	93 705
	Illinois	120 702	141 032
	Indiana	17 030	65 294
	Louisiana	57 566	47 686
	Maryland	119 579	113 132
	Massachusetts	16 311	64 787
	Michigan	144 551	174 759
	Minnesota	70 411	N
	Missouri	106 199	105 609
	New Jersey	292 839	224 148
	New York	29 069	36 612
	North Carolina	46 277	N
	Ohio	378 321	293 515
	Oregon	25 740	21 180
	Pennsylvania	166 620	165 803
	Tennessee	14 600	6 561
	Texas	253 385	208 133
	Washington	24 090	10 122
	Wisconsin	143 508	65 816
325510A	MISCELLANEOUS ALLIED PAINT PRODUCTS (INCLUDING PAINT AND VARNISH REMOVERS, THINNERS, PIGMENT DISPERSIONS, GLAZING COMPOUNDS, ETC.) @		
	United States	1 684 003	N
	Alabama	2 735	N
	California	164 275	N
	Florida	30 834	N
	Georgia	10 911	N
	Illinois	309 925	N
	Indiana	48 719	N
	Kentucky	34 829	N
	Massachusetts	27 768	N
	Michigan	52 411	N
	Minnesota	6 843	N
	Missouri	20 733	N
	New Jersey	97 393	N
	New York	18 212	N
	Ohio	232 116	N
	Oregon	4 887	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325510A	MISCELLANEOUS ALLIED PAINT PRODUCTS (INCLUDING PAINT AND VARNISH REMOVERS, THINNERS, PIGMENT DISPERSIONS, GLAZING COMPOUNDS, ETC.) @— Con.		
	Pennsylvania	119 743	N
	South Carolina	19 150	N
	Tennessee	172 611	N
	Texas	55 903	N
	Wisconsin	3 564	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325510	PAINT & COATING MFG				
31120013	Vegetable oils	S	83 216	125.4	50 855
32513102	Titanium dioxide pigments, composite	P976.8	820 260	N	N
32513109	Other inorganic pigments, including chrome colors, zinc oxide, and iron oxide	P152.8	206 302	N	N
32519215	Organic color pigments, lakes, and toners	P93.3	504 815	N	333 467
32519225	Hydrocarbon solvents (toluene, xylene, etc.)	q1 098.5	223 487	P893.0	163 678
32510033	Alcohol solvents (butyl, ethyl, isopropyl, etc.)	q189.9	77 714	314.7	99 202
32510081	Ester solvents (ethyl acetate, butyl acetate, etc.)	q200.5	103 401	N	N
32510079	Ketone solvents (acetone, mek, mibk, etc.)	q242.6	106 620	N	N
32510097	Other solvents	S	134 025	N	N
32510035	Glycol and glycol derivative solvents	q197.2	107 979	N	N
32521117	Alkyd plastics resins	P474.3	316 540	763.3	414 394
32521119	Acrylic plastics resins	942.1	588 391	802.5	495 451
32521121	Vinyl plastics resins	P317.2	166 259	603.7	217 893
32521127	Epoxy plastics resins	q202.8	231 702	N	N
32521125	Polyester plastics resins	S	211 085	N	N
00190069	Other resins	q306.7	337 354	N	N
32521129	Urethane/isocyanates plastics resins	136.3	214 259	N	N
32799215	Minerals and earths, ground or otherwise treated	2 269.5	359 885	N	210 360
32500061	All other chemicals not elsewhere classified	P674.6	548 815	N	N
33240000	Metal containers	X	395 559	X	N
32610029	Plastics containers	X	140 897	X	N
00190001	Other containers	X	33 072	X	N
00970099	All other materials and components, parts, containers, and supplies	X	1 086 450	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	1 972 804	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325510 PAINT AND COATING MANUFACTURING

This U.S. industry comprises establishments primarily engaged in (1) mixing pigments, solvents, and binders into paints and other coatings, such as stains, varnishes, lacquers, enamels, shellacs, and water repellant coatings for concrete and masonry, and/or (2) manufacturing allied

paint products, such as putties, paint and varnish removers, paint brush cleaners, and frit.

The data published with NAICS code 325510 include the following SIC industries:

2851 Paints and allied products

2899 Chemical preparations, n.e.c. (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3255101	For additional detail, see Current Industrial Report MA325F, Paint and Allied Products.
@3255104	For additional detail, see Current Industrial Report MA325F, Paint and Allied Products.
@3255107	For additional detail, see Current Industrial Report MA325F, Paint and Allied Products.
@325510A	For additional detail, see Current Industrial Report MA325F, Paint and Allied Products.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVW	2865600	2865600	3251820YVW pt	2816000 pt	2816000 pt	325199HYVW	2869300	2869300 pt
3251104	28691	28691	3251820YVW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YVW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YVW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVW	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYVW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYVW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYVW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYVW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYVW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYVW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYVW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYVW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYVW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYVW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYVW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYVW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYVW	2821000	2821000
325120WYVW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYVW	2821002	2821002
325120WYVW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYVW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYVW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YVW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251921	28651	28651	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921100	2865100	2865100	3252120711	2822072	2822072
3251314YVW	2816200	2816200	3251924	28655	28655	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924100	2865500	2865500	3252120YVW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	325192W	28650 pt	28650 pt	3252120YVW	2822002	2822002
3251317110	2816310	2816310	325192WYVW	2865000 pt	2865000 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYVW	2865002 pt	2865002 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	3251930 pt.	28690 pt	28690 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YVW	2823000	2823000
3251317YVW pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YVW	2823002	2823002
3251317YVW pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYVW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYVW pt.	2819000 pt	2819000 pt	3251930YVW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYVW pt.	2816002 pt	2816002 pt	3251930YVW pt	2869200	2869200	3252221151	2824145	2824145
325131WYVW pt.	2819002 pt	2819002 pt	3251930YVW	2869002 pt	2869002 pt	3252221YVW	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYVW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYVW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVW	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVW pt	2869700	2869700 pt	3252227311	2824442	2824442
3251817	28125	28125	3251991YVW pt	2899200	2899200	3252227411	2824444	2824444
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824447	2824447
325181W	28120	28120	3251994100	2869400	2869400	3252227YVW	2824400	2824400
325181WYVW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYVW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVW	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVW	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVW	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
			3254114	28333	28333	3255201	28913	28913
3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312W	28740	28740				32552044E1	2891471	2891471
325312WYWW	2874000	2874000	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
325312WYVY	2874002	2874002	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
						3255204551	2891445	2891445
3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
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3253201 pt	2879A pt	28796 pt	325412L	28347	28347			
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3253201 pt	2879A pt	28797 pt				3255207111	2891610	2891610
			325412P	28348	28348	3255207121	2891625	2891625
3253201111	2879A pt	28798 pt	325412P000	2834800	2834800	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt				3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt	325412T	28349	28349			
3253201725	2879A25	2879665 pt	325412T000	2834900	2834900	325520A	28917	28917
3253201A15	2879A15	2879561 pt				325520A111	2891711	2891711
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3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412VYVW	2835200	2835200	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt						
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3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D33	2879A31	2879721 pt	325412WYVY pt	2834002	2834002			
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841126 pt
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3253201YVW pt	2879A00 pt	2879700 pt				3256111111 pt	2841120 pt	2841143 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
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3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841146 pt
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3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841178 pt
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3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841145 pt
			3254130461	2835135	2835135			
3253204 pt	2879C pt	28797 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
3253204113	2879C13	2879541 pt	3254130YVW pt	2835100	2835100	3256111131 pt	2841127 pt	2841178 pt
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3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
3253204129	2879C29	2879685 pt				3256111311 pt	2841131 pt	2841123
3253204131	2879C31	2879721 pt				3256111311 pt	2841131 pt	2841141 pt
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3253204133	2879C33	2879751 pt	3254144100	2836200	2836200	3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
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			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422			
			325414A241	2836430	2836430	3256111411 pt	2841133 pt	2841145 pt
			325414AYVW	2836400	2836400			
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3253207123	2879E23	2879917						

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U.S. Census Bureau, 1997 Economic Census

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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Industry Series



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Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325520 289100	Adhesive mfg Adhesives & sealants	541 N	692 692	21 737 21 737	827 188 827 188	12 740 12 740	26 497 26 497	385 228 385 228	3 388 170 3 388 170	3 951 522 3 951 522	7 330 970 7 330 970	240 682 240 682

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
		Total	With 20 em- ploy- ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325520, ADHESIVE MFG												
United States	1	692	270	21 737	827 188	12 740	26 497	385 228	3 388 170	3 951 522	7 330 970	240 682
California	—	70	21	1 728	71 151	882	1 704	24 414	261 560	227 250	486 131	10 507
Connecticut	—	11	6	844	24 924	484	972	9 632	62 348	109 520	172 466	5 828
Florida	4	20	6	346	12 333	180	409	5 913	49 802	69 101	116 811	3 897
Georgia	1	40	17	880	32 222	540	1 089	15 954	172 040	232 379	404 074	10 726
Illinois	1	45	21	1 399	59 477	838	1 791	28 430	301 717	310 537	610 701	22 450
Indiana	2	23	9	788	24 860	529	1 083	13 669	66 311	81 789	147 432	10 115
Kansas	1	7	3	129	4 151	95	181	2 752	18 506	18 209	36 881	1 002
Kentucky	2	7	6	857	34 080	603	1 428	22 819	172 518	390 019	565 448	17 161
Maryland	3	7	4	473	19 369	265	656	10 895	89 986	49 942	140 314	3 434
Massachusetts	2	30	10	915	35 120	366	801	12 116	111 245	103 123	211 979	4 265
Michigan	1	32	14	1 540	61 649	917	1 851	30 421	197 013	271 644	469 437	34 747
Minnesota	1	8	3	150	6 615	103	193	3 225	30 703	45 077	75 628	900
Missouri	1	18	11	1 463	46 943	1 058	2 404	26 568	226 686	167 650	392 512	11 383
New Hampshire	—	8	4	309	9 786	160	280	4 963	22 051	33 816	56 263	1 172
New Jersey	1	53	22	1 508	63 316	809	1 728	27 318	246 161	295 646	539 755	16 788
New York	2	29	9	790	30 233	507	1 075	13 006	141 394	121 267	266 318	5 091
North Carolina	4	25	7	318	13 952	166	322	4 318	35 591	47 560	83 643	5 404
Ohio	1	59	29	2 980	115 055	1 699	3 269	54 032	462 027	501 004	964 003	25 902
Oklahoma	1	7	2	153	3 791	104	208	2 347	21 477	29 925	51 349	804
Pennsylvania	2	34	11	820	32 403	455	1 028	14 763	163 118	188 695	353 459	12 644
South Carolina	1	10	4	252	10 191	156	328	4 531	40 022	39 596	79 786	1 855
Tennessee	3	11	5	342	14 210	167	382	7 334	57 925	77 440	134 237	2 769
Texas	1	47	20	1 080	37 926	618	1 288	15 324	178 271	179 070	355 930	13 883
Virginia	—	7	3	127	5 070	95	181	2 648	22 739	42 442	61 281	5 499
Washington	2	13	3	296	13 467	164	352	5 300	43 123	46 211	89 002	3 583
Wisconsin	2	19	7	424	15 864	237	488	7 182	65 182	100 796	165 793	3 386

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325520, ADHESIVE MFG		325520, ADHESIVE MFG—Con.	
Companies ¹	541	Value added	\$1,000 .. 3 388 170
All establishments	692	Total inventories, beginning of year	\$1,000 .. 654 666
Establishments with 1 to 19 employees	422	Finished goods inventories, beginning of year	\$1,000 .. 308 358
Establishments with 20 to 99 employees	222	Work-in-process inventories, beginning of year	\$1,000 .. 58 594
Establishments with 100 employees or more	48	Materials and supplies inventories, beginning of year	\$1,000 .. 287 714
All employees	21 737	Total inventories, end of year	\$1,000 .. 678 822
Total compensation ²	1 049 264	Finished goods inventories, end of year	\$1,000 .. 314 410
Annual payroll	827 188	Work-in-process inventories, end of year	\$1,000 .. 61 264
Total fringe benefits	222 076	Materials and supplies inventories, end of year	\$1,000 .. 303 148
Production workers, average for year	12 740	Gross book value of total assets at beginning of year	\$1,000 .. 1 970 523
Production workers on March 15	12 798	Total capital expenditures (new and used)	\$1,000 .. 240 682
Production workers on May 15	12 717	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 53 969
Production workers on August 15	12 751	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 186 713
Production workers on November 15	12 694	Total retirements ²	\$1,000 .. 57 087
Production-worker hours	26 497	Gross book value of total assets at end of year	\$1,000 .. 2 154 118
Production-worker wages	385 228	Total depreciation during year ²	\$1,000 .. 127 209
Total cost of materials	3 951 522	Total rental payments ²	\$1,000 .. 39 432
Cost of materials, parts, containers, etc., consumed	3 572 555	Buildings and other structures rental payments ²	\$1,000 .. 19 966
Cost of resales	240 104	Machinery and equipment rental payments ²	\$1,000 .. 19 466
Cost of fuels	27 889	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 5 597
Cost of purchased electricity	60 628	Response coverage ratio ⁴	percent .. 68
Cost of contract work	50 346	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 25 995
Quantity of electricity purchased for heat and power	914 772	Response coverage ratio ⁴	percent .. 68
Quantity of electricity generated less sold for heat and power	962	Cost of purchased communications services ³	\$1,000 .. 8 106
Total value of shipments	7 330 970	Response coverage ratio ⁴	percent .. 68
Primary products value of shipments	6 445 999	Cost of purchased legal services ³	\$1,000 .. 2 908
Secondary products value of shipments	505 288	Response coverage ratio ⁴	percent .. 68
Total miscellaneous receipts	379 683	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 2 680
Value of resales	364 019	Response coverage ratio ⁴	percent .. 68
Contract receipts	10 768	Cost of purchased advertising services ³	\$1,000 .. 8 895
Other miscellaneous receipts	4 896	Response coverage ratio ⁴	percent .. 68
Primary products specialization ratio	percent .. 92	Cost of purchased software and other data processing services ³	\$1,000 .. 9 913
Value of primary products shipments made in all industries	7 380 688	Response coverage ratio ⁴	percent .. 68
Value of primary products shipments made in this industry	6 445 999	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 13 843
Value of primary products shipments made in other industries	934 689	Response coverage ratio ⁴	percent .. 68
Coverage ratio	87		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325520, ADHESIVE MFG												
All establishments	1	692	270	21 737	827 188	12 740	26 497	385 228	3 388 170	3 951 522	7 330 970	240 682
Establishments with 1 to 4 employees	8	194	—	442	13 157	294	504	7 078	52 065	83 435	136 384	4 559
Establishments with 5 to 9 employees	5	118	—	802	26 960	478	902	13 132	108 177	156 401	267 025	8 266
Establishments with 10 to 19 employees	2	110	—	1 533	54 443	885	1 725	23 525	229 560	297 882	521 768	14 345
Establishments with 20 to 49 employees	1	147	147	4 807	181 017	2 868	5 686	81 350	752 869	932 533	1 684 952	53 167
Establishments with 50 to 99 employees	2	75	75	5 213	209 768	2 879	6 306	92 788	866 927	1 073 117	1 936 695	61 537
Establishments with 100 to 249 employees	1	39	39	5 860	224 383	3 482	7 423	113 851	906 950	852 521	1 761 757	62 787
Establishments with 250 to 499 employees	—	8	8	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	237	—	1 004	26 877	629	1 011	14 535	112 332	175 418	288 999	10 770

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325520	Adhesive mfg	692	21 737	827 188	12 740	26 497	385 228	3 388 170	3 951 522	7 330 970	240 682
3255201	Natural base glues and adhesives . . .	24	737	31 792	362	783	10 598	85 762	112 098	197 300	4 922
3255204	Synthetic resin and rubber adhesives, including all types of bonding and laminating adhesives	232	11 869	476 049	6 747	14 218	217 240	2 097 710	2 220 025	4 298 846	142 107
3255207	Structural sealants (load-bearing)	15	1 350	48 129	795	1 757	23 689	170 332	371 287	544 558	19 177
325520A	Nonstructural caulking compounds and sealants	90	4 791	175 030	3 034	6 376	87 200	686 296	772 635	1 460 863	47 195

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325520	Adhesives and sealants	N	X	X	7 380 688	N	X	X	5 414 552
3255201	Natural base glues and adhesives	N	X	X	324 534	N	X	X	191 843
32552011	Natural base glues and adhesives	N	X	X	290 084	N	X	X	N
3255201111	Hide (dry forms) animal glues mil lb..	7	X	^q 14.3	17 600	4	X	17.6	15 970
3255201121	Flexible, nonwarp, and liquid animal glues (not glue stock) mil lb..	7	X	S	56 994	12	X	45.8	26 973
3255201131	Protein adhesives, including casein, blood, fish, soybean, albumen, etc. mil lb..	9	X	S	19 370	8	X	57.8	26 220
3255201141	Dextrine vegetable adhesives mil lb..	21	X	S	48 422	17	X	^p 151.1	56 345
3255201151	Starch vegetable adhesives	13	X	X	46 794	13	X	X	33 207
3255201161	Other natural base glues and adhesives made from natural gums, shellac, silicates, lacquers, and oleoresinous varnishes	20	X	X	100 904	10	X	X	24 951
3255201Y	Natural base glues and adhesives, nsk.....	N	X	X	34 450	N	X	X	N
3255201YVW	Natural base glues and adhesives, nsk.....	N	X	X	34 450	N	X	X	8 177
3255204	Synthetic resin and rubber adhesives, including all types of bonding and laminating adhesives	N	X	X	4 327 861	N	X	X	3 595 498
32552041	Epoxy adhesives	N	X	X	433 804	N	X	X	N
3255204111	Epoxy adhesives	55	X	X	433 804	62	X	X	249 301
32552042	Rubber and synthetic resin combinations	N	X	X	312 560	N	X	X	N
3255204271	Rubber and synthetic resin combinations mil lb..	25	X	S	312 560	37	X	767.6	485 124
32552043	Hot melt adhesives, including polyamide, polyolefin, and other hot melts	N	X	X	682 457	N	X	X	N
32552043D1	Hot melt adhesives, including polyamide, polyolefin, and other hot melts mil lb..	44	X	S	682 457	52	X	306.4	363 952
32552044	Adhesive films, all types, including pressure-sensitive structural and nonstructural adhesive films	N	X	X	429 224	N	X	X	N
32552044E1	Adhesive films, all types, including pressure-sensitive structural and nonstructural adhesive films mil lb..	21	X	S	429 224	19	X	N	268 949
32552045	Vinyl type adhesives	N	X	X	579 294	N	X	X	N
3255204541	Polyvinyl acetate adhesives mil lb..	51	X	^q 629.2	405 677	N	X	N	N
3255204551	Polyvinyl chloride and copolymer adhesives mil lb..	12	X	S	99 793	18	X	53.1	45 175
3255204561	Other vinyl polymer type adhesives mil lb..	19	X	S	73 824	19	X	56.1	36 997
32552046	Other synthetic resin and rubber adhesives	N	X	X	1 725 476	N	X	X	N
3255204621	Phenolics and phenolic derivative adhesives, including resorcinol mil lb..	11	X	S	103 899	14	X	1 357.2	212 310
3255204631	Urea and modified urea adhesives mil lb..	10	X	S	130 020	11	X	D	D
3255204681	Acrylic adhesives mil lb..	49	X	^q 410.4	349 152	49	X	^q 262.1	188 870
3255204691	Cyanoacrylate adhesives mil lb..	11	X	34.9	75 510	11	X	58.0	103 217
32552046A1	Polyester adhesives mil lb..	11	X	S	30 786	9	X	77.1	71 991
32552046B1	Urethane adhesives mil lb..	34	X	^p 143.1	209 810	29	X	44.9	68 234
32552046C1	Styrenic adhesives mil lb..	13	X	^p 216.5	143 669	14	X	237.3	130 396
32552046F1	Latex type rubber cement, for sale as such	26	X	X	272 843	25	X	X	99 178
32552046G1	Solvent type rubber cement, for sale as such	35	X	X	180 428	37	X	X	132 918
32552046H1	Other synthetic resin and rubber adhesives, including cellulose, nitrocellulose, polyamide, anaerobic, etc.	42	X	X	229 359	43	X	X	214 345
3255204Y	Synthetic resin and rubber adhesives, including all types of bonding and laminating adhesives, nsk	N	X	X	165 046	N	X	X	N
3255204YVW	Synthetic resin and rubber adhesives, including all types of bonding and laminating adhesives, nsk	N	X	X	165 046	N	X	X	251 615
3255207	Structural sealants (load-bearing)	N	X	X	497 742	N	X	X	344 092
32552071	Structural sealants (load-bearing)	N	X	X	470 267	N	X	X	N
3255207111	Synthetic base general performance structural (load-bearing) sealants (PVAC, butyl, vinyl, acrylic, neoprene, etc.)	16	X	X	108 034	8	X	X	50 703
3255207121	Synthetic base special performance structural (load-bearing) sealants, including polysulfide, silicone, epoxy, urethane, etc. mil lb..	20	X	S	321 259	17	X	149.2	263 890
3255207131	Synthetic base structural (load-bearing) sealant preformed tapes (butyl, polybutene, polyisobutylene, etc.)	3	X	X	40 974	2	X	X	D
3255207Y	Structural sealants (load-bearing), nsk	N	X	X	27 475	N	X	X	N
3255207YVW	Structural sealants (load-bearing), nsk	N	X	X	27 475	N	X	X	D

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325520	Adhesives and sealants—Con.								
325520A	Nonstructural caulking compounds and sealants	N	X	X	1 421 143	N	X	X	863 269
325520A1	Nonstructural caulking compounds and sealants	N	X	X	1 403 830	N	X	X	N
325520A111	Natural base nonstructural (nonload-bearing) caulks, modified and unmodified oil base	21	X	X	77 317	19	X	X	38 228
325520A121	Natural bituminous base (coal tar or asphalt) nonstructural (nonload-bearing) caulking compounds and sealants	18	X	X	63 881	15	X	X	31 005
325520A131	Synthetic base nonstructural (nonload-bearing) general performance sealants (PVC, butyl, vinyl, acrylic, neoprene, etc.) mil lb..	57	X	S	722 577	51	X	489.6	382 471
325520A141	Synthetic base nonstructural (nonload-bearing) special performance sealants, including polysulfide, silicone, epoxy, urethane, etc. mil lb..	44	X	S	484 239	33	X	171.8	265 844
325520A151	Synthetic base nonstructural (nonload-bearing) sealant preformed tapes (butyl, polybutene, polyisobutylene, etc.)	11	X	X	55 816	16	X	X	121 675
325520AY	Nonstructural caulking compounds and sealants, nsk	N	X	X	17 313	N	X	X	N
325520AYWV	Nonstructural caulking compounds and sealants, nsk	N	X	X	17 313	N	X	X	24 046
325520W	Adhesives and sealants, nsk, total	N	X	X	809 408	N	X	X	419 850
325520WY	Adhesives and sealants, nsk, total	N	X	X	809 408	N	X	X	N
325520WYWW	Adhesives and sealants, nsk, for nonadministrative-record establishments	N	X	X	541 016	N	X	X	339 781
325520WYWY	Adhesives and sealants, nsk, administrative-record establishments	N	X	X	268 392	N	X	X	80 069

Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3255201	NATURAL BASE GLUES AND ADHESIVES		
	United States	324 534	191 843
	California	16 968	17 471
	Georgia	22 252	16 886
	Illinois	18 344	34 007
	Massachusetts	24 773	N
	New Jersey	51 193	7 496
	New York	20 050	25 784
	North Carolina	16 373	23 544
	Ohio	27 056	9 116
	Pennsylvania	13 581	N
	Tennessee	8 846	3 759
	Texas	8 442	5 424
3255204	SYNTHETIC RESIN AND RUBBER ADHESIVES, INCLUDING ALL TYPES OF BONDING AND LAMINATING ADHESIVES		
	United States	4 327 861	3 595 498
	California	280 535	263 507
	Connecticut	115 154	125 281
	Florida	27 546	15 570
	Georgia	229 379	187 306
	Illinois	517 177	419 815
	Indiana	47 708	43 743
	Kentucky	140 093	134 934
	Maryland	67 758	61 066
	Massachusetts	172 637	90 294
	Michigan	286 359	154 729

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3255204	SYNTHETIC RESIN AND RUBBER ADHESIVES, INCLUDING ALL TYPES OF BONDING AND LAMINATING ADHESIVES—Con.		
	New Hampshire	29 412	26 792
	New Jersey	224 683	216 652
	New York	163 469	133 787
	North Carolina	15 451	120 254
	Ohio	540 000	493 822
	Pennsylvania	232 146	162 612
	Rhode Island	8 481	N
	South Carolina	102 519	83 756
	Tennessee	92 605	57 830
	Texas	178 948	112 065
	Virginia	67 469	28 987
	Wisconsin	93 377	57 346
3255207	STRUCTURAL SEALANTS (LOAD-BEARING)		
	United States	497 742	344 092
	Kentucky	305 931	N
	Michigan	59 331	N
	Missouri	25 569	N
325520A	NONSTRUCTURAL CAULKING COMPOUNDS AND SEALANTS		
	United States	1 421 143	863 269
	Arizona	2 744	N
	California	119 885	73 480
	Georgia	89 010	41 999
	Illinois	45 230	18 313
	Indiana	28 437	20 079
	Kansas	21 889	N
	Massachusetts	13 787	6 481
	Michigan	97 485	52 789
	Minnesota	15 879	38 345
	Missouri	142 360	117 762
	New Jersey	176 301	79 595
	Ohio	250 598	131 236
	Oklahoma	84 982	N
	Pennsylvania	82 317	54 701
	Texas	77 869	39 885
	Wisconsin	43 344	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325520	ADHESIVE MFG				
32521135	Polyvinyl acetate resins purchased from other establishments	^q 361.4	181 255	360.8	112 071
32521109	All other plastics resins purchased from other establishments	^q 352.1	269 794	569.6	251 311
32521205	Synthetic rubber	S	208 014	203.5	171 943
31122115	Starch and dextrin	S	43 250	104.2	23 946
32510095	Industrial organic chemicals, n.e.c., including synthetic organic	X	676 771	X	641 589
325000A3	Industrial inorganic chemicals	X	323 612	X	112 942
32410015	Refined petroleum products, including mineral oil, naphtha solvents, petrolatum, waxes, etc.	X	238 543	X	227 672
21230003	Nonmetallic minerals and earths, ground or otherwise treated, used as extenders and fillers	X	118 475	X	204 794
32610029	Plastics containers	X	113 939	X	60 488
33240000	Metal containers	X	124 185	X	77 599
32220003	Paper and paperboard boxes and fiber cans, tubes and drums	X	196 142	X	86 617
00970099	All other materials and components, parts, containers, and supplies	X	404 286	X	295 592
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	674 289	X	391 125

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325520 ADHESIVE MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing adhesives, glues, and caulking compounds.

The data published with NAICS code 325520 include the following SIC industry:

2891 Adhesives and sealants

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
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325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
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3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
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			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
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			3253207YVW	2879E00	2879900	325510A000 pt	2851500	2851500
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3253114000	2873200	2873200	325320W	28790	28790			
			325320WYWW	2879000	2879000	325510W pt	28510	28510
3253117	28733	28733	325320WYVY	2879002	2879002			
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3253121000	2874100	2874100	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253124	28742	28742	3254114131	2833323	2833323	3255201131	2891350	2891350
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			3254114151	2833326	2833326	3255201151	2891355	2891355
3253127	28744	28744	3254114161	2833344	2833344	3255201161	2891380	2891380
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			325411WYVW	2833000	2833000	3255204271	2891448	2891448
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325312WYVY	2874002	2874002	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
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3253140131	2875021	2875021				3255204631	2891433	2891433
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3253140161	2875061	2875000 pt	325412A	28344	28344	3255204691	2891454	2891454
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			325412L	28347	28347			
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3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A111	2891711	2891711
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3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A131	2891731	2891731
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A141	2891746	2891746
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A151	2891771	2891771
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3253201D33	2879A33	2879751 pt	325412WYVY pt	2834002	2834002			
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3256124241 pt	2842347 pt	2842346	325620G121	2844715	2844715	3259925101	3861812	3861812
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3256124251 pt	2842350 pt	2842348	325620G211	2844725	2844725	3259925316	3861815	3861815
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			325620G311	2844741	2844741			
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3256124341	2842387	2842385 pt	325620G351	2844761	2844761	3259981	28991 pt	28991 pt
3256124411	2842312	2842311 pt	325620G361	2844765	2844765	3259981100	2899111	2899100 pt
3256124421	2842313	2842311 pt	325620G371	2844771	2844771			
3256124431	2842315	2842315	325620G381	2844775	2844775	3259984	39993	39993
3256124441	2842321	2842321	325620G391	2844781	2844781	3259984100	3999300	3999300
3256124451	2842324	2842326 pt	325620G3A1	2844785	2844785			
			325620G3B1	2844795	2844795	3259987	28994	28994
			325620GYVW	2844700	2844700	3259987111	2899411	2899411
3256124461	2842325	2842326 pt				3259987121	2899431	2899431
3256124471	2842328	2842328	325620W	28440 pt	28440 pt	3259987131	2899497	2899497
3256124481	2842330	2842330	325620WYVW	2844000 pt	2844000 pt	3259987YVW ..		

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

Soap and Other Detergent Manufacturing

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1997 Economic Census

Manufacturing

Industry Series



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Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325611	Soap & other detergent mfg ...	739	807	31 158	1 271 545	18 234	36 942	628 720	10 490 110	7 364 034	17 811 233	465 092
284100	Soap & other detergents	N	799	29 022	1 182 670	16 749	33 870	576 647	9 808 265	6 997 031	16 776 051	447 723
284410	Toilet preparations (pt)	N	8	2 136	88 875	1 485	3 072	52 073	681 845	367 003	1 035 182	17 369

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325611, SOAP & OTHER DETERGENT MFG												
United States	1	807	224	31 158	1 271 545	18 234	36 942	628 720	10 490 110	7 364 034	17 811 233	465 092
California	2	98	24	1 744	54 927	1 005	1 740	25 116	363 741	179 297	546 690	9 273
Georgia	—	33	13	1 567	70 265	869	1 841	33 511	853 361	496 567	1 346 865	25 842
Illinois	—	47	12	1 559	67 049	1 106	2 436	41 306	489 719	267 068	761 178	27 024
Indiana	3	21	9	1 713	85 625	1 052	2 363	50 362	353 547	325 285	671 349	16 099
Mississippi	8	6	2	226	5 835	139	349	2 290	18 829	14 156	32 173	1 597
Missouri	—	35	11	1 858	69 534	1 370	2 659	46 301	1 197 803	467 353	1 661 062	22 346
New Jersey	2	41	23	1 921	93 566	1 150	2 670	44 425	560 570	415 580	973 520	20 376
New York	5	36	6	992	29 036	741	1 503	18 146	98 191	87 479	187 296	6 932
Ohio	—	44	20	3 115	131 785	2 284	4 639	93 573	2 378 649	1 943 470	4 274 415	60 258
Oregon	9	9	1	135	6 059	44	88	1 243	15 393	9 459	24 808	1 664
Pennsylvania	1	38	12	898	27 673	594	1 108	15 944	122 804	131 083	254 896	4 985
South Carolina	2	14	3	186	5 304	130	243	2 954	16 223	38 033	54 214	1 126
Tennessee	6	15	5	619	19 622	258	514	7 136	69 446	55 926	124 721	4 061
Texas	1	64	14	1 152	36 700	698	1 423	18 149	268 737	144 618	418 239	10 058
Washington	1	15	4	151	5 306	73	153	2 256	39 404	14 312	53 784	718
Wisconsin	3	26	9	621	19 758	334	562	8 893	62 636	59 921	121 964	3 865

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325611, SOAP & OTHER DETERGENT MFG		325611, SOAP & OTHER DETERGENT MFG—Con.	
Companies ¹	739	Value added	\$1,000.. 10 490 110
All establishments	807	Total inventories, beginning of year	\$1,000.. 1 180 281
Establishments with 1 to 19 employees	583	Finished goods inventories, beginning of year	\$1,000.. 620 854
Establishments with 20 to 99 employees	163	Work-in-process inventories, beginning of year	\$1,000.. 92 184
Establishments with 100 employees or more	61	Materials and supplies inventories, beginning of year	\$1,000.. 467 243
All employees	31 158	Total inventories, end of year	\$1,000.. 1 239 995
Total compensation ²	1 607 560	Finished goods inventories, end of year	\$1,000.. 678 644
Annual payroll	1 271 545	Work-in-process inventories, end of year	\$1,000.. 77 305
Total fringe benefits	336 015	Materials and supplies inventories, end of year	\$1,000.. 484 046
Production workers, average for year	18 234	Gross book value of total assets at beginning of year	\$1,000.. 5 481 371
Production workers on March 12	18 291	Total capital expenditures (new and used)	\$1,000.. 465 092
Production workers on May 12	18 214	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 66 669
Production workers on August 12	18 147	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 398 423
Production workers on November 12	18 284	Total retirements ²	\$1,000.. 153 328
Production-worker hours	36 942	Gross book value of total assets at end of year	\$1,000.. 5 793 135
Production-worker wages	628 720	Total depreciation during year ²	\$1,000.. 300 455
Total cost of materials	7 364 034	Total rental payments ²	\$1,000.. 231 266
Cost of materials, parts, containers, etc., consumed	6 125 097	Buildings and other structures rental payments ²	\$1,000.. 45 733
Cost of resales	1 092 732	Machinery and equipment rental payments ²	\$1,000.. 185 533
Cost of fuels	43 205	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 21 211
Cost of purchased electricity	57 745	Response coverage ratio ⁴	percent.. 80
Cost of contract work	45 255	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 66 860
Quantity of electricity purchased for heat and power	1 096 845	Response coverage ratio ⁴	percent.. 80
Quantity of electricity generated less sold for heat and power	D	Cost of purchased communications services ³	\$1,000.. 26 621
Total value of shipments	17 811 233	Response coverage ratio ⁴	percent.. 80
Primary products value of shipments	12 395 125	Cost of purchased legal services ³	\$1,000.. 20 059
Secondary products value of shipments	3 044 041	Response coverage ratio ⁴	percent.. 80
Total miscellaneous receipts	2 372 067	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 6 304
Value of resales	2 305 091	Response coverage ratio ⁴	percent.. 80
Contract receipts	D	Cost of purchased advertising services ³	\$1,000.. 43 988
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent.. 80
Primary products specialization ratio	80	Cost of purchased software and other data processing services ³	\$1,000.. 8 561
Value of primary products shipments made in all industries	14 375 206	Response coverage ratio ⁴	percent.. 80
Value of primary products shipments made in this industry	12 395 125	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 9 715
Value of primary products shipments made in other industries	1 980 081	Response coverage ratio ⁴	percent.. 80
Coverage ratio	86		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325611. SOAP & OTHER DETERGENT MFG												
All establishments	1	807	224	31 158	1 271 545	18 234	36 942	628 720	10 490 110	7 364 034	17 811 233	465 092
Establishments with 1 to 4 employees	9	291	—	611	15 555	404	622	9 260	74 552	58 139	132 962	5 148
Establishments with 5 to 9 employees	8	160	—	1 134	33 198	635	1 124	17 695	144 035	114 912	260 441	10 263
Establishments with 10 to 19 employees	5	132	—	1 818	57 613	953	1 744	26 802	235 477	175 707	415 169	12 451
Establishments with 20 to 49 employees	3	114	114	3 410	119 554	1 829	3 667	50 749	508 338	360 469	871 632	21 728
Establishments with 50 to 99 employees	1	49	49	3 408	126 595	1 870	3 719	52 576	646 380	603 171	1 250 406	29 830
Establishments with 100 to 249 employees	1	36	36	5 740	230 560	3 420	7 245	117 366	2 056 173	1 359 736	3 405 078	83 427
Establishments with 250 to 499 employees	—	19	19	6 464	282 598	4 806	10 435	186 250	4 347 198	2 850 122	7 148 590	119 948
Establishments with 500 to 999 employees	1	4	4	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	1	1	D	D	D	D	D	D	D	D	D
Administrative records ²	9	446	—	2 491	62 465	1 449	2 378	37 915	305 175	239 446	547 932	21 901

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325611	Soap & other detergent mfg	807	31 158	1 271 545	18 234	36 942	628 720	10 490 110	7 364 034	17 811 233	465 092
3256111	Commercial, industrial, and institutional soaps and detergents, except specialty cleaners	200	7 970	305 899	3 841	7 692	108 512	1 428 653	1 017 229	2 451 813	66 495
3256114	Household detergents	48	12 867	586 045	7 437	15 123	283 976	6 935 332	4 574 190	11 461 430	297 078
3256117	Household soaps, except specialty cleaners	17	3 209	144 458	2 439	5 474	100 454	765 813	845 878	1 615 774	41 334
325611A	Glycerin, natural	1	D	D	D	D	D	D	D	D	D
325611D	Toothpaste, including gels and toothpowder	7	1 956	74 933	1 452	3 006	50 849	642 302	309 034	940 169	16 427

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325611	Soaps and other detergents	N	X	X	14 375 206	N	X	X	N
3256111	Commercial, industrial, and institutional soaps and detergents, except specialty cleaners	N	X	X	2 297 099	N	X	X	2 222 011
32561111	Commercial, industrial, and institutional hard surface cleaners, dry, liquid, and aerosol	N	X	X	449 984	N	X	X	N
325611111	Dry hard surface commercial, industrial, and institutional cleaners	27	X	D	D	N	X	N	N
325611112	Liquid hard surface commercial, industrial, and institutional cleaners	106	X	86.5	306 926	N	X	N	N
325611113	Aerosol hard surface commercial, industrial, and institutional cleaners	10	X	D	D	N	X	N	N
32561112	Commercial, industrial, and institutional laundry detergents	N	X	X	290 610	N	X	X	N
325611121	Commercial, industrial, and institutional dry laundry detergents	33	X	S	60 662	N	X	N	N
325611122	Commercial, industrial, and institutional liquid laundry detergents	41	X	28.7	229 948	N	X	N	N
32561113	Commercial, industrial and institutional dishwashing compounds	N	X	X	287 801	N	X	X	N
325611131	Commercial, industrial, and institutional dry dishwashing compounds	24	X	D	D	N	X	N	N
325611132	Commercial, industrial, and institutional liquid dishwashing compounds	40	X	D	D	N	X	N	N
32561114	Commercial, industrial, and institutional metal cleaners	N	X	X	211 272	N	X	X	N
325611141	Commercial, industrial, and institutional metal cleaners	45	X	188.9	211 272	N	X	N	N
32561115	Commercial, industrial, and institutional scouring cleaners	N	X	X	13 222	N	X	X	N
325611151	Commercial, industrial, and institutional scouring cleaners	13	X	33.1	13 222	N	X	N	N
32561116	Dairy, farm, and food plant cleaners, sanitizers, etc.	N	X	X	128 741	N	X	X	N
325611161	Dairy, farm, and food plant cleaners, sanitizers, etc.	33	X	40.0	128 741	N	X	N	N
32561117	All other commercial, industrial, and institutional soaps and cleaners, including dry cleaners, liquid, dry, and aerosol	N	X	X	665 897	N	X	X	N
325611171	Commercial, industrial, and institutional soap chips, flakes, granules, powders, and sprays, including washing powders, except specialty cleaners	28	X	135.6	91 888	36	X	157.4	84 270
325611172	Commercial, industrial, and institutional liquid (potash and other) soaps, excluding shampoos and specialty cleaners	55	X	S	275 279	53	X	81.0	187 727
325611173	Other commercial, industrial, and institutional soaps, including mechanics' hand soap, except specialty cleaners	28	X	134.4	114 894	30	X	177.4	69 394
325611174	All other commercial, industrial, and institutional cleaners, including dry cleaners, liquid, dry, and aerosol	70	X	X	183 836	N	X	X	N
3256111Y	Soaps and detergents, commercial, industrial, and institutional, nsk	N	X	X	249 572	N	X	X	N
3256111YWV	Soaps and detergents, commercial, industrial, and institutional, nsk	N	X	X	249 572	N	X	X	258 165
3256114	Household detergents	N	X	X	7 175 286	N	X	X	6 033 766
32561141	Household dry laundry detergents, light-duty, and heavy-duty phosphate based	N	X	X	79 447	N	X	X	N
325611411	Household dry laundry detergents, light-duty	5	X	D	D	8	X	S	7 363
325611412	Household dry laundry detergents, heavy-duty, phosphate based	6	X	D	D	22	X	1 264.8	920 596
32561142	Household dry laundry detergents, heavy-duty, phosphate free	N	X	X	2 591 482	N	X	X	N
325611421	Household dry laundry detergents, heavy-duty, phosphate free	14	X	3 658.1	2 591 482	24	X	2 869.9	1 868 708
32561143	Household liquid laundry detergents, light-duty	N	X	X	875 509	N	X	X	N
325611431	Household liquid laundry detergents, light-duty	10	X	126.0	875 509	21	X	141.1	729 838
32561144	Household liquid laundry detergents, heavy-duty	N	X	X	2 065 890	N	X	X	N
325611441	Household liquid laundry detergents, heavy-duty	18	X	342.4	2 065 890	23	X	274.6	1 309 052

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325611	Soaps and other detergents—Con.								
3256114	Household detergents—Con.								
32561145	Other household detergents	N	X	X	1 250 181	N	X	X	N
3256114511	Household liquid alkaline automatic dishwashing detergents mil gal..	7	X	151.9	199 924	14	X	19.7	53 638
3256114521	Household dry alkaline automatic dishwashing detergents mil lb..	8	X	1 290.4	450 952	15	X	765.9	286 536
3256114531	Household liquid alkaline hard surface cleaners, including general-purpose cleaners and degreasers mil gal..	35	X	S	377 598	65	X	N	N
3256114541	Household aerosol alkaline hard surface cleaners, including general-purpose cleaners and degreasers mil gal..	2	X	D	D	8	X	N	N
3256114551	Household dry alkaline hard surface cleaners, including general-purpose cleaners and degreasers mil lb..	3	X	D	D	4	X	N	N
3256114561	Household liquid alkaline scouring cleaners mil gal..	3	X	D	D	6	X	N	N
3256114571	Household dry alkaline scouring cleaners mil lb..	2	X	D	D	5	X	N	N
3256114581	All other household alkaline detergents	5	X	X	13 579	4	X	X	4 303
3256114591	Household laundry presoaks mil lb..	3	X	D	D	10	X	68.1	72 727
3256114Y	Household detergents, nsk	N	X	X	312 777	N	X	X	N
3256114YVV	Household detergents, nsk	N	X	X	312 777	N	X	X	63 401
3256117	Household soaps, except specialty cleaners (including toilet soaps, medicated and mechanics' soap, etc.)	N	X	X	1 850 017	N	X	X	1 969 621
32561171	Household deodorant bar soaps (except novelty), excluding medicated	N	X	X	742 106	N	X	X	N
3256117111	Household deodorant bar soaps (except novelty), excluding medicated mil lb..	12	X	S	742 106	21	X	S	986 357
32561172	Household nondeodorant bar soaps (except novelty), excluding medicated	N	X	X	412 945	N	X	X	N
3256117211	Household nondeodorant bar soaps (except novelty), excluding medicated mil lb..	16	X	P386.1	412 945	30	X	S	602 625
32561173	Other household soaps, including mechanics' hand soaps (except waterless), and medicated soaps	N	X	X	553 655	N	X	X	N
3256117311	Household novelty bar soaps, excluding medicated mil lb..	12	X	D	D	15	X	P29.3	75 449
3256117321	Household liquid toilet soaps, excluding medicated mil gal..	27	X	S	369 896	27	X	S	221 583
3256117331	Other household soaps, including mechanics' hand soaps (except waterless), and medicated soaps	7	X	X	D	20	X	X	80 311
3256117Y	Soaps, except specialty cleaners, household, nsk	N	X	X	141 311	N	X	X	N
3256117YVV	Soaps, except specialty cleaners, household, nsk	N	X	X	141 311	N	X	X	3 296
325611A	Glycerin, natural	N	X	X	265 942	N	X	X	138 279
325611A1	Glycerin, natural	N	X	X	265 942	N	X	X	N
325611A111	Crude glycerin, natural, 100-percent basis mil lb..	5	X	126.9	96 136	7	X	103.8	34 555
325611A121	High-gravity, dynamite, yellow distilled natural glycerin, and chemically pure natural glycerine, 100-percent basis mil lb..	5	X	267.3	169 806	N	X	N	N
325611AY	Glycerin, natural, nsk	N	X	X	—	N	X	X	N
325611AYVV	Glycerin, natural, nsk	N	X	X	—	N	X	X	—
325611D	Toothpaste, including gels and toothpowder	N	X	X	1 402 521	N	X	X	N
325611D1	Toothpaste, including gels and toothpowder	N	X	X	1 402 521	N	X	X	N
325611D100	Toothpaste, including gels and toothpowder	21	X	X	1 402 521	N	X	X	N
325611W	Soap and other detergents, nsk, total	N	X	X	1 384 341	N	X	X	N
325611WY	Soap and other detergents, nsk, total	N	X	X	1 384 341	N	X	X	N
325611WYWW	Soap and other detergents, nsk, for nonadministrative-record establishments	N	X	X	870 942	N	X	X	N
325611WYWY	Soap and other detergents, nsk, for administrative-record establishments	N	X	X	513 399	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3256111	COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL SOAPS AND DETERGENTS, EXCEPT SPECIALTY CLEANERS		
	United States	2 297 099	2 222 011
	California	264 620	263 049
	Connecticut	13 785	N
	Florida	16 859	15 424
	Georgia	277 016	193 414
	Illinois	331 727	269 397
	Indiana	65 670	52 376
	Kansas	40 945	36 797
	Louisiana	6 285	N
	Maryland	4 349	N
	Massachusetts	30 205	40 179
	Michigan	56 799	149 214
	Minnesota	46 146	29 527
	Missouri	92 317	67 203
	New Jersey	280 207	294 139
	New York	16 715	31 143
	Ohio	238 358	206 535
	Pennsylvania	39 788	94 850
	Texas	211 833	190 098
	Washington	24 330	N
	Wisconsin	69 453	80 992
3256114	HOUSEHOLD DETERGENTS		
	United States	7 175 286	6 033 766
	California	36 493	529 543
	Illinois	43 894	123 774
	Indiana	55 110	N
	Missouri	972 773	720 910
	New Jersey	204 005	65 825
	Pennsylvania	103 177	N
	Texas	32 690	135 758
3256117	HOUSEHOLD SOAPS, EXCEPT SPECIALTY CLEANERS (INCLUDING TOILET SOAPS, MEDICATED AND MECHANICS' SOAP, ETC.)		
	United States	1 850 017	1 969 621
	New Jersey	25 055	14 279
	New York	6 624	5 861
	Ohio	364 607	456 649
325611A	GLYCERIN, NATURAL		
	United States	265 942	138 279
325611D	TOOTHPASTE, INCLUDING GELS AND TOOTHPOWDER		
	United States	1 402 521	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325611	SOAP & OTHER DETERGENT MFG				
32561303	Bulk surface active intermediates (active wt.)	173.4	80 161	490.7	256 972
32561305	Bulk surface active agents primarily for detergent purposes (active wt.), except intermediates	S	556 210	499.1	266 706
32561307	Other bulk surface active agents (emulsifiers, wetting agents, penetrants, etc.) (active wt.), except intermediates	P65.6	39 086	85.3	42 773
32561100	Glycerin (100 percent)	D	D	N	N
31120013	Vegetable oil	D	D	N	N
32562000	Perfume oil mixtures and blends	42.1	238 748	N	N
32519901	Fatty acids	230.2	123 959	299.9	102 128
31161301	Grease and inedible tallow	785.4	159 066	765.3	130 164
32518103	Chlorine (100 percent Cl basis)	S	6 114	S	9 284
32518105	Sodium carbonate (soda ash) (58 percent Na2O)	q772.6	100 624	713.3	96 182
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	726.4	93 165	470.3	104 158
32518821	Sodium tripolyphosphate (STPP) (100 percent NaP0)	160.0	85 745	259.8	153 680
32518819	All other potassium and sodium compounds	X	228 146	X	281 294
32410013	Refined petroleum products, including mineral oil, naphtha solvents, petrolatum, waxes, etc.	X	74 669	X	32 051
32500005	All other organic and inorganic chemicals	X	1 521 780	X	N

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1997 and 1992—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325611	SOAP & OTHER DETERGENT MFG—Con.				
32310003	Labels, coupons, instructions, and other printed material	X	76 955	X	70 180
32221001	Paperboard containers, boxes, and corrugated paperboard	X	543 493	X	563 843
32240000	Metal containers	X	32 146	X	N
32610029	Plastics containers	X	498 937	X	N
32610037	Fabricated plastics products, including dispensing pumps and trigger and mist sprayers; except containers	X	88 312	X	N
00970099	All other materials and components, parts, containers, and supplies	X	474 907	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	948 398	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nisk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

Appendix B.

NAICS Codes, Titles, and Descriptions

325611 SOAP AND OTHER DETERGENT MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing and packaging soaps and other detergents, such as laundry detergents; dishwashing detergents; toothpaste gels, and tooth powders; and natural glycerin.

The data published with NAICS code 325611 include the following SIC industries:

- 2841 Soap and other detergents
- 2844 Toilet preparations (pt)

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
			3254114	28333	28333	3255201	28913	28913
3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312W	28740	28740				32552044E1	2891471	2891471
325312WYWW	2874000	2874000	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
325312WYVY	2874002	2874002	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
						3255204551	2891445	2891445
3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046B1	2891457	2891457
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
			325412G000	2834600	2834600	3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt	325412L	28347	28347			
			325412L000	2834700	2834700	3255207	28916	28916
3253201 pt	2879A pt	28797 pt				3255207111	2891610	2891610
			325412P	28348	28348	3255207121	2891625	2891625
3253201111	2879A pt	28798 pt	325412P000	2834800	2834800	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt				3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt	325412T	28349	28349			
3253201725	2879A25	2879665 pt	325412T000	2834900	2834900	325520A	28917	28917
3253201A15	2879A15	2879561 pt				325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt	325412V	28352	28352	325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412VYVW	2835200	2835200	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt						
			325412W pt	28340	28340	325520W	28910	28910
3253201A43	2879A43	2879818 pt	325412W pt	28350 pt	28350 pt	325520WYVW	2891000	2891000
3253201A45	2879A45	2879822 pt	325412WYVW pt	2834000	2834000	325520WYVY	2891002	2891002
3253201A47	2879A47	2879885 pt	325412WYVW pt	2835000 pt	2835000 pt			
3253201D31	2879A31	2879721 pt	325412WYVY pt	2834002	2834002	3256111	28411	28411
3253201D33	2879A33	2879751 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879500 pt				3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841143 pt
3253201YVW pt	2879A00 pt	2879700 pt				3256111121 pt	2841122 pt	2841125 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
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3253204 pt	2879C pt	28795 pt	3254130221	2835115	2835115	3256111121 pt	2841122 pt	2841146 pt
			3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841149 pt
3253204 pt	2879C pt	28796 pt	3254130341	2835125	2835125	3256111121 pt	2841122 pt	2841178 pt
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3253204 pt	2879C pt	28797 pt	3254130461	2835135	2835135	3256111131 pt	2841127 pt	2841145 pt
			3254130571	2835140	2835140			
3253204 pt	2879C pt	28798 pt	3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
3253204113	2879C13	2879541 pt	3254130YVW pt	2835100	2835100	3256111131 pt	2841127 pt	2841178 pt
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3253204117	2879C17	2879581 pt				3256111211 pt	2841129 pt	2841143 pt
3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
3253204129	2879C29	2879685 pt				3256111311 pt	2841131 pt	2841123
3253204131	2879C31	2879721 pt				3256111311 pt	2841131 pt	2841141 pt
			3254144	28362	28362			
3253204133	2879C33	2879751 pt	3254144100	2836200	2836200	3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841141 pt
			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422			
3253207	2879E	28799	325414A241	2836430	2836430	3256111411 pt	2841133 pt	2841145 pt
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3253207113	2879E13	2879924				3256111411 pt	2841133 pt	2841146 pt
3253207121	2879E21	2879912	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	3256111411 pt	2841133 pt	284117

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U.S. Census Bureau, 1997 Economic Census

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Manufacturing

Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325612	Polish & other sanitation good mfg	676	728	21 989	724 639	14 132	28 728	360 261	5 149 703	3 190 242	8 369 528	153 693
284200	Polishes & sanitation goods ...	N	728	21 989	724 639	14 132	28 728	360 261	5 149 703	3 190 242	8 369 528	153 693

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325612, POLISH & OTHER SANITATION GOOD MFG												
United States	1	728	212	21 989	724 639	14 132	28 728	360 261	5 149 703	3 190 242	8 369 528	153 693
California	2	83	23	1 669	51 217	1 185	2 511	28 234	294 558	240 712	534 647	12 807
Florida	4	49	8	539	14 038	366	786	8 039	75 234	66 099	141 604	2 020
Georgia	—	29	10	1 313	39 933	724	1 636	18 683	347 235	226 500	575 940	9 714
Illinois	1	47	15	1 595	50 225	897	1 981	20 982	574 650	300 150	881 236	9 668
Kentucky	—	6	1	115	4 427	91	191	2 532	14 984	13 729	29 243	421
Massachusetts	5	17	4	315	12 114	158	327	4 477	72 644	47 657	120 713	2 402
New Jersey	1	28	11	1 295	41 626	916	1 982	25 899	417 250	218 238	636 532	7 435
New York	4	50	14	1 121	31 394	715	1 343	15 105	104 554	86 220	192 612	2 047
Ohio	—	29	14	2 255	81 418	1 363	2 824	29 544	417 610	252 663	669 847	14 301
Pennsylvania	1	36	14	1 174	34 049	791	1 414	15 925	87 143	105 458	193 289	7 328
Tennessee	2	15	4	439	9 728	317	614	4 816	35 200	34 083	68 333	5 319
Texas	2	52	13	927	26 759	522	1 011	11 738	152 042	120 557	273 882	2 906
Virginia	3	9	2	129	3 853	71	154	1 668	10 304	11 045	21 260	644
Wisconsin	—	23	12	2 389	115 410	1 554	3 052	63 919	1 388 674	670 011	2 078 967	32 657

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325612, POLISH & OTHER SANITATION GOOD MFG		325612, POLISH & OTHER SANITATION GOOD MFG—Con.	
Companies ¹ number..	676	Value added \$1,000..	5 149 703
All establishments number..	728	Total inventories, beginning of year \$1,000..	574 134
Establishments with 1 to 19 employees number..	516	Finished goods inventories, beginning of year \$1,000..	308 949
Establishments with 20 to 99 employees number..	162	Work-in-process inventories, beginning of year \$1,000..	39 440
Establishments with 100 employees or more number..	50	Materials and supplies inventories, beginning of year \$1,000..	225 745
All employees number..	21 989	Total inventories, end of year \$1,000..	554 749
Total compensation ² \$1,000..	897 026	Finished goods inventories, end of year \$1,000..	286 622
Annual payroll \$1,000..	724 639	Work-in-process inventories, end of year \$1,000..	32 184
Total fringe benefits \$1,000..	172 387	Materials and supplies inventories, end of year \$1,000..	235 943
Production workers, average for year number..	14 132	Gross book value of total assets at beginning of year \$1,000..	1 800 727
Production workers on March 12 number..	14 124	Total capital expenditures (new and used) \$1,000..	153 693
Production workers on May 12 number..	14 201	Capital expenditures for buildings and other structures (new and used) \$1,000..	26 398
Production workers on August 12 number..	14 029	Capital expenditures for machinery and equipment (new and used) \$1,000..	127 295
Production workers on November 12 number..	14 174	Total retirements ² \$1,000..	33 220
Production-worker hours 1,000..	28 728	Gross book value of total assets at end of year \$1,000..	1 921 200
Production-worker wages \$1,000..	360 261	Total depreciation during year ² \$1,000..	119 495
Total cost of materials \$1,000..	3 190 242	Total rental payments ² \$1,000..	47 714
Cost of materials, parts, containers, etc., consumed \$1,000..	2 402 085	Buildings and other structures rental payments ² \$1,000..	25 117
Cost of resales \$1,000..	683 589	Machinery and equipment rental payments ² \$1,000..	22 597
Cost of fuels \$1,000..	13 411	Cost of purchased services for the repair of buildings and other structures ³ \$1,000..	6 324
Cost of purchased electricity \$1,000..	28 361	Response coverage ratio ⁴ percent..	77
Cost of contract work \$1,000..	62 796	Cost of purchased services for the repair of machinery and equipment ³ \$1,000..	25 561
Quantity of electricity purchased for heat and power 1,000 kWh..	458 663	Response coverage ratio ⁴ percent..	77
Quantity of electricity generated less sold for heat and power 1,000 kWh..	—	Cost of purchased communications services ³ \$1,000..	11 923
Total value of shipments \$1,000..	8 369 528	Response coverage ratio ⁴ percent..	77
Primary products value of shipments \$1,000..	5 878 494	Cost of purchased legal services ³ \$1,000..	11 273
Secondary products value of shipments \$1,000..	1 162 908	Response coverage ratio ⁴ percent..	77
Total miscellaneous receipts \$1,000..	1 328 126	Cost of purchased accounting and bookkeeping services ³ \$1,000..	5 151
Value of resales \$1,000..	1 294 171	Response coverage ratio ⁴ percent..	77
Contract receipts \$1,000..	23 766	Cost of purchased advertising services ³ \$1,000..	87 674
Other miscellaneous receipts \$1,000..	10 189	Response coverage ratio ⁴ percent..	77
Primary products specialization ratio percent..	83	Cost of purchased software and other data processing services ³ \$1,000..	5 909
Value of primary products shipments made in all industries \$1,000..	8 157 817	Response coverage ratio ⁴ percent..	77
Value of primary products shipments made in this industry \$1,000..	5 878 494	Cost of purchased refuse removal (including hazardous waste) services ³ \$1,000..	5 920
Value of primary products shipments made in other industries \$1,000..	2 279 323	Response coverage ratio ⁴ percent..	77
Coverage ratio percent..	72		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325612, POLISH & OTHER SANITATION GOOD MFG												
All establishments	1	728	212	21 989	724 639	14 132	28 728	360 261	5 149 703	3 190 242	8 369 528	153 693
Establishments with 1 to 4 employees	9	294	—	590	16 138	446	676	8 477	54 902	49 717	105 960	1 844
Establishments with 5 to 9 employees	7	127	—	846	23 920	536	945	11 494	69 726	72 616	144 355	2 663
Establishments with 10 to 19 employees	2	95	—	1 307	38 685	797	1 431	17 116	177 739	150 934	330 321	6 476
Establishments with 20 to 49 employees	3	100	100	3 119	97 159	1 848	3 671	42 708	394 251	338 639	734 532	14 839
Establishments with 50 to 99 employees	2	62	62	4 399	141 655	2 818	5 945	70 281	865 215	581 154	1 454 523	25 089
Establishments with 100 to 249 employees	—	35	35	5 143	165 159	3 353	7 162	82 734	1 531 243	945 477	2 477 848	27 709
Establishments with 250 to 499 employees	—	12	12	3 803	108 097	2 497	5 149	60 698	624 950	436 132	1 060 084	38 582
Establishments with 500 to 999 employees	4	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	364	—	1 305	33 133	916	1 448	17 660	111 593	102 397	216 474	3 944

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325612	Polish & other sanitation good mfg	728	21 989	724 639	14 132	28 728	360 261	5 149 703	3 190 242	8 369 528	153 693
3256121	Chlorine and other inorganic bleaching compounds, household (sodium hypochlorite, etc., 100 percent Cl equivalent)	27	1 418	48 910	1 000	2 105	31 264	854 279	540 435	1 393 114	12 843
3256124	Specialty cleaning and sanitation products	150	11 879	398 635	7 482	15 144	204 299	3 216 406	1 814 744	5 041 232	104 893
3256127	Polishing preparations and related products	80	3 827	139 235	2 411	5 211	56 050	575 281	420 068	1 005 401	20 018

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325612	Polishes and sanitation goods	N	X	X	8 157 817	N	X	X	6 476 621
3256121	Chlorine and other inorganic bleaching compounds, household (sodium hypochlorite, etc., 100 percent Cl equivalent) @	N	X	X	1 002 094	N	X	X	946 062
32561211	Chlorine and other inorganic bleaching compounds, household, (sodium hypochlorite, etc., 100 percent Cl equivalent)	N	X	X	991 382	N	X	X	N
3256121111	Chlorine bleaching compounds, household, liquid (sodium hypochlorite, etc., less than 7 percent available chlorine or equivalent oxidizing value, 100 percent Cl equivalent)	27	X	P242.2	797 299	N	X	N	N
3256121121	Nonchlorine bleaching compounds, household, liquid (hydrogen peroxide, etc., less than 7 percent available chlorine or equivalent oxidizing value, 100 percent Cl equivalent)	8	X	S	15 841	N	X	N	N
3256121131	Chlorine bleaching compounds, household, dry (chlorinated isocyanurates, etc., less than 50 percent available chlorine or equivalent oxidizing value, 100 percent Cl equivalent)	7	X	52.0	115 288	N	X	N	N
3256121141	Nonchlorine bleaching compounds, household, dry (sodium perborate, etc., less than 50 percent available chlorine or equivalent oxidizing value, 100 percent Cl equivalent)	7	X	S	62 954	N	X	N	N
3256121Y	Chlorine and other inorganic bleaching compounds, household (sodium hypochlorite, etc., 100 percent Cl equivalent) nsk	N	X	X	10 712	N	X	X	N
3256121YVV	Chlorine and other inorganic bleaching compounds, household (sodium hypochlorite, etc., 100 percent Cl equivalent) nsk	N	X	X	10 712	N	X	X	13 521
3256124	Specialty cleaning and sanitation products	N	X	X	5 161 093	N	X	X	3 661 488
32561241	Disinfectants, nonagricultural, industrial and institutional	N	X	X	193 619	N	X	X	N
3256124111	Disinfectants, nonagricultural, industrial and institutional	74	X	X	193 619	N	X	X	N
32561242	Laundry aids	N	X	X	1 274 263	N	X	X	N
3256124211	Dry laundry fabric softeners and rinses (except dryer sheets)	2	X	X	504	N	X	X	N
3256124221	Household liquid laundry fabric softeners and rinses	19	X	X	D	35	X	X	538 042
3256124231	Industrial and institutional liquid laundry fabric softeners and rinses	10	X	X	D	N	X	X	N
3256124241	Laundry dryer sheets	7	X	X	469 118	N	X	X	N
3256124251	Laundry starch preparations, including permanent types	11	X	X	48 956	N	X	X	N
3256124261	Other laundry aids, including ironing aids and drycleaning spotting preparations	14	X	X	38 543	N	X	X	N
32561243	Air and room fresheners	N	X	X	713 081	N	X	X	N
3256124311	Air and room fresheners, aerosol-type, household	14	X	X	176 482	N	X	X	N
3256124321	Air and room fresheners, aerosol-type, industrial and institutional	15	X	X	18 039	N	X	X	N
3256124331	Other air and room fresheners (except potpourri), household	22	X	X	472 123	N	X	X	N
3256124341	Other air and room fresheners (except potpourri), industrial and institutional	21	X	X	46 437	N	X	X	N
32561244	Other specialty cleaning products, including glass window preparations, toilet bowl cleaners, and rug cleaners, etc.	N	X	X	2 535 698	N	X	X	N
3256124411	Glass window cleaning preparations, except automotive windshield washer fluid, household	23	X	X	263 946	N	X	X	N
3256124421	Glass window cleaning preparations, except automotive windshield washer fluid, industrial and institutional	31	X	X	24 390	N	X	X	N
3256124431	Automotive windshield washer fluid	14	X	X	39 036	21	X	X	29 458
3256124441	Oven cleaners	20	X	X	104 023	23	X	X	64 541
3256124451	Toilet bowl cleaners, household	17	X	X	249 729	N	X	X	N
3256124461	Toilet bowl cleaners, industrial and institutional	30	X	X	38 951	N	X	X	N
3256124471	Drain pipe solvents	23	X	X	180 039	31	X	X	131 132
3256124481	Bathroom, tub, and tile cleaners	42	X	X	437 262	47	X	X	124 925
3256124491	Disinfectants, nonagricultural, household	23	X	X	D	N	X	X	N
32561244E1	Rug and upholstery cleaners, consumer-type preparations	25	X	X	131 234	32	X	X	149 199

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325612	Polishes and sanitation goods—Con.								
3256124	Specialty cleaning and sanitation products—Con.								
32561244	Other specialty cleaning products, including glass window preparations, toilet bowl cleaners, and rug cleaners, etc.—Con.								
32561244F1	Rug and upholstery cleaners, industrial- and institutional-type preparations	35	X	X	49 538	34	X	X	23 411
32561244G1	Household ammonia	9	X	X	10 835	15	X	X	17 078
32561244H1	Cat litter, except natural and untreated materials	8	X	X	D	7	X	X	D
32561244J1	Other specialty detergents, including sweeping compounds, waterless hand cleaners, wallpaper cleaners, etc.	88	X	X	524 529	N	X	X	N
3256124Y	Specialty cleaning and sanitation products, nsk	N	X	X	444 432	N	X	X	N
3256124YWV	Specialty cleaning and sanitation products, nsk	N	X	X	444 432	N	X	X	199 331
3256127	Polishing preparations and related products (including automobile, floor, and metal polishes)	N	X	X	1 063 788	N	X	X	1 086 467
32561271	Polishing preparations and related products	N	X	X	997 770	N	X	X	N
3256127111	Automobile body polish and cleaners, household	20	X	X	178 292	N	X	X	N
3256127121	Automobile body polish and cleaners, industrial and institutional	40	X	X	98 554	N	X	X	N
3256127131	Furniture polish and cleaners, household	11	X	X	164 605	N	X	X	N
3256127141	Furniture polish and cleaners, industrial and institutional	13	X	X	19 407	N	X	X	N
3256127151	Floor polish, water emulsion, household	16	X	7.9	79 952	N	X	N	N
3256127161	Floor polish, water emulsion, industrial and institutional	66	X	S	169 778	N	X	N	N
3256127171	Floor polish, liquid (nonemulsion)	12	X	S	6 690	21	X	19.1	35 146
3256127181	Floor polish other than liquid form, including paste and cake	3	X	S	838	7	X	S	3 823
3256127191	Shoe polishes and cleaners	7	X	X	8 877	11	X	X	99 864
32561271A1	Leather dressings and finishes, excluding shoe polish	14	X	S	64 179	20	X	S	50 960
32561271B1	Other polishing preparations and related products, including metal polish and polishing cloths and papers	41	X	X	206 598	62	X	X	136 372
3256127Y	Polishing preparations and related products, nsk	N	X	X	66 018	N	X	X	N
3256127YWV	Polishing preparations and related products, nsk	N	X	X	66 018	N	X	X	38 109
325612W	Polishes and sanitation goods, nsk, total	N	X	X	930 842	N	X	X	782 604
325612WY	Polishes and sanitation goods, nsk, total	N	X	X	930 842	N	X	X	N
325612WYWW	Polishes and sanitation goods, nsk, for nonadministrative-record establishments	N	X	X	738 605	N	X	X	689 356
325612WYWY	Polishes and sanitation goods, nsk, for administrative-record establishments	N	X	X	192 237	N	X	X	93 248

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3256121	CHLORINE AND OTHER INORGANIC BLEACHING COMPOUNDS, HOUSEHOLD (SODIUM HYPOCHLORITE, ETC., 100 PERCENT CL EQUIVALENT) @		
	United States	1 002 094	946 062
	California.....	102 185	121 101
	Florida.....	52 459	51 303
	New Jersey.....	38 199	N
3256124	Ohio.....	28 101	N
	SPECIALTY CLEANING AND SANITATION PRODUCTS		
	United States	5 161 093	3 661 488
	California.....	145 441	204 533
	Colorado.....	9 026	N
3256127	Connecticut.....	15 882	N
	Florida.....	10 694	41 123
	Georgia.....	313 327	247 011
	Illinois.....	302 058	391 106
	Indiana.....	57 682	37 076
	Iowa.....	20 379	N
	Kentucky.....	18 044	N
	Louisiana.....	5 339	6 012
	Maryland.....	84 433	122 677
	Massachusetts.....	32 183	48 745
	Michigan.....	185 128	86 553
	Minnesota.....	70 392	66 794
	Missouri.....	406 455	338 676
	New Jersey.....	478 218	316 157
	New York.....	77 969	101 634
	North Carolina.....	93 283	39 509
	Ohio.....	1 371 875	663 077
	Oklahoma.....	8 076	N
	Oregon.....	4 602	5 713
	Pennsylvania.....	110 064	84 688
	South Carolina.....	5 281	N
	Tennessee.....	88 064	47 402
	Texas.....	90 917	109 929
	Virginia.....	18 177	6 109
	Wisconsin.....	851 216	441 009
3256127	POLISHING PREPARATIONS AND RELATED PRODUCTS (INCLUDING AUTOMOBILE, FLOOR, AND METAL POLISHES)		
	United States	1 063 788	1 086 467
	California.....	62 742	74 949
	Connecticut.....	15 546	N
	Georgia.....	46 337	59 255
	Illinois.....	114 681	121 783
	Indiana.....	20 475	27 045
	Kansas.....	6 848	N
	Massachusetts.....	21 643	26 910
	Michigan.....	44 720	54 872
	Minnesota.....	11 920	3 957
	Mississippi.....	6 887	N
	Missouri.....	32 922	20 967
	New Jersey.....	61 348	19 412
	New York.....	27 415	30 675
	North Carolina.....	23 389	53 914
	Ohio.....	107 024	79 522
	Pennsylvania.....	17 781	103 835
	Texas.....	16 515	15 968
	Washington.....	2 143	N
	Wisconsin.....	271 946	291 511

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325612	POLISH & OTHER SANITATION GOOD MFG				
32561303	Bulk surface active intermediates (active wt.) mil lb..	S	26 955	48.2	23 787
32561305	Bulk surface active agents primarily for detergent purposes (active wt.), except intermediates mil lb..	S	35 698	^P 32.8	20 740
32561307	Other bulk surface active agents (emulsifiers, wetting agents, penetrants, etc.) (active wt.), except intermediates mil lb..	51.7	35 588	39.1	28 728
32561100	Glycerin (100 percent) mil lb..	S	621	N	N
31120013	Vegetable oil mil lb..	^P 5.0	2 036	S	1 062
32562000	Perfume oil mixtures and blends mil lb..	^P 13.9	101 664	^Q 10.4	67 022
32519901	Fatty acids mil lb..	^Q 23.6	10 252	^Q 13.0	5 275
31161301	Grease and inedible tallow mil lb..	S	9 738	^P 5.0	3 395
32518103	Chlorine (100 percent Cl basis) 1,000 s tons..	^P 138.1	25 028	^P 129.4	15 501
32518105	Sodium carbonate (soda ash) (58 percent Na ₂ O) 1,000 s tons..	64.6	5 146	55.6	8 302
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH) 1,000 s tons..	^P 123.3	31 396	155.1	31 604
32518821	Sodium tripolyphosphate (STPP) (100 percent NaPO ₃) 1,000 s tons..	^Q 4.6	3 251	^Q 3.5	2 749
32518819	All other potassium and sodium compounds	X	21 422	X	22 364
32410013	Refined petroleum products, including mineral oil, naphtha solvents, petrolatum, waxes, etc.	X	54 463	X	72 127
32500005	All other organic and inorganic chemicals	X	368 003	X	N
32310003	Labels, coupons, instructions, and other printed material	X	59 245	X	46 145
32221001	Paperboard containers, boxes, and corrugated paperboard	X	134 815	X	147 039
33240000	Metal containers	X	132 489	X	143 813
32610029	Plastics containers	X	275 779	X	250 843
32610037	Fabricated plastics products, including dispensing pumps and trigger and mist sprayers; except containers	X	108 025	X	99 630
00970099	All other materials and components, parts, containers, and supplies	X	283 295	X	302 784
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	677 176	X	462 550

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325612 POLISH AND OTHER SANITATION GOOD MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing and packaging polishes and specialty cleaning preparations.

The data published with NAICS code 325612 include the following SIC industry:

2842 Polishes and sanitation goods

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3256121	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222AYVV	2824900	2824900
			325199A100	2869837	2869837	325222D	28248	28248
			325199E	28698 pt	28698 pt	325222D111	2824815	2824815
			325199E111	2869853	2869853	325222D211	2824851	2824851
			325199E121	2869855	2869855	325222D221	2824875	2824875
			325199EYVV	2869800	2869800	325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930			
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A pt	28995 pt	28995 pt
			3253207YVW	2879E00	2879900	325510A000 pt	2851500	2851500
3253114	28732	28732				325510A000 pt	2899586	2899586
3253114000	2873200	2873200	325320W	28790	28790			
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3253140151	2875051	2875000 pt				3255204691	2891454	2891454
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3253201A21	2879A21	2879641 pt	325412V111	2835212	2835212	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V121	2835220	2835220	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412YVWV	2835200	2835200	325520AYVW	2891700	2891700
3253201A41	2879A41	2879812 pt						
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3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
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			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
			325414A241	2836430	2836430			
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3253207123	2879E23	2879917	325414WYWW	2836002				

MANUFACTURING—INDUSTRY SERIES

U.S. Census Bureau, 1997 Economic Census

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
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Robert J. Shapiro,
Under Secretary
for Economic Affairs



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William G. Barron,
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Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325613 284300	Surface active agent mfg Surface active agents.....	184 N	211 211	9 471 9 471	462 694 462 694	4 998 4 998	11 494 11 494	211 409 211 409	3 962 218 3 962 218	3 027 907 3 027 907	6 992 306 6 992 306	288 827 288 827

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325613, SURFACE ACTIVE AGENT MFG												
United States	1	211	103	9 471	462 694	4 998	11 494	211 409	3 962 218	3 027 907	6 992 306	288 827
California	3	18	4	344	12 830	148	255	4 275	48 634	80 390	127 744	5 527
Georgia	—	11	5	386	14 255	186	408	5 437	73 443	90 019	162 712	5 137
Illinois	2	17	11	1 542	79 393	918	2 073	44 222	337 879	530 595	868 046	47 949
Massachusetts	1	9	3	258	12 034	84	188	4 071	30 751	63 603	93 478	2 213
New Jersey	3	19	10	698	40 025	334	743	16 559	154 157	217 667	373 746	20 850
New York	2	7	3	227	12 837	128	264	6 289	47 632	53 703	100 258	2 112
North Carolina	2	32	15	1 205	51 716	542	1 117	17 298	192 899	245 782	435 508	15 052
Ohio	3	7	3	110	3 685	48	96	1 727	17 359	25 201	43 966	2 194
Pennsylvania	4	9	7	439	20 439	230	570	9 243	107 945	118 804	225 720	18 430
South Carolina	—	22	15	960	42 288	562	1 203	18 080	141 879	283 488	435 728	25 048
Texas	1	9	3	263	12 247	189	432	8 876	101 529	164 840	266 577	25 969
Wisconsin	6	5	4	156	7 034	62	136	2 523	28 419	41 132	69 573	2 866

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325613, SURFACE ACTIVE AGENT MFG		325613, SURFACE ACTIVE AGENT MFG—Con.	
Companies ¹	number.. 184	Value added	\$1,000.. 3 962 218
All establishments	number.. 211	Total inventories, beginning of year	\$1,000.. 528 405
Establishments with 1 to 19 employees	number.. 108	Finished goods inventories, beginning of year	\$1,000.. 307 953
Establishments with 20 to 99 employees	number.. 80	Work-in-process inventories, beginning of year	\$1,000.. 59 903
Establishments with 100 employees or more	number.. 23	Materials and supplies inventories, beginning of year	\$1,000.. 160 549
All employees	number.. 9 471	Total inventories, end of year	\$1,000.. 526 734
Total compensation ²	\$1,000.. 581 644	Finished goods inventories, end of year	\$1,000.. 312 354
Annual payroll	\$1,000.. 462 694	Work-in-process inventories, end of year	\$1,000.. 53 321
Total fringe benefits	\$1,000.. 118 950	Materials and supplies inventories, end of year	\$1,000.. 161 059
Production workers, average for year	number.. 4 998	Gross book value of total assets at beginning of year	\$1,000.. 2 540 477
Production workers on March 12	number.. 4 983	Total capital expenditures (new and used)	\$1,000.. 288 827
Production workers on May 12	number.. 5 016	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 33 774
Production workers on August 12	number.. 5 031	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 255 053
Production workers on November 12	number.. 4 962	Total retirements ²	\$1,000.. 71 401
Production-worker hours	1,000.. 11 494	Gross book value of total assets at end of year	\$1,000.. 2 757 903
Production-worker wages	\$1,000.. 211 409	Total depreciation during year ²	\$1,000.. 155 183
Total cost of materials	\$1,000.. 3 027 907	Total rental payments ²	\$1,000.. 18 671
Cost of materials, parts, containers, etc., consumed	\$1,000.. 2 703 442	Buildings and other structures rental payments ²	\$1,000.. 4 490
Cost of resales	\$1,000.. 128 723	Machinery and equipment rental payments ²	\$1,000.. 14 181
Cost of fuels	\$1,000.. 83 990	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 5 413
Cost of purchased electricity	\$1,000.. 58 376	Response coverage ratio ⁴	percent.. 78
Cost of contract work	\$1,000.. 53 376	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 62 927
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 188 224	Response coverage ratio ⁴	percent.. 78
Quantity of electricity generated less sold for heat and power	1,000 kWh.. —	Cost of purchased communications services ³	\$1,000.. 4 851
Total value of shipments	\$1,000.. 6 992 306	Response coverage ratio ⁴	percent.. 78
Primary products value of shipments	\$1,000.. 4 919 683	Cost of purchased legal services ³	\$1,000.. 674
Secondary products value of shipments	\$1,000.. 1 874 919	Response coverage ratio ⁴	percent.. 78
Total miscellaneous receipts	\$1,000.. 197 704	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 1 825
Value of resales	\$1,000.. 144 761	Response coverage ratio ⁴	percent.. 78
Contract receipts	\$1,000.. D	Cost of purchased advertising services ³	\$1,000.. 2 167
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 78
Primary products specialization ratio	percent.. 72	Cost of purchased software and other data processing services ³	\$1,000.. 3 104
Value of primary products shipments made in all industries	\$1,000.. 5 949 297	Response coverage ratio ⁴	percent.. 78
Value of primary products shipments made in this industry	\$1,000.. 4 919 683	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 17 077
Value of primary products shipments made in other industries	\$1,000.. 1 029 614	Response coverage ratio ⁴	percent.. 78
Coverage ratio	percent.. 82		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325613, SURFACE ACTIVE AGENT MFG												
All establishments	1	211	103	9 471	462 694	4 998	11 494	211 409	3 962 218	3 027 907	6 992 306	288 827
Establishments with 1 to 4 employees	1	47	—	97	3 177	57	98	1 577	67 856	108 232	176 035	4 193
Establishments with 5 to 9 employees	7	26	—	177	7 098	94	180	3 254	26 783	61 769	91 924	4 435
Establishments with 10 to 19 employees	6	35	—	464	19 791	217	444	7 825	78 412	117 625	197 053	6 938
Establishments with 20 to 49 employees	3	52	52	1 690	75 617	878	1 930	33 655	276 648	426 595	703 700	38 262
Establishments with 50 to 99 employees	1	28	28	2 101	96 434	1 039	2 246	37 440	371 110	622 831	999 832	47 699
Establishments with 100 to 249 employees	—	18	18	2 510	120 302	1 353	3 135	57 894	516 344	730 640	1 238 574	67 482
Establishments with 250 to 499 employees	1	3	3	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	71	—	358	12 671	198	367	6 295	55 675	86 967	143 990	8 021

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325613	Surface active agent mfg .	211	9 471	462 694	4 998	11 494	211 409	3 962 218	3 027 907	6 992 306	288 827

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325613	Surfactants, finishing agents, and assistants	N	X	X	5 949 297	N	X	X	3 776 027
3256130	Surfactants, finishing agents, and assistants	N	X	X	5 949 297	N	X	X	3 776 027
32561301	Textile and leather assistants and finishes	N	X	X	534 775	N	X	X	N
3256130111	Textile assistants	34	X	S	198 030	35	X	270.4	163 704
3256130121	Textile finishes	36	X	S	280 655	45	X	639.8	275 287
3256130131	Leather assistants and finishes	7	X	S	56 090	7	X	49.9	52 966
32561302	Surfactants (bulk surface active agents)	N	X	X	4 760 247	N	X	X	N
3256130241	Surfactants (bulk surface active agents)	106	X	X	4 760 247	102	X	X	2 988 516
3256130Y	Surfactants, finishing agents, and assistants, nsk	N	X	X	654 275	N	X	X	N
3256130YWW	Surfactants, finishing agents, and assistants, nsk, for nonadministrative-record establishments	N	X	X	514 660	N	X	X	278 963
3256130YWY	Surfactants, finishing agents, and assistants, nsk, for administrative-record establishments	N	X	X	139 615	N	X	X	16 591

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325613	SURFACE ACTIVE AGENT MFG				
32561303	Bulk surface active intermediates (active wt.)	117.5	71 675	187.7	58 702
32561305	Bulk surface active agents primarily for detergent purposes (active wt.), except intermediates	550.3	110 785	150.7	54 108
32561307	Other bulk surface active agents (emulsifiers, wetting agents, penetrants, etc.) (active wt.), except intermediates	53.6	40 792	P29.0	26 813
32561100	Glycerin (100 percent)	13.4	7 324	14.8	8 417
31120013	Vegetable oil	176.6	56 709	235.9	65 919
32562000	Perfume oil mixtures and blends	D	D	S	236
32519901	Fatty acids	S	125 771	224.6	109 681
31161301	Grease and inedible tallow	170.3	42 607	88.2	30 569
32518103	Chlorine (100 percent Cl basis)	D	D	N	N
32518105	Sodium carbonate (soda ash) (58 percent Na2O)	6.4	1 258	Q5.1	705
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH)	65.7	11 414	20.0	3 485
32518821	Sodium tripolyphosphate (STPP) (100 percent NaP0)	D	D	Q0.2	78
32518819	All other potassium and sodium compounds	X	13 643	X	4 179
32410013	Refined petroleum products, including mineral oil, naphtha solvents, petrolatum, waxes, etc.	X	192 989	X	93 027
32500005	All other organic and inorganic chemicals	X	502 294	X	N
32310003	Labels, coupons, instructions, and other printed material	X	1 530	X	550
32221001	Paperboard containers, boxes, and corrugated paperboard	X	9 784	X	13 340
32400000	Metal containers	X	13 955	X	24 887
32610029	Plastics containers	X	15 144	X	6 718
32610037	Fabricated plastics products, including dispensing pumps and trigger and mist sprayers; except containers	X	D	X	N
00970099	All other materials and components, parts, containers, and supplies	X	382 980	X	370 311
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	1 098 053	X	234 866

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325613 SURFACE ACTIVE AGENT MANUFACTURING

This U.S. industry comprises establishments primarily engaged in (1) manufacturing bulk surface active agents for use as wetting agents, emulsifiers, and penetrants, and/or (2) manufacturing textiles and leather finishing agents used to reduce tension or speed the drying process.

The data published with NAICS code 325613 include the following SIC industry:

2843 Surface active agents

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930			
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A pt	28995 pt	28995 pt
			3253207YVW	2879E00	2879900	325510A000 pt	2851500	2851500
3253114	28732	28732				325510A000 pt	2899586	2899586
3253114000	2873200	2873200	325320W	28790	28790			
			325320WYWW	2879000	2879000	325510W pt	28510	28510
3253117	28733	28733	325320WYVY	2879002	2879002			
3253117100	2873300	2873300				325510W pt	28990 pt	28990 pt
			3254111	28331	28331	325510WYWW pt	2851000	2851000
325311W	28730	28730	3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311WYWW	2873000	2873000	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYVY	2873002	2873002	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
3253121	28741	28741	3254114	28333	28333	3255201	28913	28913
3253121000	2874100	2874100	3254114111	2833315	2833315	3255201111	2891311	2891311
			3254114121	2833318	2833318	3255201121	2891326	2891326
3253124	28742	28742	3254114131	2833323	2833323	3255201131	2891350	2891350
3253124000	2874200	2874200	3254114141	2833324	2833324	3255201141	2891351	2891351
			3254114151	2833326	2833326	3255201151	2891355	2891355
3253127	28744	28744	3254114161	2833344	2833344	3255201161	2891380	2891380
3253127111	2874410	2874410	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127121	2874411	2874411	3254114291	2833399	2833399			
3253127131	2874421	2874421	3254114YVW	2833300	2833300			
3253127141	2874431	2874431				3255204	28914	28914
3253127YVW	2874400	2874400	325411W	28330	28330	3255204111	2891411	2891411
			325411WYVW	2833000	2833000	3255204271	2891448	2891448
325312W	28740	28740	325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312WYWW	2874000	2874000				32552044E1	2891471	2891471
325312WYVY	2874002	2874002	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
			3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
3253140	28750	28750				3255204551	2891445	2891445
3253140111	2875010	2875010	3254124	28342	28342	3255204561	2891447	2891447
3253140121	2875011	2875011	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140131	2875021	2875021				3255204631	2891433	2891433
3253140141	2875041	2875000 pt	3254127	28343	28343			
3253140151	2875051	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140161	2875061	2875000 pt	325412A	28344	28344	3255204691	2891454	2891454
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046A1	2891455	2891455
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046B1	2891457	2891457
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046C1	2891461	2891461
						32552046F1	2891481	2891481
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046G1	2891483	2891483
			325412G000	2834600	2834600	32552046H1	2891499	2891499
3253201 pt	2879A pt	28796 pt				3255204YVW	2891400	2891400
			325412L	28347	28347			
3253201 pt	2879A pt	28797 pt	325412L000	2834700	2834700			
						3255207	28916	28916
3253201 pt	2879A pt	28798 pt	325412P	28348	28348	3255207111	2891610	2891610
3253201111	2879A11	2879531 pt	325412P000	2834800	2834800	3255207121	2891625	2891625
3253201413	2879A13	2879541 pt				3255207131	2891650	2891650
3253201725	2879A25	2879665 pt	325412T	28349	28349	3255207YVW	2891600	2891600
3253201A15	2879A15	2879561 pt	325412T000	2834900	2834900			
3253201A17	2879A17	2879581 pt				325520A	28917	28917
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A111	2891711	2891711
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A121	2891721	2891721
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A131	2891731	2891731
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A141	2891746	2891746
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A151	2891771	2891771
						325520AYVW	2891700	2891700
3253201A43	2879A43	2879818 pt	325412W pt	28340	28340			
3253201A45	2879A45	2879822 pt	325412W pt	28350 pt	28350 pt	325520W	28910	28910
3253201A47	2879A47	2879885 pt	325412WYVW pt	2834000	2834000	325520WYVW	2891000	2891000
3253201D33	2879A31	2879721 pt	325412WYVW pt	2835000 pt	2835000 pt	325520WYVY	2891002	2891002
3253201D33	2879A33	2879751 pt	325412WYVY pt	2834002	2834002			
3253201YVW pt	2879A00 pt	2879500 pt	325412WYVY pt	2835002 pt	2835002 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879600 pt				3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879700 pt	3254130 pt	28350 pt	28350 pt	3256111111 pt	2841120 pt	2841141 pt
3253201YVW pt	2879A00 pt	2879800 pt				3256111111 pt	2841120 pt	2841143 pt
			3254130 pt	28351	28351	3256111121 pt	2841122 pt	2841125 pt
3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841145 pt
			3254130221	2835115	2835115	3256111121 pt	2841122 pt	2841146 pt
3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841149 pt
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3253204 pt	2879C pt	28797 pt	3254130351	2835130	2835130	3256111131 pt	2841127 pt	2841125 pt
			3254130461	2835135	2835135	3256111131 pt	2841127 pt	2841145 pt
3253204 pt	2879C pt	28798 pt	3254130571	2835140	2835140			
			3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
3253204113	2879C13	2879541 pt	3254130YVW pt	2835100	2835100	3256111131 pt	2841127 pt	2841178 pt
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3253204121	2879C21	2879641 pt	3254141	28361	28361	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
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3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
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			325414A131	2836422	2836422			
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3253207121	2879E21	2879912	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	3256111411 pt	2841133 pt	2841177
3253207125	2879E25	2879986 pt				3256111511 pt	2841134 pt	284

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U.S. Census Bureau, 1997 Economic Census

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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Industry Series



U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325620	Toilet preparation mfg	683	729	63 816	2 122 513	40 391	77 346	987 310	16 666 275	7 751 030	24 334 130	576 649
284420	Toilet preparations (pt)	N	729	63 816	2 122 513	40 391	77 346	987 310	16 666 275	7 751 030	24 334 130	576 649

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
		Total	With 20 em- ploy- ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325620, TOILET PREPARATION MFG												
United States	1	729	311	63 816	2 122 513	40 391	77 346	987 310	16 666 275	7 751 030	24 334 130	576 649
Arkansas	—	9	3	1 810	61 175	1 460	2 655	41 149	325 765	227 421	554 993	37 107
California	1	154	65	8 656	291 311	5 211	9 551	115 285	1 138 636	673 375	1 819 746	47 349
Connecticut	—	16	11	2 130	95 014	947	2 089	39 132	1 037 498	414 872	1 386 847	39 876
Florida	6	48	12	1 316	32 413	888	1 633	16 357	150 927	89 605	242 999	5 853
Georgia	3	21	12	1 300	38 375	877	1 518	18 427	189 729	97 080	285 828	19 027
Illinois	—	39	25	4 274	151 874	2 619	5 143	70 663	1 301 672	502 295	1 782 989	59 358
Maine	9	8	2	181	5 362	110	129	1 710	19 660	8 072	27 465	1 384
Minnesota	—	15	8	1 655	60 625	1 119	2 036	33 797	321 980	184 060	498 675	13 677
Missouri	2	12	6	511	16 158	294	617	7 848	40 875	71 749	111 823	3 370
New Jersey	3	91	62	11 998	465 921	6 788	12 537	182 119	2 552 823	1 572 038	4 159 170	118 877
New York	1	82	32	8 319	237 972	5 228	10 956	99 071	1 838 683	1 042 864	2 865 220	52 884
North Carolina	2	9	8	5 078	143 971	3 710	6 637	82 250	1 715 795	486 125	2 188 766	54 627
Ohio	—	12	6	2 386	92 496	1 287	2 536	42 310	753 962	412 596	1 167 675	20 217
Pennsylvania	2	15	3	328	9 547	218	394	4 024	48 831	24 006	72 661	1 095
Texas	—	49	17	2 423	74 194	1 684	3 039	37 978	826 216	408 909	1 250 595	18 963
Wisconsin	1	8	4	233	4 541	190	422	2 175	12 769	8 917	20 622	540

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325620, TOILET PREPARATION MFG		325620, TOILET PREPARATION MFG—Con.	
Companies ¹	number.. 683	Value added	\$1,000.. 16 666 275
All establishments	number.. 729	Total inventories, beginning of year	\$1,000.. 2 389 601
Establishments with 1 to 19 employees	number.. 418	Finished goods inventories, beginning of year	\$1,000.. 1 126 719
Establishments with 20 to 99 employees	number.. 176	Work-in-process inventories, beginning of year	\$1,000.. 179 115
Establishments with 100 employees or more	number.. 135	Materials and supplies inventories, beginning of year	\$1,000.. 1 083 767
All employees	number.. 63 816	Total inventories, end of year	\$1,000.. 2 523 102
Total compensation ²	\$1,000.. 2 667 897	Finished goods inventories, end of year	\$1,000.. 1 208 173
Annual payroll	\$1,000.. 2 122 513	Work-in-process inventories, end of year	\$1,000.. 180 836
Total fringe benefits	\$1,000.. 545 384	Materials and supplies inventories, end of year	\$1,000.. 1 134 093
Production workers, average for year	number.. 40 391	Gross book value of total assets at beginning of year	\$1,000.. 4 950 012
Production workers on March 12	number.. 40 412	Total capital expenditures (new and used)	\$1,000.. 576 649
Production workers on May 12	number.. 40 147	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 118 624
Production workers on August 12	number.. 40 619	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 458 025
Production workers on November 12	number.. 40 386	Total retirements ²	\$1,000.. 191 167
Production-worker hours	1,000.. 77 346	Gross book value of total assets at end of year	\$1,000.. 5 335 494
Production-worker wages	\$1,000.. 987 310	Total depreciation during year ²	\$1,000.. 360 730
Total cost of materials	\$1,000.. 7 751 030	Total rental payments ²	\$1,000.. 135 930
Cost of materials, parts, containers, etc., consumed	\$1,000.. 6 572 777	Buildings and other structures rental payments ²	\$1,000.. 90 751
Cost of resales	\$1,000.. 600 572	Machinery and equipment rental payments ²	\$1,000.. 45 179
Cost of fuels	\$1,000.. 21 496	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 21 146
Cost of purchased electricity	\$1,000.. 73 555	Response coverage ratio ⁴	percent.. 72
Cost of contract work	\$1,000.. 482 630	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 63 929
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 052 922	Response coverage ratio ⁴	percent.. 72
Quantity of electricity generated less sold for heat and power	1,000 kWh.. —	Cost of purchased communications services ³	\$1,000.. 23 982
Total value of shipments	\$1,000.. 24 334 130	Response coverage ratio ⁴	percent.. 72
Primary products value of shipments	\$1,000.. 21 341 022	Cost of purchased legal services ³	\$1,000.. 13 272
Secondary products value of shipments	\$1,000.. 1 583 467	Response coverage ratio ⁴	percent.. 72
Total miscellaneous receipts	\$1,000.. 1 409 641	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 8 922
Value of resales	\$1,000.. 1 309 215	Response coverage ratio ⁴	percent.. 72
Contract receipts	\$1,000.. 99 142	Cost of purchased advertising services ³	\$1,000.. 572 787
Other miscellaneous receipts	\$1,000.. 1 284	Response coverage ratio ⁴	percent.. 72
Primary products specialization ratio	percent.. 93	Cost of purchased software and other data processing services ³	\$1,000.. 23 312
Value of primary products shipments made in all industries	\$1,000.. 23 070 843	Response coverage ratio ⁴	percent.. 72
Value of primary products shipments made in this industry	\$1,000.. 21 341 022	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 14 522
Value of primary products shipments made in other industries	\$1,000.. 1 729 821	Response coverage ratio ⁴	percent.. 72
Coverage ratio	percent.. 92		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325620, TOILET PREPARATION MFG												
All establishments	1	729	311	63 816	2 122 513	40 391	77 346	987 310	16 666 275	7 751 030	24 334 130	576 649
Establishments with 1 to 4 employees	9	205	—	376	8 746	291	401	4 992	34 301	24 798	59 101	2 213
Establishments with 5 to 9 employees	5	112	—	717	19 587	496	753	10 831	108 264	62 503	171 308	4 768
Establishments with 10 to 19 employees	6	101	—	1 391	35 539	931	1 377	18 134	143 160	86 200	230 381	7 722
Establishments with 20 to 49 employees	3	112	112	3 630	112 748	2 254	3 789	51 497	371 699	279 533	651 607	20 478
Establishments with 50 to 99 employees	1	64	64	4 537	142 308	2 824	5 312	66 305	775 699	562 519	1 343 734	28 805
Establishments with 100 to 249 employees	3	63	63	10 172	318 297	6 482	12 358	145 751	1 503 710	1 174 377	2 677 176	93 110
Establishments with 250 to 499 employees	1	44	44	15 691	506 774	10 673	20 358	256 234	3 451 680	1 807 055	5 236 205	148 611
Establishments with 500 to 999 employees	—	19	19	12 515	523 358	7 843	15 797	248 996	6 896 643	2 228 604	9 043 292	177 242
Establishments with 1,000 to 2,499 employees	—	9	9	14 787	455 156	8 597	17 201	184 570	3 381 119	1 525 441	4 921 326	93 700
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	301	—	2 129	47 801	1 532	2 097	27 578	189 947	136 204	326 673	12 394

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325620	Toilet preparation mfg	729	63 816	2 122 513	40 391	77 346	987 310	16 666 275	7 751 030	24 334 130	576 649
3256201	Shaving preparations	2	D	D	D	D	D	D	D	D	D
3256204	Perfumes, toilet waters, and colognes	47	4 304	171 351	2 486	4 346	75 980	2 035 419	1 211 731	3 257 712	45 265
3256207	Hair preparations (including shampoos)	82	12 521	432 434	7 701	14 459	203 093	4 511 746	1 742 434	6 191 986	161 670
325620A	Denture cleaners and other oral hygiene products	10	595	17 113	419	697	6 925	89 682	65 954	155 467	2 929
325620D	Creams, lotions, and oils, excluding shaving, hair, deodorant, eye, manicuring, and bath	52	9 739	354 574	5 629	12 031	133 153	3 133 914	1 445 443	4 592 278	59 218
325620G	Other cosmetics and toilet preparations, nec	91	26 181	847 397	16 912	33 097	400 761	5 843 721	2 505 680	8 300 354	240 117

Table 6a. Products Statistics: 1997 and 1992

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325620	Toilet preparations	N	X	X	23 070 843	N	X	X	N
3256201	Shaving preparations (including shaving soaps, creams, gels, aftershave and preshave preparations, styptics, etc.)	N	X	X	503 711	N	X	X	499 012
32562011	Shaving preparations	N	X	X	477 103	N	X	X	N
3256201111	Shaving soap and cream	18	X	X	327 804	21	X	X	270 370
3256201121	Aftershave preparations (all forms)	15	X	X	141 548	18	X	X	217 809
3256201131	Other shaving preparations, including preshave preparations and styptics	6	X	X	7 751	5	X	X	10 808
3256201Y	Shaving preparations, nsk	N	X	X	26 608	N	X	X	N
3256201YVV	Shaving preparations, nsk	N	X	X	26 608	N	X	X	25
3256204	Perfumes, toilet waters, and colognes (including perfume oil mixtures and blends)	N	X	X	3 059 475	N	X	X	2 230 232
32562041	Perfumes and toilet waters	N	X	X	2 133 779	N	X	X	N
3256204111	Perfume oil mixtures and blends	43	X	X	725 184	35	X	X	522 873
3256204121	Perfumes	20	X	X	1 336 251	25	X	X	372 626
3256204131	Toilet waters	7	X	X	72 344	14	X	X	206 235
32562042	Colognes	N	X	X	781 473	N	X	X	N
3256204211	Colognes	23	X	X	781 473	34	X	X	985 773
3256204Y	Perfumes, toilet waters, and colognes, nsk	N	X	X	144 223	N	X	X	N
3256204YVV	Perfumes, toilet waters, and colognes, nsk	N	X	X	144 223	N	X	X	142 725
3256207	Hair preparations (including shampoos, permanents, dyes, sprays, rinses, dressings, etc.)	N	X	X	5 417 438	N	X	X	4 637 984
32562071	Shampoos, professional and consumer use	N	X	X	2 470 102	N	X	X	N
3256207111	Professional hair shampoos containing soap, including products with additives for coloring, dandruff removal, etc.	19	X	X	51 357	22	X	X	56 894
3256207121	Consumer use hair shampoos containing soap, including products with additives for coloring, dandruff removal, etc.	55	X	X	1 761 084	49	X	X	562 339
3256207131	Professional liquid hair shampoos containing synthetic organic detergents, including products with additives for coloring, dandruff removal, etc.	15	X	X	172 819	22	X	X	102 211
3256207141	Consumer use liquid hair shampoos containing synthetic organic detergents, including products with additives for coloring, dandruff removal, etc.	29	X	X	461 768	45	X	X	879 062
3256207151	Cream and gel hair shampoos (professional and consumer use) containing synthetic organic detergents, including products with additives for coloring, dandruff removal, etc.	13	X	X	23 074	10	X	X	21 382
32562072	Hair preparations, except shampoos	N	X	X	2 682 778	N	X	X	N
3256207211	Professional hair tonics, including hair and scalp conditioners	22	X	X	100 134	30	X	X	107 466
3256207221	Consumer use hair tonics, including hair and scalp conditioners	35	X	X	532 201	46	X	X	520 934
3256207231	Professional use hair mousse	10	X	X	15 313	N	X	X	N
3256207241	Consumer use hair mousse	13	X	X	150 586	N	X	X	N
3256207251	Consumer use hair perms (complete and refill)	8	X	X	74 796	10	X	X	111 898
3256207261	Professional hair perms	13	X	X	57 488	27	X	X	210 077
3256207271	Hair dressings, including brilliantines, creams, and pomades	22	X	X	180 838	31	X	X	133 217
3256207281	Professional use hair coloring preparations (bleaches, dyes, rinses, tints, etc.), except combination shampoo-coloring preparations	16	X	X	170 971	N	X	X	N
3256207291	Consumer use hair coloring preparations (bleaches, dyes, rinses, tints, etc.), except combination shampoo-coloring preparations	12	X	X	819 932	N	X	X	N
32562072A1	Aerosol hair spray	21	X	X	178 934	26	X	X	334 031
32562072B1	Nonaerosol hair spray	35	X	X	232 286	51	X	X	442 125
32562072C1	Hair rinses, except color rinses	7	X	X	24 621	8	X	X	21 086
32562072D1	Other hair preparations, including heat setting wave solutions	13	X	X	144 678	26	X	X	88 857
3256207Y	Hair preparations (including shampoos), nsk	N	X	X	264 558	N	X	X	N
3256207YVV	Hair preparations (including shampoos), nsk	N	X	X	264 558	N	X	X	151 071

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325620	Toilet preparations—Con.								
325620A	Denture cleaners and other oral hygiene products	N	X	X	745 978	N	X	X	N
325620A1	Denture cleaners and other oral hygiene products	N	X	X	745 978	N	X	X	N
325620A111	Denture cleaners	5	X	X	16 313	6	X	X	N
325620A121	Other oral hygiene products, including dental floss, dental adhesives, etc. (excluding toothbrushes and toothpicks)	33	X	X	729 665	32	X	X	N
325620AY	Dentifrices, mouthwashes, gargles, and rinses, nsk	N	X	X	—	N	X	X	N
325620AYWV	Dentifrices, mouthwashes, gargles, and rinses, nsk	N	X	X	—	N	X	X	N
325620D	Creams, lotions, and oils, excluding shaving, hair, deodorant, eye, manicuring, and bath	N	X	X	4 192 929	N	X	X	3 084 019
325620D1	Creams, except shaving, hair, deodorant, eye, and manicuring	N	X	X	2 157 022	N	X	X	N
325620D111	Cleansing creams	41	X	X	378 976	40	X	X	377 918
325620D121	Foundation creams	20	X	X	596 875	23	X	X	359 439
325620D131	Lubricating creams, including hormone creams	14	X	X	104 943	16	X	X	287 633
325620D141	Moisturizing creams	53	X	X	884 453	52	X	X	532 921
325620D151	Other creams, excluding shaving, hair, deodorant, eye, and manicuring creams	18	X	X	191 775	18	X	X	56 685
325620D2	Lotions and oils, excluding shaving, hair, and deodorant	N	X	X	1 729 788	N	X	X	N
325620D211	Suntan lotions and oils	19	X	X	83 369	25	X	X	119 633
325620D221	Sunscreens and sunblocks (lotions and oils)	33	X	X	254 263	27	X	X	180 272
325620D231	Cleansing lotions (except hair, shaving, and bath)	25	X	X	151 796	21	X	X	125 980
325620D241	Cosmetic oils, including baby oils but excluding suntan oils	13	X	X	30 752	17	X	X	42 833
325620D251	Hand lotions	54	X	X	682 538	59	X	X	530 593
325620D261	Body lotions, except bath lotions	51	X	X	334 532	44	X	X	163 017
325620D271	Other lotions and oils, excluding hair, shaving, and bath	19	X	X	192 538	19	X	X	72 923
325620DY	Creams, lotions and oils, excluding shaving, hair, and deodorant, nsk	N	X	X	306 119	N	X	X	N
325620DYWV	Creams, lotions and oils, excluding shaving, hair, and deodorant, nsk	N	X	X	306 119	N	X	X	234 172
325620G	Other cosmetics and toilet preparations, nec (including cosmetics, powders, manicuring preparations, personal deodorants, bath salts, and bubble bath)	N	X	X	7 575 618	N	X	X	5 722 852
325620G1	Cosmetics (lip, eye, and blushers)	N	X	X	2 427 350	N	X	X	N
325620G111	Lip cosmetics and toilet preparations (lipstick, lip gloss, lip conditioners, etc.)	42	X	X	1 047 770	40	X	X	753 362
325620G121	Blushers	19	X	X	416 707	23	X	X	224 356
325620G131	Eye cosmetics and toilet preparations (mascara, eye shadow, eye liners, eye creams, etc.)	28	X	X	962 873	32	X	X	781 110
325620G2	Deodorants and feminine hygiene douches, except medicated	N	X	X	1 459 821	N	X	X	N
325620G211	Feminine hygiene douches and deodorants (except medicated)	3	X	X	64 131	6	X	X	81 070
325620G221	Underarm deodorants, aerosol and spray type	8	X	X	199 265	12	X	X	176 110
325620G231	Underarm deodorants, roll-on, solid, and other types	22	X	X	1 196 425	30	X	X	1 023 415
325620G3	Other cosmetics and toilet preparations	N	X	X	2 362 312	N	X	X	N
325620G311	Nail enamels and polishes	24	X	X	409 069	25	X	X	357 961
325620G321	Nail enamel and polish removers	7	X	X	104 123	12	X	X	46 887
325620G331	Other manicuring preparations (including nail and cuticle conditioners and creams)	14	X	X	107 080	10	X	X	49 409
325620G341	Talcum and toilet powder	18	X	X	139 830	38	X	X	242 488
325620G351	Face powder (pressed and loose)	19	X	X	327 449	26	X	X	434 453
325620G361	Other powder, including foot powder, etc.	4	X	X	21 821	7	X	X	10 526
325620G371	Bath salts, tablets, oils, and bubble baths	37	X	X	137 224	35	X	X	275 819
325620G381	Premoistened towelettes, including wipes for babies	10	X	X	647 433	11	X	X	452 377
325620G391	Facial scrubs and masks	17	X	X	58 599	23	X	X	73 835
325620G3A1	Depilatories	6	X	X	30 813	7	X	X	29 604
325620G3B1	Other cosmetics and toilet preparations	50	X	X	378 871	38	X	X	408 809
325620GY	Other cosmetics and toilet preparations, nsk	N	X	X	1 326 135	N	X	X	N
325620GYWV	Other cosmetics and toilet preparations, nsk	N	X	X	1 326 135	N	X	X	301 261

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325620	Toilet preparations—Con.								
325620W	Toilet preparations, nsk, total	N	X	X	1 575 694	N	X	X	N
325620WY	Toilet preparations, nsk, total	N	X	X	1 575 694	N	X	X	N
325620WYWW	Toilet preparations, nsk, for nonadministrative-record establishments	N	X	X	1 280 225	N	X	X	N
325620WYWY	Toilet preparations, nsk, for administrative-record establishments	N	X	X	295 469	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3256201	SHAVING PREPARATIONS (INCLUDING SHAVING SOAPS, CREAMS, GELS, AFTERSHAVE AND PRESHAVE PREPARATIONS, STYPTICS, ETC.)		
	United States	503 711	499 012
	New Jersey	46 871	124 209
	New York	8 254	15 039
3256204	PERFUMES, TOILET WATERS, AND COLOGNES (INCLUDING PERFUME OIL MIXTURES AND BLENDS)		
	United States	3 059 475	2 230 232
	California	17 130	9 889
	Illinois	11 701	N
	New Jersey	1 491 881	1 007 639
3256207	HAIR PREPARATIONS (INCLUDING SHAMPOOS, PERMANENTS, DYES, SPRAYS, RINSES, DRESSINGS, ETC.)		
	United States	5 417 438	4 637 984
	California	513 849	646 449
	Illinois	892 550	971 843
	Minnesota	248 209	363 253
	Missouri	11 272	N
	New Jersey	537 481	457 752
	New York	31 695	72 809
	North Carolina	276 715	N
	Pennsylvania	18 943	9 703
	Tennessee	39 286	95 084
	Texas	146 778	55 168
325620A	DENTURE CLEANERS AND OTHER ORAL HYGIENE PRODUCTS		
	United States	745 978	N
	California	7 445	N
	New Jersey	71 667	N
325620D	CREAMS, LOTIONS, AND OILS, EXCLUDING SHAVING, HAIR, DEODORANT, EYE, MANICURING, AND BATH		
	United States	4 192 929	3 084 019
	California	280 561	257 567
	Florida	45 339	59 923
	Illinois	430 907	N
	Minnesota	4 231	15 888
	New Jersey	556 706	361 346
	Ohio	131 666	N
	Texas	477 908	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325620G	OTHER COSMETICS AND TOILET PREPARATIONS, NEC (INCLUDING COSMETICS, POWDERS, MANICURING PREPARATIONS, PERSONAL DEODORANTS, BATH SALTS, AND BUBBLE BATH)		
	United States	7 575 618	5 722 852
	Arkansas	499 688	204 015
	California	348 615	222 543
	Connecticut	22 014	32 151
	Florida	7 105	N
	Illinois	266 304	246 514
	Minnesota	72 051	84 339
	Missouri	31 401	154 053
	New Jersey	980 433	1 094 884
	New York	995 499	1 062 524
	North Carolina	1 233 767	522 273
	Ohio	154 119	188 190
	Wisconsin	34 202	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325620	TOILET PREPARATION MFG				
32562000	Perfume oil mixtures and blends	X	389 491	X	N
32510051	Perfume materials (synthetic organic)	X	66 473	X	N
32599809	Essential oils, natural	X	173 540	X	N
32561309	Bulk surface active agents other than sulfonated oils and fats	X	329 676	X	N
31100027	Fats, oils, greases, and tallow	X	154 341	X	N
32410015	Refined petroleum products, including mineral oil, naphtha solvents, petrolatum, waxes, etc.	X	105 035	X	N
32510065	Alcohols	X	85 213	X	N
32510031	Other synthetic organic chemicals including halogenated hydrocarbons	X	247 107	X	N
32518817	Silicates	X	96 909	X	N
32610037	Fabricated plastics products, including dispensing pumps and trigger and mist sprayers; except containers	X	243 213	X	N
32610029	Plastics containers	X	1 096 646	X	N
32721301	Glass containers	X	193 103	X	N
32220013	Paper and paperboard containers including shipping containers, setup and folding cartons, etc.	X	440 854	X	N
33240000	Metal containers	X	200 393	X	N
00970099	All other materials and components, parts, containers, and supplies	X	1 428 804	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	1 321 979	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325620 TOILET PREPARATION MANUFACTURING

This U.S. industry comprises establishments primarily engaged in preparing, blending, compounding, and packaging toilet preparations, such as perfumes, shaving preparations, hair preparations, face creams, lotions (including sunscreens), and other cosmetic preparations.

The data published with NAICS code 325620 include the following SIC industry:

2844 Toilet preparations (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.....	28950	28950	325199H	28693 pt	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K.....	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N.....	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.....	28650 pt	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.....	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt....	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt....	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt....	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt....	2869002 pt	2869002 pt	325188A.....	28197	28197	325199U.....	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.....	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.....	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt	28199 pt	28199 pt	325199WYWW pt....	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt	28697 pt	28697 pt	325199WYWW pt....	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt	2819997	2819900 pt	325199WYWW pt....	2899000 pt	2899000 pt
325120A.....	28136	28136	325188G000 pt	2819900 pt	2819900 pt	325199WYWW pt....	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt	2869713	2869700 pt	325199WYWW pt....	2899002 pt	2899002 pt
325120D pt	28137	28137	325188W pt	28190 pt	28190 pt	3252111.....	28213	28213
325120D pt	28697 pt	28697 pt	325188W pt	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt....	2819000 pt	2819000 pt	3252114.....	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt....	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.....	28130	28130	325188WYWW pt....	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.....	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt....	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt....	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120.....	28220	28220
325120WYWW pt....	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt....	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.....	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.....	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210.....	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.....	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.....	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221.....	28241	28241
325131W pt.....	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.....	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt....	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt....	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt....	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt....	2819002 pt	2819002 pt	3251930YWW pt	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.....	28697 pt	28697 pt	3252224.....	28242	28242
3251321100	2865200	2865200	3251991 pt.....	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227.....	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
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325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
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3251820 pt.....	28163 pt	28163 pt	325199A.....	28698 pt	28698 pt	325222AYVV	2824900	2824900
			325199A100	2869837	2869837	325222D.....	28248	28248
			325199E.....	28698 pt	28698 pt	325222D111	2824815	2824815
			325199E111	2869853	2869853	325222D211	2824851	2824851
			325199E121	2869855	2869855	325222D221	2824875	2824875
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A131	2891731	2891731
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520A141	2891746	2891746
3253201A41	2879A41	2879812 pt	325412VYVW	2835200	2835200	325520A151	2891771	2891771
						325520AYVW	2891700	2891700
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3253201A47	2879A47	2879885 pt	325412WYVW pt	2834000	2834000	325520WYVW	2891000	2891000
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3253204 pt	2879C pt	28795 pt	3254130111	2835110	2835110	3256111121 pt	2841122 pt	2841145 pt
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3253204123	2879C23	2879661 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841146 pt
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3253204127	2879C27	2879675 pt	3254141YVW	2836100	2836100			
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3253204131	2879C31	2879721 pt				3256111311 pt	2841131 pt	2841141 pt
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3253204133	2879C33	2879751 pt	3254144100	2836200	2836200	3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt				3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841141 pt
			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400	3256111411 pt	2841133 pt	2841145 pt
3253207111	2879E11	2879921				3256111411 pt	2841133 pt	2841146 pt
3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841149 pt
3253207121	2879E21	2879912	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841177
3253207123	2879E23	2879917	325414WYVY	2836002	2836002	32		

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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Director



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Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325910	Printing ink mfg	254	565	13 026	501 533	6 895	14 470	239 627	1 675 447	2 493 572	4 140 214	90 318
289300	Printing ink	N	565	13 026	501 533	6 895	14 470	239 627	1 675 447	2 493 572	4 140 214	90 318

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
		Total	With 20 em- ploy- ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325910, PRINTING INK MFG												
United States	2	565	220	13 026	501 533	6 895	14 470	239 627	1 675 447	2 493 572	4 140 214	90 318
California	1	54	25	1 215	52 300	555	1 230	21 870	139 095	195 016	333 088	4 731
Kentucky	1	9	1	148	5 471	95	191	3 526	33 584	48 396	81 156	1 878
Massachusetts	1	17	6	399	15 046	225	434	6 859	27 061	51 311	78 353	1 816
Minnesota	—	13	6	460	19 728	249	543	9 071	49 164	56 356	104 363	2 819
New Jersey	—	33	19	797	33 358	391	824	14 035	111 932	105 827	219 613	2 819
Oregon	1	10	5	242	9 132	109	234	3 508	20 502	27 985	47 482	547
Pennsylvania	3	23	11	528	22 056	281	636	10 328	91 527	70 483	157 948	6 862
South Carolina	4	13	7	406	12 822	213	408	5 627	54 564	74 431	126 918	2 714
Texas	3	36	10	562	20 701	315	645	10 601	70 089	98 982	170 018	2 801
Virginia	2	18	10	432	19 291	242	496	9 555	50 469	107 607	157 829	1 566
Wisconsin	4	21	8	422	17 021	242	505	9 494	77 312	115 735	192 474	2 930

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325910, PRINTING INK MFG		325910, PRINTING INK MFG—Con.	
Companies ¹	254	Value added	1 675 447
All establishments	565	Total inventories, beginning of year	439 089
Establishments with 1 to 19 employees	345	Finished goods inventories, beginning of year	235 991
Establishments with 20 to 99 employees	206	Work-in-process inventories, beginning of year	17 734
Establishments with 100 employees or more	14	Materials and supplies inventories, beginning of year	185 364
All employees	13 026	Total inventories, end of year	434 893
Total compensation ²	628 760	Finished goods inventories, end of year	247 173
Annual payroll	501 533	Work-in-process inventories, end of year	35 357
Total fringe benefits	127 227	Materials and supplies inventories, end of year	152 363
Production workers, average for year	6 895	Gross book value of total assets at beginning of year	734 029
Production workers on March 12	6 894	Total capital expenditures (new and used)	90 318
Production workers on May 12	6 899	Capital expenditures for buildings and other structures (new and used)	19 505
Production workers on August 12	6 874	Capital expenditures for machinery and equipment (new and used)	70 813
Production workers on November 12	6 913	Total retirements ²	19 564
Production-worker hours	14 470	Gross book value of total assets at end of year	804 783
Production-worker wages	239 627	Total depreciation during year ²	54 026
Total cost of materials	2 493 572	Total rental payments ²	30 385
Cost of materials, parts, containers, etc., consumed	2 394 946	Buildings and other structures rental payments ²	16 425
Cost of resales	69 108	Machinery and equipment rental payments ²	13 960
Cost of fuels	5 465	Cost of purchased services for the repair of buildings and other structures ³	1 988
Cost of purchased electricity	21 920	Response coverage ratio ⁴	53
Cost of contract work	2 133	Cost of purchased services for the repair of machinery and equipment ³	15 378
Quantity of electricity purchased for heat and power	322 719	Response coverage ratio ⁴	53
Quantity of electricity generated less sold for heat and power	—	Cost of purchased communications services ³	6 904
Total value of shipments	4 140 214	Response coverage ratio ⁴	53
Primary products value of shipments	3 938 421	Cost of purchased legal services ³	1 259
Secondary products value of shipments	97 393	Response coverage ratio ⁴	53
Total miscellaneous receipts	104 400	Cost of purchased accounting and bookkeeping services ³	3 302
Value of resales	99 388	Response coverage ratio ⁴	53
Contract receipts	D	Cost of purchased advertising services ³	1 847
Other miscellaneous receipts	D	Response coverage ratio ⁴	53
Primary products specialization ratio	97	Cost of purchased software and other data processing services ³	1 263
Value of primary products shipments made in all industries	3 964 944	Response coverage ratio ⁴	53
Value of primary products shipments made in this industry	3 938 421	Cost of purchased refuse removal (including hazardous waste) services ³	4 766
Value of primary products shipments made in other industries	26 523	Response coverage ratio ⁴	53
Coverage ratio	99		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325910, PRINTING INK MFG												
All establishments	2	565	220	13 026	501 533	6 895	14 470	239 627	1 675 447	2 493 572	4 140 214	90 318
Establishments with 1 to 4 employees	4	86	—	210	7 173	125	226	3 663	22 286	47 989	69 826	652
Establishments with 5 to 9 employees	5	108	—	706	23 227	380	735	11 006	74 166	98 628	172 184	2 930
Establishments with 10 to 19 employees	3	151	—	2 066	74 164	1 115	2 225	35 246	264 675	388 521	646 899	13 337
Establishments with 20 to 49 employees	2	150	150	4 514	179 555	2 366	5 020	83 236	597 468	852 385	1 439 400	29 498
Establishments with 50 to 99 employees	2	56	56	3 751	153 981	1 973	4 324	75 806	459 760	643 962	1 092 488	29 717
Establishments with 100 to 249 employees	—	14	14	1 779	63 433	936	1 940	30 670	257 092	462 087	719 417	14 184
Establishments with 250 to 499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 500 to 999 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	107	—	700	21 973	396	697	10 875	60 165	93 837	152 589	2 591

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325910	Printing ink mfg	565	13 026	501 533	6 895	14 470	239 627	1 675 447	2 493 572	4 140 214	90 318
3259101	Letterpress printing inks	18	466	19 248	227	484	8 639	70 226	87 152	153 003	6 988
3259104	Lithographic and offset printing inks	183	5 661	232 445	3 147	6 853	119 058	763 734	1 206 668	1 967 057	32 118
3259107	Gravure printing inks	44	1 083	43 308	594	1 261	21 099	177 478	377 307	541 436	23 535
325910A	Flexographic printing inks	86	2 578	92 505	1 258	2 624	41 125	309 350	381 745	683 689	12 248
325910E	Nonimpact digital inks	9	383	14 495	197	416	6 130	61 398	53 352	115 440	5 892
325910H	Printing inks, nec	21	974	37 620	421	884	13 332	131 909	135 997	269 197	2 782

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325910	Printing ink	N	X	X	3 964 944	N	X	X	3 063 796
3259101	Letterpress printing inks	N	X	X	241 815	N	X	X	140 463
32591011	Letterpress printing inks	N	X	X	241 757	N	X	X	N
3259101111	Letterpress news printing inks mil lb..	8	X	D	D	9	X	112.6	57 836
3259101121	Letterpress packaging printing inks mil lb..	10	X	D	D	14	X	38.6	71 614
3259101131	Other letterpress printing inks, including publication inks mil lb..	8	X	S	7 190	13	X	9.6	10 422
3259101Y	Letterpress printing inks, nsk	N	X	X	58	N	X	X	N
3259101YVV	Letterpress printing inks, nsk	N	X	X	58	N	X	X	591
3259104	Lithographic and offset printing inks	N	X	X	1 707 721	N	X	X	1 394 486
32591041	Lithographic and offset news and nonheat web offset printing inks	N	X	X	279 130	N	X	X	N
3259104111	Lithographic and offset news and nonheat web offset printing inks mil lb..	23	X	304.0	279 130	30	X	398.4	341 128
32591042	Lithographic and offset publication and commercial web printing inks	N	X	X	830 010	N	X	X	N
3259104221	Lithographic and offset publication and commercial web printing inks mil lb..	25	X	657.3	830 010	33	X	286.7	485 828
32591043	Lithographic and offset sheet-fed general printing inks	N	X	X	334 030	N	X	X	N
3259104341	Lithographic and offset sheet-fed general printing inks mil lb..	41	X	P73.4	334 030	46	X	67.1	265 957
32591044	Other lithographic and offset inks	N	X	X	235 194	N	X	X	N
3259104431	Lithographic and offset sheet-fed packaging printing inks mil lb..	17	X	P44.2	162 257	27	X	P40.3	159 013
3259104451	Other lithographic and offset printing inks mil lb..	13	X	S	72 937	20	X	P31.6	89 250
3259104Y	Lithographic and offset inks, nsk	N	X	X	29 357	N	X	X	N
3259104YVV	Lithographic and offset inks, nsk	N	X	X	29 357	N	X	X	53 310
3259107	Gravure printing inks	N	X	X	574 565	N	X	X	464 521
32591071	Gravure publication printing inks	N	X	X	326 340	N	X	X	N
3259107131	Gravure publication printing inks, solvent-type mil lb..	4	X	P269.1	294 208	8	X	304.3	237 258
3259107141	Gravure publication printing inks, water-type mil lb..	3	X	S	32 132	3	X	D	D
32591072	Other gravure printing inks, except publication printing type	N	X	X	228 110	N	X	X	N
3259107211	Gravure packaging printing inks, solvent-type mil lb..	16	X	P59.9	121 909	17	X	74.8	122 234
3259107221	Gravure packaging printing inks, water-type mil lb..	11	X	S	59 258	17	X	39.1	57 321
3259107251	Other gravure printing inks mil lb..	6	X	S	46 943	6	X	5.1	9 185
3259107Y	Gravure inks, nsk	N	X	X	20 115	N	X	X	N
3259107YVV	Gravure inks, nsk	N	X	X	20 115	N	X	X	D
325910A	Flexographic printing inks	N	X	X	703 084	N	X	X	590 159
325910A1	Flexographic printing inks	N	X	X	647 698	N	X	X	N
325910A111	Flexographic packaging printing inks, solvent-type mil lb..	17	X	S	160 542	18	X	130.4	232 733
325910A121	Flexographic packaging printing inks, water-type mil lb..	35	X	P146.5	334 162	38	X	164.6	267 003
325910A131	Flexographic news and commercial printing inks mil lb..	6	X	56.5	102 362	9	X	21.7	25 744
325910A141	Other flexographic printing inks mil lb..	15	X	S	50 632	12	X	S	32 353
325910AY	Flexographic inks, nsk	N	X	X	55 386	N	X	X	N
325910AYVV	Flexographic inks, nsk	N	X	X	55 386	N	X	X	32 326
325910E	Nonimpact-digital inks	N	X	X	96 034	N	X	X	N
325910E1	Nonimpact-digital inks	N	X	X	86 967	N	X	X	N
325910E111	Inkjet inks mil lb..	7	X	S	57 167	N	X	N	N
325910E121	Electrophotographic printing inks mil lb..	3	X	S	8 592	N	X	N	N
325910E131	Other nonimpact-digital inks mil lb..	3	X	S	21 208	N	X	N	N
325910EY	Other nonimpact-digital inks, nsk	N	X	X	9 067	N	X	X	N
325910EYVV	Other nonimpact-digital inks, nsk	N	X	X	9 067	N	X	X	N
325910H	Printing inks, nec	N	X	X	228 316	N	X	X	N
325910H1	Printing inks, nec	N	X	X	228 316	N	X	X	N
325910H111	Textile printing inks mil lb..	9	X	S	51 025	11	X	37.6	56 496
325910H121	Screen printing inks mil lb..	13	X	P26.0	131 944	17	X	P26.3	87 619
325910H131	Other printing inks, including stencil inks mil lb..	11	X	P5.6	45 347	N	X	N	N
325910HY	Printing inks, nec, nsk	N	X	X	—	N	X	X	N
325910HYVV	Printing inks, nec, nsk	N	X	X	—	N	X	X	N
325910W	Printing ink, nsk, total	N	X	X	413 409	N	X	X	260 661
325910WY	Printing ink, nsk, total	N	X	X	413 409	N	X	X	N
325910WYVV	Printing ink, nsk, for nonadministrative-record establishments	N	X	X	264 586	N	X	X	240 884
325910WYWY	Printing ink, nsk, for administrative-record establishments	N	X	X	148 823	N	X	X	19 777

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3259101	LETTERPRESS PRINTING INKS		
	United States	241 815	140 463
	California	25 164	23 939
	Illinois	20 591	8 806
	New Jersey	8 594	10 700
	Ohio	12 516	7 823
	Texas	8 096	7 491
3259104	LITHOGRAPHIC AND OFFSET PRINTING INKS		
	United States	1 707 721	1 394 486
	Arizona	7 013	9 611
	California	155 395	138 841
	Colorado	10 223	6 373
	Connecticut	27 306	17 694
	Florida	68 650	39 064
	Georgia	33 483	35 877
	Illinois	224 417	214 878
	Maryland	38 680	36 714
	Massachusetts	24 025	25 277
	Minnesota	59 222	66 446
	Missouri	53 331	58 192
	Nebraska	4 784	5 861
	New Jersey	56 648	63 707
	New York	76 990	72 145
	North Carolina	32 847	33 486
	Ohio	68 364	88 967
	Oregon	14 922	N
	Pennsylvania	30 645	34 570
	Tennessee	32 509	41 587
	Texas	83 272	86 151
	Utah	18 350	N
	Virginia	76 438	10 308
	Washington	12 591	N
	Wisconsin	121 804	50 945
3259107	GRAVURE PRINTING INKS		
	United States	574 565	464 521
	California	8 629	5 768
	Georgia	40 566	N
	Illinois	100 449	64 931
	Minnesota	4 286	N
	New Jersey	6 528	27 019
	North Carolina	25 398	37 986
	Pennsylvania	22 071	16 230
	Virginia	50 374	63 926
	Wisconsin	16 084	8 555
325910A	FLEXOGRAPHIC PRINTING INKS		
	United States	703 084	590 159
	California	69 504	65 081
	Colorado	2 376	N
	Georgia	16 859	25 299
	Illinois	48 277	80 582
	Indiana	12 499	N
	Maryland	13 335	13 948
	Massachusetts	9 168	N
	Michigan	5 800	5 337
	Minnesota	26 786	19 312
	Missouri	14 902	30 799
	New Jersey	58 073	78 481
	North Carolina	77 582	30 241
	Ohio	72 865	42 444
	Oregon	19 874	N
	Pennsylvania	45 783	27 131
	Tennessee	29 558	12 251
	Texas	32 755	19 064
	Virginia	9 235	N
	Washington	3 690	N
	Wisconsin	27 221	39 944
325910E	NONIMPACT-DIGITAL INKS		
	United States	96 034	N
	New Jersey	16 580	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325910H	PRINTING INKS, NEC		
	United States	228 316	N
	California	17 929	N
	Illinois	20 292	N
	New Jersey	54 001	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325910	PRINTING INK MFG				
32513001	Pigments, organic and inorganic mil lb..	222.5	545 690	310.6	563 660
32518200	Carbon black mil lb..	D	D	193.9	60 967
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. mil lb..	^P 140.4	191 189	135.8	119 414
32551003	Paints, varnishes, stains, lacquers, shellacs, japans, enamels, and allied products mil lb..	393.5	393 268	530.8	318 179
32519105	Wood rosin, turpentine, and other wood chemicals mil lb..	30.1	20 213	38.7	28 096
32410011	Hydrocarbon oils and solvents mil gal..	58.9	137 820	^P 102.4	102 152
32510029	Oxygenated solvents mil gal..	D	D	43.4	58 537
33240000	Metal containers	X	22 303	X	27 430
00970099	All other materials and components, parts, containers, and supplies	X	251 815	X	168 207
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	529 749	X	454 282

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325910 PRINTING INK MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing printing and inkjet inks and inkjet cartridges.

The data published with NAICS code 325910 include the following SIC industry:

2893 Printing ink

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
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325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
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3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
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325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
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3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
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			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
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						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3253207125	28							

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

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U.S. Department of Commerce

William M. Daley,

Secretary

Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
and Statistics
Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325920	Explosives mfg	65	101	7 770	280 624	5 507	11 016	171 344	772 887	542 828	1 318 404	34 009
289200	Explosives	N	101	7 770	280 624	5 507	11 016	171 344	772 887	542 828	1 318 404	34 009

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325920, EXPLOSIVES MFG												
United States	—	101	52	7 770	280 624	5 507	11 016	171 344	772 887	542 828	1 318 404	34 009
California	—	9	5	617	19 568	468	1 029	15 323	44 191	26 189	70 197	3 617
Kentucky	—	8	3	195	7 016	115	262	3 613	32 894	37 729	69 563	653
Pennsylvania	3	6	3	346	9 113	262	425	6 391	17 251	16 963	34 056	824
Texas	—	10	7	802	28 966	588	1 123	15 630	118 877	73 913	194 260	3 716

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325920, EXPLOSIVES MFG		325920, EXPLOSIVES MFG—Con.	
Companies ¹	65	Value added	\$1,000 .. 772 887
All establishments	101	Total inventories, beginning of year	\$1,000 .. 148 779
Establishments with 1 to 19 employees	49	Finished goods inventories, beginning of year	\$1,000 .. 49 432
Establishments with 20 to 99 employees	29	Work-in-process inventories, beginning of year	\$1,000 .. 42 390
Establishments with 100 employees or more	23	Materials and supplies inventories, beginning of year	\$1,000 .. 56 957
All employees	7 770	Total inventories, end of year	\$1,000 .. 149 610
Total compensation ²	363 264	Finished goods inventories, end of year	\$1,000 .. 45 065
Annual payroll	280 624	Work-in-process inventories, end of year	\$1,000 .. 44 068
Total fringe benefits	82 640	Materials and supplies inventories, end of year	\$1,000 .. 60 477
Production workers, average for year	5 507	Gross book value of total assets at beginning of year	\$1,000 .. 452 976
Production workers on March 15	5 554	Total capital expenditures (new and used)	\$1,000 .. 34 009
Production workers on May 15	5 398	Capital expenditures for buildings and other structures (new and used)	\$1,000 .. 8 491
Production workers on August 15	5 500	Capital expenditures for machinery and equipment (new and used)	\$1,000 .. 25 518
Production workers on November 15	5 576	Total retirements ²	\$1,000 .. 20 518
Production-worker hours	11 016	Gross book value of total assets at end of year	\$1,000 .. 466 467
Production-worker wages	171 344	Total depreciation during year ²	\$1,000 .. 39 947
Total cost of materials	542 828	Total rental payments ²	\$1,000 .. 9 516
Cost of materials, parts, containers, etc., consumed	472 967	Buildings and other structures rental payments ²	\$1,000 .. 5 148
Cost of resales	28 656	Machinery and equipment rental payments ²	\$1,000 .. 4 368
Cost of fuels	15 387	Cost of purchased services for the repair of buildings and other structures ³	\$1,000 .. 5 722
Cost of purchased electricity	12 647	Response coverage ratio ⁴	percent .. 98
Cost of contract work	13 171	Cost of purchased services for the repair of machinery and equipment ³	\$1,000 .. 11 957
Quantity of electricity purchased for heat and power	255 546	Response coverage ratio ⁴	percent .. 98
Quantity of electricity generated less sold for heat and power	41 940	Cost of purchased communications services ³	\$1,000 .. 2 982
Total value of shipments	1 318 404	Response coverage ratio ⁴	percent .. 98
Primary products value of shipments	D	Cost of purchased legal services ³	\$1,000 .. 1 798
Secondary products value of shipments	D	Response coverage ratio ⁴	percent .. 98
Total miscellaneous receipts	228 874	Cost of purchased accounting and bookkeeping services ³	\$1,000 .. 374
Value of resales	41 434	Response coverage ratio ⁴	percent .. 98
Contract receipts	D	Cost of purchased advertising services ³	\$1,000 .. 1 032
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent .. 98
Primary products specialization ratio	D	Cost of purchased software and other data processing services ³	\$1,000 .. 936
Value of primary products shipments made in all industries	1 104 135	Response coverage ratio ⁴	percent .. 98
Value of primary products shipments made in this industry	D	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000 .. 3 745
Value of primary products shipments made in other industries	D	Response coverage ratio ⁴	percent .. 98
Coverage ratio	D		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325920, EXPLOSIVES MFG												
All establishments	—	101	52	7 770	280 624	5 507	11 016	171 344	772 887	542 828	1 318 404	34 009
Establishments with 1 to 4 employees	5	21	—	46	1 504	35	65	1 092	4 019	5 568	9 842	208
Establishments with 5 to 9 employees	2	14	—	94	2 889	77	159	2 248	17 385	19 218	37 754	348
Establishments with 10 to 19 employees	—	14	—	199	6 575	129	280	4 074	21 506	49 077	70 939	2 981
Establishments with 20 to 49 employees	1	22	22	644	21 278	411	863	12 524	103 399	112 668	216 744	4 017
Establishments with 50 to 99 employees	1	7	7	437	15 302	294	648	8 788	39 980	37 757	78 244	4 124
Establishments with 100 to 249 employees	—	15	15	2 376	78 485	1 760	3 472	47 900	227 360	170 135	394 087	14 672
Establishments with 250 to 499 employees	—	5	5	1 545	50 105	1 101	2 255	30 879	173 001	96 103	272 854	D
Establishments with 500 to 999 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	1	1	D	D	D	D	D	D	D	D	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	21	—	97	2 717	76	126	1 994	7 341	5 474	12 695	374

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325920	Explosives mfg	101	7 770	280 624	5 507	11 016	171 344	772 887	542 828	1 318 404	34 009

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325920	Explosives	N	X	X	1 104 135	N	X	X	888 427
3259200	Explosives, propellants, and blasting accessories, except those shipped by government-owned, contractor-operated plants	N	X	X	1 104 135	N	X	X	888 427
32592001	Industrial explosives	N	X	X	613 061	N	X	X	N
3259200111	Industrial ammonium nitrate explosives, fuel sensitized, except slurry	11	X	P1 607.9	200 244	9	X	P1 073.6	118 854
3259200121	Other industrial explosives; including water gel and slurries (cap and noncap sensitive), permissibles, dynamites, black blasting powder, shape charges, liquid oxygen explosives, nitroglycerin for sale	18	X	X	412 817	N	X	X	N
32592002	Blasting accessories, including blasting caps, squibs, ignitors, detonating primers, fuses, detonating cord, etc.	N	X	X	239 299	N	X	X	N
3259200231	Blasting accessories, including blasting caps, squibs, ignitors, detonating primers, fuses, detonating cord, etc.	13	X	X	239 299	12	X	X	285 007
32592003	Other explosives; including propellants (smokeless and black powder), military detonators, jet starters, fuse and explosive assemblies, etc.	N	X	X	142 202	N	X	X	N
3259200341	Other explosives; including propellants (smokeless and black powder), military detonators, jet starters, fuse and explosive assemblies, etc.	13	X	X	142 202	N	X	X	N
3259200Y	Explosives, nsk	N	X	X	109 573	N	X	X	N
3259200YWW	Explosives, nsk, for nonadministrative-record establishments	N	X	X	98 148	N	X	X	123 264
3259200YWY	Explosives, nsk, for administrative-record establishments	N	X	X	11 425	N	X	X	7 210

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325920	EXPLOSIVES MFG				
32531103	Ammonia, synthetic anhydrous (100 percent NH3)	D	D	D	D
32531105	Ammonium nitrate (100 percent NH4NO3)	710.5	89 507	394.1	43 938
32531101	Nitric acid (100 percent HNO3)	D	D	36.2	5 421
32518805	Sulfuric acid (100 percent H2SO4), except spent	D	D	P48.5	3 372
32592009	High explosives, including PETN, TNT, azides, and fulminates	X	62 368	X	13 996
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	17 653	X	13 482
00970099	All other materials and components, parts, containers, and supplies	X	153 021	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	74 974	X	D

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325920 EXPLOSIVES MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing explosives.

The data published with NAICS code 325920 include the following SIC industry:

2892 Explosives

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251921	28651	28651	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921100	2865100	2865100	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251924	28655	28655	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924100	2865500	2865500	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	325192W	28650 pt	28650 pt	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192WYWW	2865000 pt	2865000 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865002 pt	2865002 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	3251930 pt.	28690 pt	28690 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28692	28692	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930111	2869215	2869215	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930211	2869210	2869210	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930221	2869219	2869219	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930311	2869225	2869225	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930411	2869220	2869220	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930511	2869229	2869229	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869200	2869200	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869002 pt	2869002 pt	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251991 pt.	28697 pt	28697 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28992	28992	3252224	28242	28242
3251321100	2865200	2865200	3251991111	2899211	2899211	3252224111	2824261	2824261
3251324	28653	28653	3251991121	2899224	2899224	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991131	2899259	2899259	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991141	2899261	2899261	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991151	2899283	2899283	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991161	2899292	2899292	3252224YVV	2824200	2824200
3251811	28121	28121	3251991171	2899294	2899294	3252227	28244	28244
3251811000	2812100	2812100	3251991181	2869715	2869700 pt	3252227111	2824415	2824415
3251814	28123	28123	3251991YVV pt	2869700	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2899200	2899200	3252227311	2824442	2824442
3251817	28125	28125	3251994	28694	28694	3252227411	2824444	2824444
3251817000	2812500	2812500	3251994100	2869400	2869400	3252227421	2824447	2824447
325181W	28120	28120	3251997	28698 pt	28698 pt	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997100	2869831	2869831	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A100	2869837	2869837	325222A131	2824919	2824919
			325199E	28698 pt	28698 pt	325222AYVV	2824900	2824900
			325199E111	2869853	2869853	325222D	28248	28248
			325199E121	2869855	2869855	325222D111	2824815	2824815
			325199EYVV	2869800	2869800	325222D211	2824851	2824851
						325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	3254111	28331	28331	325510WYWW pt	2851000	2851000
			3254111111	2833110	2833110	325510WYWW pt	2899000 pt	2899000 pt
325311W	28730	28730	3254111121	2833120	2833120	325510WYVY pt	2851002	2851002
325311WYWW	2873000	2873000	3254111YVW	2833100	2833100	325510WYVY pt	2899002 pt	2899002 pt
325311WYVY	2873002	2873002						
			3254114	28333	28333	3255201	28913	28913
3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
3253121000	2874100	2874100	3254114121	2833318	2833318	3255201121	2891326	2891326
			3254114131	2833323	2833323	3255201131	2891350	2891350
3253124	28742	28742	3254114141	2833324	2833324	3255201141	2891351	2891351
3253124000	2874200	2874200	3254114151	2833326	2833326	3255201151	2891355	2891355
			3254114161	2833344	2833344	3255201161	2891380	2891380
3253127	28744	28744	3254114171	2833392	2833392	3255201YVW	2891300	2891300
3253127111	2874410	2874410	3254114291	2833399	2833399			
3253127121	2874411	2874411	3254114YVW	2833300	2833300			
3253127131	2874421	2874421				3255204	28914	28914
3253127141	2874431	2874431	325411W	28330	28330	3255204111	2891411	2891411
3253127YVW	2874400	2874400	325411WYVW	2833000	2833000	3255204271	2891448	2891448
			325411WYVY	2833002	2833002	32552043D1	2891465	2891465
325312W	28740	28740				32552044E1	2891471	2891471
325312WYWW	2874000	2874000	3254121	28341	28341	3255204541 pt	2891437 pt	2891441
325312WYVY	2874002	2874002	3254121000	2834100	2834100	3255204541 pt	2891437 pt	2891443
						3255204551	2891445	2891445
3253140	28750	28750	3254124	28342	28342	3255204561	2891447	2891447
3253140111	2875010	2875010	3254124000	2834200	2834200	3255204621	2891424	2891424
3253140121	2875011	2875011				3255204631	2891433	2891433
3253140131	2875021	2875021	3254127	28343	28343			
3253140141	2875041	2875000 pt	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140151	2875051	2875000 pt				3255204691	2891454	2891454
3253140161	2875061	2875000 pt	325412A	28344	28344	32552046A1	2891455	2891455
3253140241	2875031	2875031	325412A000	2834400	2834400	32552046B1	2891457	2891457
3253140YVW	2875000	2875000 pt	325412D	28345	28345	32552046C1	2891461	2891461
3253140YVY	2875002	2875002	325412D000	2834500	2834500	32552046F1	2891481	2891481
						32552046G1	2891483	2891483
3253201 pt	2879A pt	28795 pt	325412G	28346	28346	32552046H1	2891499	2891499
			325412G000	2834600	2834600	3255204YVW	2891400	2891400
3253201 pt	2879A pt	28796 pt						
			325412L	28347	28347	3255207	28916	28916
3253201 pt	2879A pt	28797 pt	325412L000	2834700	2834700	3255207111	2891610	2891610
						3255207121	2891625	2891625
3253201 pt	2879A pt	28798 pt	325412P	28348	28348	3255207131	2891650	2891650
3253201111	2879A11	2879531 pt	325412P000	2834800	2834800	3255207YVW	2891600	2891600
3253201413	2879A13	2879541 pt						
3253201725	2879A25	2879665 pt	325412T	28349	28349	325520A	28917	28917
3253201A15	2879A15	2879561 pt	325412T000	2834900	2834900	325520A111	2891711	2891711
3253201A17	2879A17	2879581 pt				325520A121	2891721	2891721
3253201A21	2879A21	2879641 pt	325412V	28352	28352	325520A131	2891731	2891731
3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A141	2891746	2891746
3253201A27	2879A27	2879675 pt	325412V121	2835220	2835220	325520A151	2891771	2891771
3253201A29	2879A29	2879685 pt	325412V191	2835225	2835225	325520AYVW	2891700	2891700
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Robert J. Shapiro,
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Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325991	Custom compounding of purchased resin	729	832	27 573	950 978	18 224	36 137	503 456	3 046 279	4 766 850	7 800 274	285 292
308700	Custom compound purchased resins	N	832	27 573	950 978	18 224	36 137	503 456	3 046 279	4 766 850	7 800 274	285 292

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325991, CUSTOM COMPOUNDING OF PURCHASED RESIN												
United States	1	832	321	27 573	950 978	18 224	36 137	503 456	3 046 279	4 766 850	7 800 274	285 292
California	2	91	24	2 045	67 410	1 317	2 405	34 537	186 165	280 085	466 903	20 911
Connecticut	2	17	4	439	17 548	165	321	5 151	122 926	124 348	247 654	2 962
Florida	4	33	5	489	14 166	322	585	6 853	42 060	45 905	87 659	3 182
Georgia	—	18	11	1 077	39 505	584	1 224	18 677	140 192	244 287	377 942	15 528
Illinois	3	39	17	1 352	41 979	958	1 855	22 736	112 217	135 595	246 951	10 321
Indiana	—	29	16	1 393	51 599	918	1 707	25 559	178 697	345 358	522 055	13 369
Iowa	2	4	1	156	3 655	132	219	2 687	7 609	7 234	14 901	250
Kansas	—	5	3	198	6 017	150	282	3 538	16 053	36 835	52 943	1 342
Maryland	2	5	4	317	7 878	230	448	4 938	29 009	38 329	66 737	1 873
Michigan	1	41	12	990	38 028	544	1 085	14 860	134 077	172 255	306 244	8 568
Minnesota	—	18	3	610	25 072	356	726	10 075	59 417	78 408	138 195	6 181
Mississippi	—	8	4	284	9 815	237	492	7 021	67 205	162 678	229 119	14 548
Missouri	—	11	5	323	11 141	257	493	6 472	26 452	42 062	67 943	2 772
Nevada	2	7	2	111	3 528	82	164	2 078	13 229	28 296	42 780	1 716
New Jersey	2	48	25	1 973	75 568	1 330	2 790	39 948	191 392	350 887	547 734	17 561
Ohio	1	69	44	3 816	132 901	2 550	5 241	75 448	398 411	633 623	1 026 783	54 297
Rhode Island	—	10	4	746	34 826	390	842	12 005	59 072	64 550	127 988	2 819
Tennessee	—	31	14	1 373	44 392	1 020	2 142	28 526	206 447	281 610	487 089	16 561
Texas	—	70	27	2 133	69 264	1 510	2 931	43 408	230 389	402 625	631 338	22 320
Virginia	1	10	4	301	8 306	224	476	5 211	20 737	17 734	38 663	2 182

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325991, CUSTOM COMPOUNDING OF PURCHASED RESIN		325991, CUSTOM COMPOUNDING OF PURCHASED RESIN—Con.	
Companies ¹	729	Value added	\$1,000.. 3 046 279
All establishments	832	Total inventories, beginning of year	\$1,000.. 727 659
Establishments with 1 to 19 employees	511	Finished goods inventories, beginning of year	\$1,000.. 353 710
Establishments with 20 to 99 employees	258	Work-in-process inventories, beginning of year	\$1,000.. 30 163
Establishments with 100 employees or more	63	Materials and supplies inventories, beginning of year	\$1,000.. 343 786
All employees	27 573	Total inventories, end of year	\$1,000.. 774 316
Total compensation ²	1 198 050	Finished goods inventories, end of year	\$1,000.. 363 572
Annual payroll	950 978	Work-in-process inventories, end of year	\$1,000.. 33 156
Total fringe benefits	247 072	Materials and supplies inventories, end of year	\$1,000.. 377 588
Production workers, average for year	18 224	Gross book value of total assets at beginning of year	\$1,000.. 2 303 038
Production workers on March 15	18 133	Total capital expenditures (new and used)	\$1,000.. 285 292
Production workers on May 15	18 161	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 47 450
Production workers on August 15	18 209	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 237 842
Production workers on November 15	18 393	Total retirements ²	\$1,000.. 45 879
Production-worker hours	36 137	Gross book value of total assets at end of year	\$1,000.. 2 542 451
Production-worker wages	503 456	Total depreciation during year ²	\$1,000.. 175 930
Total cost of materials	4 766 850	Total rental payments ²	\$1,000.. 55 869
Cost of materials, parts, containers, etc., consumed	4 373 817	Buildings and other structures rental payments ²	\$1,000.. 31 982
Cost of resales	244 562	Machinery and equipment rental payments ²	\$1,000.. 23 887
Cost of fuels	23 627	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 12 383
Cost of purchased electricity	106 002	Response coverage ratio ⁴	percent.. 79
Cost of contract work	18 842	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 60 688
Quantity of electricity purchased for heat and power	1 706 205	Response coverage ratio ⁴	percent.. 79
Quantity of electricity generated less sold for heat and power	—	Cost of purchased communications services ³	\$1,000.. 12 679
Total value of shipments	7 800 274	Response coverage ratio ⁴	percent.. 79
Primary products value of shipments	7 023 546	Cost of purchased legal services ³	\$1,000.. 6 386
Secondary products value of shipments	328 613	Response coverage ratio ⁴	percent.. 79
Total miscellaneous receipts	448 115	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 5 829
Value of resales	313 401	Response coverage ratio ⁴	percent.. 79
Contract receipts	125 444	Cost of purchased advertising services ³	\$1,000.. 7 862
Other miscellaneous receipts	9 270	Response coverage ratio ⁴	percent.. 79
Primary products specialization ratio	percent.. 95	Cost of purchased software and other data processing services ³	\$1,000.. 6 368
Value of primary products shipments made in all industries	7 214 119	Response coverage ratio ⁴	percent.. 79
Value of primary products shipments made in this industry	7 023 546	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 10 255
Value of primary products shipments made in other industries	190 573	Response coverage ratio ⁴	percent.. 79
Coverage ratio	percent.. 97		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325991, CUSTOM COMPOUNDING OF PURCHASED RESIN												
All establishments	1	832	321	27 573	950 978	18 224	36 137	503 456	3 046 279	4 766 850	7 800 274	285 292
Establishments with 1 to 4 employees	8	197	—	425	12 311	327	488	7 343	40 109	61 781	102 117	3 182
Establishments with 5 to 9 employees	7	164	—	1 089	28 148	703	1 052	15 262	92 471	130 673	224 361	8 962
Establishments with 10 to 19 employees	4	150	—	2 050	61 355	1 329	2 201	30 224	181 344	239 374	420 893	15 753
Establishments with 20 to 49 employees	1	149	149	4 758	156 801	3 200	6 228	78 262	498 048	795 911	1 287 829	34 589
Establishments with 50 to 99 employees	1	109	109	7 799	266 360	5 278	10 989	148 401	841 132	1 488 390	2 323 102	114 714
Establishments with 100 to 249 employees	—	55	55	8 256	302 963	5 554	11 243	170 279	1 116 311	1 603 729	2 716 252	83 706
Establishments with 250 to 499 employees	1	6	6	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	8	394	—	2 432	54 223	1 677	2 275	32 423	174 055	270 191	445 851	16 468

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325991	Custom compounding of purchased resin	832	27 573	950 978	18 224	36 137	503 456	3 046 279	4 766 850	7 800 274	285 292
3259911	Custom compounding of purchased resins and color concentrates	306	19 730	715 826	12 870	26 614	376 275	2 381 137	3 838 661	6 202 941	225 333
3259912	Resins in the form of pellets from spent or post consumer plastics	30	2 198	84 843	1 443	2 997	38 228	237 692	335 508	577 477	22 827

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325991	Custom compounding of purchased resin	N	X	X	7 214 119	N	X	X	4 403 789
3259911	Custom compounding of purchased resins and color concentrates	N	X	X	5 796 104	N	X	X	N
32599111	Custom compounding of purchased resins and color concentrates	N	X	X	4 434 218	N	X	X	N
3259911115	Custom compounding of purchased resins	209	X	X	4 434 218	304	X	X	3 190 070
32599112	Plastics color concentrates	N	X	X	1 361 886	N	X	X	N
3259911221	Plastics color concentrates	57	X	X	1 361 886	81	X	X	815 709
3259911Y	Custom compounding of purchased resins and color concentrates, nsk	N	X	X	—	N	X	X	N
3259911YWV	Custom compounding of purchased resins and color concentrates, nsk	N	X	X	—	N	X	X	N
3259912	Resins in the form of pellets from spent or post consumer plastics	N	X	X	489 133	N	X	X	N
32599121	Resins in the form of pellets from spent or post consumer plastics	N	X	X	489 133	N	X	X	N
3259912100	Resins in the form of pellets from spent or post consumer plastics	38	X	X	489 133	N	X	X	N
325991W	Custom compounding of purchased resin, nsk, total	N	X	X	928 882	N	X	X	N
325991WY	Custom compounding of purchased resin, nsk, total	N	X	X	928 882	N	X	X	N
325991WYWW	Custom compounding of purchased resin, nsk, for nonadministrative-record establishments	N	X	X	501 865	N	X	X	N
325991WYWY	Custom compounding of purchased resin, nsk, for administrative-record establishments	N	X	X	427 017	N	X	X	79 630

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^P 10 to 19 percent estimated; ^Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3259911	CUSTOM COMPOUNDING OF PURCHASED RESINS AND COLOR CONCENTRATES		
	United States	5 796 104	N
	Arizona	18 344	N
	California	263 436	N
	Connecticut	218 505	N
	Florida	53 048	N
	Georgia	347 648	N
	Illinois	114 227	N
	Indiana	476 403	N
	Kentucky	42 522	N
	Massachusetts	299 624	N
	Michigan	247 041	N
	Minnesota	118 454	N
	Mississippi	222 356	N
	Missouri	49 608	N
	New Jersey	444 836	N
	New York	122 398	N
	North Carolina	102 441	N
	Ohio	870 039	N
	Pennsylvania	300 593	N
	Rhode Island	9 538	N
	South Carolina	43 694	N
	Tennessee	430 838	N
	Texas	518 458	N
	Wisconsin	84 456	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3259912	RESINS IN THE FORM OF PELLETS FROM SPENT OR POST CONSUMER PLASTICS		
	United States	489 133	N
	California	25 452	N
	Massachusetts	57 823	N
	New Jersey	4 747	N
	Ohio	36 460	N
	Pennsylvania	10 049	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. **Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325991	CUSTOM COMPOUNDING OF PURCHASED RESIN				
325000A3	Industrial inorganic chemicals	X	154 852	X	96 464
32513107	Inorganic pigments	X	218 421	X	188 191
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	X	1 804 745	X	1 037 761
325100A1	Industrial organic and synthetic organic chemicals, including plasticizers (except synthetic dyes, pigments, and toners)	X	296 735	X	189 430
32513200	Synthetic dyes, pigments, lakes, and toners	X	132 744	X	144 501
32500043	All other chemical and allied products	X	266 262	X	150 651
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes	X	33 696	X	12 245
32599100	Custom compounded plastics resins (purchased)	X	210 524	X	84 809
32721209	Textile-type glass fiber	X	37 131	X	18 392
32221001	Paperboard containers, boxes, and corrugated paperboard	X	49 794	X	36 326
00999803	Spent or post-consumer plastics (purchased)	X	98 868	X	N
00970099	All other materials and components, parts, containers, and supplies	X	372 559	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	697 486	X	337 392

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325991 CUSTOM COMPOUNDING OF PURCHASED RESINS

This U.S. industry comprises establishments primarily engaged in (1) custom mixing and blending plastics resins made elsewhere or (2) reformulating plastics resins from recycled plastics products.

The data published with NAICS code 325991 include the following SIC industries:

3087 Custom compound purchased resins

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
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3251820 pt.	28160 pt	28160 pt	325199A	28698 pt	28698 pt	325222A121	2824917	2824917
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			325199E111	2869853	2869853	325222D	28248	28248
			325199E121	2869855	2869855	325222D111	2824815	2824815
			325199EYVV	2869800	2869800	325222D211	2824851	2824851
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						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
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3253201A23	2879A23	2879661 pt	325412V111	2835212	2835212	325520A121	2891721	2891721
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3253204141	2879C41	2879812 pt				3256111311 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841145 pt
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3253204YVW pt	2879C00 pt	2879500 pt	3254147YVW	2836300	2836300	3256111321 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt				3256111411 pt	2841133 pt	2841126 pt
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			325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841143 pt
			325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841145 pt
			325414A241	2836430	2836430			
3253207	2879E	28799	325414AYVW	2836400	2836400			
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3253207113	2879E13	2879924	325414W	28360	28360	3256111411 pt	2841133 pt	2841146 pt
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3253207123	2879E23	2879917	325414WYWW	2836002	2836002	3256111411 pt	2841133 pt	2841177

MANUFACTURING—INDUSTRY SERIES

U.S. Census Bureau, 1997 Economic Census

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

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Economics

and Statistics

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Under Secretary for
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Director



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Under Secretary
for Economic Affairs



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Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325992	Photographic film, paper, plate, & chemical mfg	275	310	39 032	1 838 067	21 858	51 245	861 670	7 619 069	5 037 379	12 828 577	566 619
386110	Photographic equipment & supplies (pt)	N	310	39 032	1 838 067	21 858	51 245	861 670	7 619 069	5 037 379	12 828 577	566 619

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
		Total	With 20 em- ploy- ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325992, PHOTOGRAPHIC FILM, PAPER, PLATE, & CHEMICAL MFG												
United States	—	310	107	39 032	1 838 067	21 858	51 245	861 670	7 619 069	5 037 379	12 828 577	566 619
California	3	50	11	1 092	32 112	819	1 528	18 598	84 190	61 312	147 282	5 216
Georgia	1	10	4	265	8 165	132	263	2 818	23 758	21 442	45 187	1 398
Illinois	—	24	8	834	26 821	526	1 091	14 197	70 257	129 604	199 417	10 300
Michigan	—	6	3	164	8 335	70	158	2 062	16 602	25 902	43 066	574
Minnesota	1	7	5	195	6 102	85	153	2 163	14 763	10 300	24 940	1 101
Missouri	—	6	5	723	26 164	440	868	12 632	57 038	33 118	86 427	3 220
New Jersey	—	16	6	736	35 476	460	976	20 828	203 950	90 590	299 626	17 996
Ohio	—	10	5	232	9 766	103	191	2 840	52 078	48 603	103 428	2 061
Texas	3	22	6	531	15 819	404	904	10 042	56 058	55 729	110 845	10 982

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325992, PHOTOGRAPHIC FILM, PAPER, PLATE, & CHEMICAL MFG		325992, PHOTOGRAPHIC FILM, PAPER, PLATE, & CHEMICAL MFG—Con.	
Companies ¹	275	Value added	\$1,000.. 7 619 069
All establishments	310	Total inventories, beginning of year	\$1,000.. 1 589 696
Establishments with 1 to 19 employees	203	Finished goods inventories, beginning of year	\$1,000.. 464 244
Establishments with 20 to 99 employees	71	Work-in-process inventories, beginning of year	\$1,000.. 699 751
Establishments with 100 employees or more	36	Materials and supplies inventories, beginning of year	\$1,000.. 425 691
All employees	39 032	Total inventories, end of year	\$1,000.. 1 446 100
Total compensation ²	2 262 405	Finished goods inventories, end of year	\$1,000.. 343 820
Annual payroll	1 838 067	Work-in-process inventories, end of year	\$1,000.. 648 046
Total fringe benefits	424 338	Materials and supplies inventories, end of year	\$1,000.. 454 234
Production workers, average for year	21 858	Gross book value of total assets at beginning of year	\$1,000.. 8 660 790
Production workers on March 12	21 947	Total capital expenditures (new and used)	\$1,000.. 566 619
Production workers on May 12	22 145	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 63 280
Production workers on August 12	21 720	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 503 339
Production workers on November 12	21 620	Total retirements ²	\$1,000.. 394 470
Production-worker hours	51 245	Gross book value of total assets at end of year	\$1,000.. 8 832 939
Production-worker wages	861 670	Total depreciation during year ²	\$1,000.. 374 327
Total cost of materials	5 037 379	Total rental payments ²	\$1,000.. 100 890
Cost of materials, parts, containers, etc., consumed	4 663 831	Buildings and other structures rental payments ²	\$1,000.. 25 593
Cost of resales	D	Machinery and equipment rental payments ²	\$1,000.. 75 297
Cost of fuels	61 378	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 44 515
Cost of purchased electricity	77 689	Response coverage ratio ⁴	percent.. 96
Cost of contract work	D	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 258 571
Quantity of electricity purchased for heat and power	1 519 916	Response coverage ratio ⁴	percent.. 96
Quantity of electricity generated less sold for heat and power	938 066	Cost of purchased communications services ³	\$1,000.. 21 671
Total value of shipments	12 828 577	Response coverage ratio ⁴	percent.. 96
Primary products value of shipments	11 348 768	Cost of purchased legal services ³	\$1,000.. 11 915
Secondary products value of shipments	1 119 635	Response coverage ratio ⁴	percent.. 96
Total miscellaneous receipts	360 174	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 14 902
Value of resales	D	Response coverage ratio ⁴	percent.. 96
Contract receipts	D	Cost of purchased advertising services ³	\$1,000.. 12 602
Other miscellaneous receipts	D	Response coverage ratio ⁴	percent.. 96
Primary products specialization ratio	91	Cost of purchased software and other data processing services ³	\$1,000.. 30 391
Value of primary products shipments made in all industries	11 851 089	Response coverage ratio ⁴	percent.. 96
Value of primary products shipments made in this industry	11 348 768	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 28 794
Value of primary products shipments made in other industries	502 321	Response coverage ratio ⁴	percent.. 96
Coverage ratio	95		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325992, PHOTOGRAPHIC FILM, PAPER, PLATE, & CHEMICAL MFG												
All establishments	—	310	107	39 032	1 838 067	21 858	51 245	861 670	7 619 069	5 037 379	12 828 577	566 619
Establishments with 1 to 4 employees	7	133	—	253	6 178	180	230	3 239	17 125	17 418	34 956	2 638
Establishments with 5 to 9 employees	9	34	—	226	6 234	139	196	3 202	14 190	12 011	26 584	1 795
Establishments with 10 to 19 employees	6	36	—	531	15 417	340	546	8 564	40 568	37 138	78 221	3 541
Establishments with 20 to 49 employees	1	43	43	1 333	41 789	807	1 422	18 373	133 755	156 146	294 332	7 619
Establishments with 50 to 99 employees	1	28	28	2 014	74 711	1 200	2 354	35 059	339 240	193 605	535 936	14 192
Establishments with 100 to 249 employees	—	16	16	2 591	91 623	1 648	3 329	48 710	445 673	312 719	764 888	52 243
Establishments with 250 to 499 employees	—	9	9	3 056	118 660	2 183	4 329	71 487	854 078	474 061	1 347 628	63 112
Establishments with 500 to 999 employees	2	7	7	4 667	213 594	3 042	6 972	119 232	1 054 925	724 975	1 792 924	D
Establishments with 1,000 to 2,499 employees	—	3	3	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	1	1	D	D	D	D	D	D	D	D	D
Administrative records ²	9	154	—	825	20 336	546	697	10 848	50 198	43 337	95 027	5 758

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325992	Photographic film, paper, plate, & chemical mfg....	310	39 032	1 838 067	21 858	51 245	861 670	7 619 069	5 037 379	12 828 577	566 619
3259921	Photographic sensitized film, plates, paper, and cloth, silver halide type (except x-ray)	25	28 727	1 438 594	15 069	37 319	640 468	5 218 393	3 648 945	9 017 856	409 890
3259923	Sensitized photographic film, plates, paper, and cloth, other than silver halide type (including x-ray)	46	5 958	244 967	4 000	8 949	144 591	1 467 759	871 444	2 352 907	107 824
3259925	Prepared photographic chemicals ...	45	3 097	123 143	1 949	3 895	59 898	858 902	452 229	1 316 719	40 223

Table 6a. **Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325992	Photographic film, paper, plate and chemical products	N	X	X	11 851 089	N	X	X	N
3259921	Photographic sensitized film, plates, paper, and cloth, silver halide type (except x-ray)	N	X	X	6 811 073	N	X	X	N
32599211	Photographic sensitized film, plates, paper, and cloth, silver halide type (except x-ray)	N	X	X	6 811 073	N	X	X	N
3259921101	Photographic presensitized printing plates, unexposed	7	X	X	372 405	11	X	X	366 755
3259921106	Phototypesetting and imagesetting film	7	X	X	118 161	4	X	X	117 352
3259921111	Sensitized photographic paper and cloth, silver halide type	8	X	X	D	8	X	X	D
3259921116	Other photographic sensitized film, plates, slides, including microfilm and motion picture film, sheet film, pack film, and long lengths of still picture roll film including graphic arts film	11	X	X	D	N	X	X	N
3259921Y	Photographic sensitized film, plates, paper, and cloth, silver halide type (except x-ray), nsk	N	X	X	—	N	X	X	N
3259921YVV	Photographic sensitized film, plates, paper, and cloth, silver halide type (except x-ray), nsk	N	X	X	—	N	X	X	9 765
3259923	Sensitized photographic film, plates, paper, and cloth, other than silver halide type (including x-ray)	N	X	X	2 835 477	N	X	X	N
32599231	Sensitized photographic film, plates, paper, and cloth, other than silver halide type (including x-ray)	N	X	X	2 792 301	N	X	X	N
3259923101	Dry diazo print paper, paper reproductions, diazo type film (including microfilm-microfiche), and all other diazo materials	12	X	X	289 326	N	X	X	N
3259923106	Photographic diffusion transfer materials (including both imager and receiver sheets), off-press color proofing media, letterpress and flexographic plates, and other types	25	X	X	1 153 889	N	X	X	N
3259923111	X-ray film and plates	6	X	X	1 349 086	9	X	X	D
3259923Y	Sensitized photographic film, plates, paper, and cloth, other than silver halide type (including x-ray), nsk	N	X	X	43 176	N	X	X	N
3259923YVV	Sensitized photographic film, plates, paper, and cloth, other than silver halide type (including x-ray), nsk	N	X	X	43 176	N	X	X	45 877
3259925	Prepared photographic chemicals	N	X	X	2 070 936	N	X	X	1 862 276
32599251	Prepared photographic chemicals, office copy toners	N	X	X	1 138 027	N	X	X	N
3259925101	Prepared photographic chemicals, office copy toners	28	X	X	1 138 027	16	X	X	963 421
32599252	Prepared photographic chemicals	N	X	X	617 373	N	X	X	N
3259925206	Prepared photographic chemicals	21	X	X	617 373	26	X	X	695 247
32599253	Other prepared photographic chemicals, including prepared plate chemicals	N	X	X	279 923	N	X	X	N
3259925316	Prepared photographic plate chemicals	6	X	X	35 531	5	X	X	41 043
3259925321	Other prepared photographic chemicals	13	X	X	244 392	14	X	X	142 594
3259925Y	Prepared photographic chemicals, nsk	N	X	X	35 613	N	X	X	N
3259925YVV	Prepared photographic chemicals, nsk	N	X	X	35 613	N	X	X	19 971
325992W	Photographic film, paper, plate, and chemical manufacturing, nsk, total	N	X	X	133 603	N	X	X	N
325992WY	Photographic film, paper, plate, and chemical manufacturing, nsk, total	N	X	X	133 603	N	X	X	N
325992WYVV	Photographic film, paper, plate, and chemical manufacturing, nsk, for nonadministrative-record establishments	N	X	X	46 093	N	X	X	N
325992WYVY	Photographic film, paper, plate, and chemical manufacturing, nsk, for administrative-record establishments	N	X	X	87 510	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. Product Class Shipments for Selected States: 1997 and 1992

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3259921	PHOTOGRAPHIC SENSITIZED FILM, PLATES, PAPER, AND CLOTH, SILVER HALIDE TYPE (EXCEPT X-RAY)		
	United States	6 811 073	N
	Missouri	46 548	N
3259923	SENSITIZED PHOTOGRAPHIC FILM, PLATES, PAPER, AND CLOTH, OTHER THAN SILVER HALIDE TYPE (INCLUDING X-RAY)		
	United States	2 835 477	N
	California	46 225	N
	Georgia	11 150	N
	Illinois	75 959	N
	New York	188 878	N
	South Carolina	209 380	N
	Texas	80 347	N
3259925	PREPARED PHOTOGRAPHIC CHEMICALS		
	United States	2 070 936	1 862 276
	California	135 846	81 414
	New Jersey	59 014	115 724
	New York	654 917	N
	Pennsylvania	14 947	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325992	PHOTOGRAPHIC FILM, PAPER, PLATE, & CHEMICAL MFG				
32210007	Paper and paperboard products (except paperboard boxes, containers, corrugated paperboard, and photographic base papers)	X	198 240	X	N
32212025	Photographic base papers	X	720 801	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	148 564	X	N
325000B1	Inorganic chemicals, n.e.c., except silver nitrate and prepared photographic chemicals	X	D	X	N
32518839	Silver nitrate	X	266 245	X	N
325100A7	Synthetic organic chemicals, except prepared photographic chemicals	X	D	X	N
32599215	Prepared photographic chemicals	X	D	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	X	71 759	X	N
32611303	Unsupported plastics film and sheet for photographic, mimeographic, X-ray, etc.	X	153 630	X	N
32610011	Fabricated plastics products (except gaskets)	X	27 185	X	N
32599203	Light sensitive films and papers	X	164 486	X	N
00970099	All other materials and components, parts, containers, and supplies	X	882 100	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	67 601	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325992 PHOTOGRAPHIC FILM, PAPER, PLATE, AND CHEMICAL MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing sensitized film, sensitized paper, sensitized cloth, sensitized plates, toners (i.e., for photocopiers, laser printers, and similar electrostatic printing devices), toner cartridges, and photographic chemicals.

The data published with NAICS code 325992 include the following SIC industry:

3861 Photographic equipment and supplies (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824477	2824477
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	2824400	2824400
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A	28249	28249
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A111	2824915	2824915
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222A131	2824919	2824919
			325199A100	2869837	2869837	325222AYVV	2824900	2824900
			325199E	28698 pt	28698 pt	325222D	28248	28248
			325199E111	2869853	2869853	325222D111	2824815	2824815
			325199E121	2869855	2869855	325222D211	2824851	2824851
			325199EYVV	2869800	2869800	325222D221	2824875	2824875
						325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt			
			3253207155	2879E55	2879971	325510A pt	28515	28515
3253111	28731	28731	3253207157	2879E57	2879930	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207159	2879E59	2879986 pt	325510A000 pt	2851500	2851500
			3253207YVW	2879E00	2879900	325510A000 pt	2899586	2899586
3253114	28732	28732	325320W	28790	28790			
3253114000	2873200	2873200	325320WYWW	2879000	2879000	325510W pt	28510	28510
			325320WYVY	2879002	2879002			
3253117	28733	28733				325510W pt	28990 pt	28990 pt
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3253121	28741	28741	3254114111	2833315	2833315	3255201111	2891311	2891311
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3253201A27	2879A27	2879675 pt	325412V191	2835225	2835225	325520A151	2891771	2891771
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U.S. Census Bureau, 1997 Economic Census

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325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

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1997 Economic Census

Manufacturing

Industry Series



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Manufacturing

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U.S. Department of Commerce

William M. Daley,

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Robert L. Mallett,

Deputy Secretary

Economics

and Statistics

Administration

Robert J. Shapiro,

Under Secretary for
Economic Affairs

U.S. CENSUS BUREAU

Kenneth Prewitt,

Director



**Economics
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Administration**

Robert J. Shapiro,
Under Secretary
for Economic Affairs



U.S. CENSUS BUREAU

Kenneth Prewitt,
Director

William G. Barron,
Deputy Director

Paula J. Schneider,
Principal Associate Director
for Programs

Frederick T. Knickerbocker,
Associate Director
for Economic Programs

Thomas L. Mesenbourg,
Assistant Director
for Economic Programs

William G. Bostic Jr.,
Chief, Manufacturing
and Construction Division

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Companies ¹	All establishments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325998	All other miscellaneous chemical product & preparation mfg.....	986	1 149	35 897	1 416 948	21 536	43 613	688 340	6 791 694	6 053 715	12 817 596	613 013
281930	Industrial inorganic chemicals, n.e.c. (pt)	N	22	1 484	65 448	971	2 213	38 727	284 409	98 458	380 156	30 402
289940	Chemical preparations, n.e.c. (pt)	N	1 118	33 841	1 332 904	20 123	40 446	638 715	6 451 847	5 929 085	12 356 816	581 682
395210	Lead pencils & art goods (pt) ..	N	—	—	—	—	—	—	—	—	—	—
399950	Manufacturing industries, n.e.c. (pt)	N	9	572	18 596	442	954	10 898	55 438	26 172	80 624	929

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325998, ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT & PREPARATION MFG												
United States	2	1 149	424	35 897	1 416 948	21 536	43 613	688 340	6 791 694	6 053 715	12 817 596	613 013
Arizona	4	14	4	205	6 205	109	202	3 300	35 396	19 382	54 750	2 270
Arkansas	1	11	3	389	13 417	234	486	5 912	46 486	90 141	135 516	9 889
California	2	114	30	2 308	80 163	1 342	2 618	41 966	431 250	300 935	728 970	24 749
Florida	3	36	13	811	26 667	478	843	13 375	87 085	91 203	179 946	6 361
Georgia	1	40	16	1 701	62 328	1 037	2 273	31 211	380 107	448 120	824 791	21 563
Illinois	2	67	32	3 000	129 391	1 819	3 633	66 893	1 010 371	940 084	1 950 343	68 388
Indiana	3	26	9	483	16 133	316	614	6 907	73 302	91 950	160 530	7 301
Kansas	4	13	8	775	26 373	523	1 086	14 229	112 893	69 225	182 243	38 145
Kentucky	—	11	3	406	17 490	298	701	12 998	93 881	36 219	130 697	3 085
Louisiana	2	22	4	284	9 531	196	423	6 236	73 536	59 104	132 569	4 427
Maryland	1	15	6	310	11 080	201	394	5 358	65 360	49 268	115 194	4 269
Massachusetts	—	23	11	2 088	105 858	1 156	2 406	41 881	289 586	265 375	556 238	32 237
Michigan	2	44	20	1 947	86 697	980	2 103	37 614	319 387	246 832	570 813	20 409
Minnesota	2	16	5	493	18 599	315	669	8 815	64 853	34 418	99 252	2 300
Missouri	—	20	6	358	10 357	224	370	5 414	43 331	42 045	85 377	1 742
New Jersey	2	55	19	1 330	53 923	729	1 522	22 776	349 768	219 077	566 967	10 306
New Mexico	7	5	2	204	4 190	161	305	2 838	12 517	12 373	24 947	865
North Carolina	—	41	9	1 790	80 744	1 170	2 132	34 208	329 586	315 322	634 272	29 842
Ohio	3	89	40	3 012	112 780	1 789	3 431	54 781	525 662	389 244	914 528	38 911
Pennsylvania	2	61	28	1 667	60 857	993	2 087	30 647	321 779	370 954	684 407	19 752
South Carolina	—	18	7	963	42 106	636	1 577	23 507	186 570	173 259	356 081	13 509
Texas	2	127	50	3 722	145 094	2 378	4 778	73 169	720 959	667 204	1 397 604	64 047
Utah	5	10	4	386	10 215	265	420	6 358	42 791	25 832	67 376	3 215
Washington	1	19	6	321	13 092	160	342	5 298	89 139	80 569	170 093	4 052
Wisconsin	1	26	12	528	19 828	268	504	8 105	97 838	113 688	210 130	3 446

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
325998, ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT & PREPARATION MFG		325998, ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT & PREPARATION MFG—Con.	
Companies ¹	number.. 986	Value added	\$1,000.. 6 791 694
All establishments	number.. 1 149	Total inventories, beginning of year	\$1,000.. 1 388 267
Establishments with 1 to 19 employees	number.. 725	Finished goods inventories, beginning of year	\$1,000.. 699 854
Establishments with 20 to 99 employees	number.. 348	Work-in-process inventories, beginning of year	\$1,000.. 175 870
Establishments with 100 employees or more	number.. 76	Materials and supplies inventories, beginning of year	\$1,000.. 512 543
All employees	number.. 35 897	Total inventories, end of year	\$1,000.. 1 422 827
Total compensation ²	\$1,000.. 1 772 243	Finished goods inventories, end of year	\$1,000.. 743 550
Annual payroll	\$1,000.. 1 416 948	Work-in-process inventories, end of year	\$1,000.. 159 987
Total fringe benefits	\$1,000.. 355 295	Materials and supplies inventories, end of year	\$1,000.. 519 290
Production workers, average for year	number.. 21 536	Gross book value of total assets at beginning of year	\$1,000.. 6 268 633
Production workers on March 12	number.. 21 474	Total capital expenditures (new and used)	\$1,000.. 613 013
Production workers on May 12	number.. 21 450	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 107 641
Production workers on August 12	number.. 21 601	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 505 372
Production workers on November 12	number.. 21 619	Total retirements ²	\$1,000.. 196 453
Production-worker hours	1,000.. 43 613	Gross book value of total assets at end of year	\$1,000.. 6 685 193
Production-worker wages	\$1,000.. 688 340	Total depreciation during year ²	\$1,000.. 371 265
Total cost of materials	\$1,000.. 6 053 715	Total rental payments ²	\$1,000.. 74 122
Cost of materials, parts, containers, etc., consumed	\$1,000.. 5 146 483	Buildings and other structures rental payments ²	\$1,000.. 30 850
Cost of resales	\$1,000.. 637 024	Machinery and equipment rental payments ²	\$1,000.. 43 272
Cost of fuels	\$1,000.. 107 377	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 15 479
Cost of purchased electricity	\$1,000.. 102 607	Response coverage ratio ⁴	percent.. 79
Cost of contract work	\$1,000.. 60 224	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 115 169
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 922 750	Response coverage ratio ⁴	percent.. 79
Quantity of electricity generated less sold for heat and power	1,000 kWh.. 37 909	Cost of purchased communications services ³	\$1,000.. 18 648
Total value of shipments	\$1,000.. 12 817 596	Response coverage ratio ⁴	percent.. 79
Primary products value of shipments	\$1,000.. 10 681 184	Cost of purchased legal services ³	\$1,000.. 11 593
Secondary products value of shipments	\$1,000.. 1 108 507	Response coverage ratio ⁴	percent.. 79
Total miscellaneous receipts	\$1,000.. 1 027 905	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 5 190
Value of resales	\$1,000.. 896 292	Response coverage ratio ⁴	percent.. 79
Contract receipts	\$1,000.. 75 224	Cost of purchased advertising services ³	\$1,000.. 22 581
Other miscellaneous receipts	\$1,000.. 56 389	Response coverage ratio ⁴	percent.. 79
Primary products specialization ratio	percent.. 90	Cost of purchased software and other data processing services ³	\$1,000.. 5 888
Value of primary products shipments made in all industries	\$1,000.. 11 803 944	Response coverage ratio ⁴	percent.. 79
Value of primary products shipments made in this industry	\$1,000.. 10 681 184	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 31 261
Value of primary products shipments made in other industries	\$1,000.. 1 122 760	Response coverage ratio ⁴	percent.. 79
Coverage ratio	percent.. 90		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325998, ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT & PREPARATION MFG												
All establishments	2	1 149	424	35 897	1 416 948	21 536	43 613	688 340	6 791 694	6 053 715	12 817 596	613 013
Establishments with 1 to 4 employees	4	305	—	682	22 375	474	790	12 219	105 545	141 115	247 542	7 046
Establishments with 5 to 9 employees	3	176	—	1 211	42 386	723	1 279	20 884	202 052	163 294	363 813	12 584
Establishments with 10 to 19 employees	3	244	—	3 384	125 347	1 915	3 649	57 019	651 221	593 464	1 236 444	40 445
Establishments with 20 to 49 employees	2	242	242	7 502	276 951	4 245	8 344	121 866	1 262 762	1 192 402	2 458 171	88 760
Establishments with 50 to 99 employees	3	106	106	7 190	263 500	4 158	8 129	125 727	1 354 440	1 239 739	2 599 738	89 478
Establishments with 100 to 249 employees	1	57	57	8 641	347 196	5 099	10 904	170 258	1 401 471	1 258 908	2 646 131	202 473
Establishments with 250 to 499 employees	—	15	15	4 577	193 308	3 336	6 773	111 035	1 168 149	1 196 299	2 346 892	78 513
Establishments with 500 to 999 employees	—	4	4	2 710	145 885	1 586	3 745	69 332	646 054	268 494	918 865	93 714
Establishments with 1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	8	280	—	1 351	37 963	876	1 349	21 464	152 581	146 348	299 804	16 905

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
325998	All other miscellaneous chemical product & preparation mfg	1 149	35 897	1 416 948	21 536	43 613	688 340	6 791 694	6 053 715	12 817 596	613 013
3259981	Evaporated salt (bulk, pressed blocks, and packaged), except table salt	25	2 424	92 554	1 852	4 180	67 076	324 329	120 574	451 691	D
3259984	Matches	5	555	18 232	429	934	10 692	54 627	25 578	79 219	D
3259987	Gelatin, except ready-to-eat desserts	9	1 749	76 637	1 260	2 891	49 051	274 837	298 023	558 227	69 715
325998A	Water treating compounds	123	4 888	183 005	2 456	4 578	72 316	1 578 468	1 140 107	2 718 786	59 369
325998E	Automotive chemicals	40	1 496	53 052	830	1 644	21 160	311 537	431 516	744 169	22 759
325998H	Chemical preparations, nec, including essential oils	364	17 177	738 185	10 039	21 131	336 890	3 331 036	3 186 355	6 489 553	315 578

Table 6a. Products Statistics: 1997 and 1992

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325998	All other miscellaneous chemical products	N	X	X	11 803 944	N	X	X	N
3259981	Evaporated salt (bulk, pressed blocks, and packaged), except table salt	N	X	X	408 210	N	X	X	N
32599811	Evaporated salt (bulk, pressed blocks, and packaged), except table salt	N	X	X	408 210	N	X	X	N
3259981100	Evaporated salt (bulk, pressed blocks, and packaged), except table salt 1,000 s tons ..	13	X	^{P4} 591.4	408 210	N	X	N	N
3259984	Matches	N	X	X	53 406	N	X	X	62 222
32599841	Matches	N	X	X	53 406	N	X	X	N
3259984100	Matches	3	X	X	53 406	9	X	X	62 222
3259987	Gelatin, except ready-to-eat desserts (including food grade, pharmaceutical, photographic, unfilled capsules, etc.)	N	X	X	445 300	N	X	X	314 076
32599871	Gelatin, except ready-to-eat desserts	N	X	X	445 300	N	X	X	N
3259987111	Food grade gelatin, excluding ready-to-eat desserts, pharmaceutical, and photographic grades mil lb ..	9	X	S	136 189	7	X	51.5	87 855
3259987121	Pharmaceutical grade gelatin, except unfilled capsules mil lb ..	5	X	^{P20.8}	59 779	6	X	29.3	54 133
3259987131	Other gelatin products (unfilled capsules, gelatin sheets for theatrical use, photographic, or technical grade gelatin) mil lb ..	8	X	S	249 332	5	X	D	D
3259987Y	Gelatin, except ready-to-eat desserts, nsk	N	X	X	—	N	X	X	N
3259987YVV	Gelatin, except ready-to-eat desserts, nsk	N	X	X	—	N	X	X	D
325998A	Water treating compounds	N	X	X	2 097 455	N	X	X	N
325998A1	Water treating compounds	N	X	X	2 097 455	N	X	X	N
325998A111	Swimming pool chemical preparations	17	X	X	465 230	25	X	X	324 474
325998A121	Cooling tower water treating compounds mil lb ..	52	X	^{Q168.8}	256 032	65	X	330.1	334 660
325998A131	Boiler water treating compounds mil lb ..	66	X	S	219 205	79	X	204.7	213 129
325998A141	Other water treating compounds mil lb ..	74	X	^{P1} 425.3	1 156 988	88	X	1 395.9	1 031 660
325998AY	Water treating compounds, nsk	N	X	X	—	N	X	X	N
325998AYVV	Water treating compounds, nsk	N	X	X	—	N	X	X	N
325998E	Automotive chemicals	N	X	X	690 311	N	X	X	N
325998E1	Automotive chemicals	N	X	X	690 311	N	X	X	N
325998E111	Antifreeze preparations mil gal ..	33	X	S	305 440	42	X	S	370 493
325998E121	Radiator additives	5	X	X	14 633	N	X	X	N
325998E131	Crankcase additives (excluding motor oils)	7	X	X	17 034	N	X	X	N
325998E141	Brake, transmission, and other automotive fluids	11	X	X	52 603	N	X	X	N
325998E151	Engine degreasers	4	X	X	3 187	N	X	X	N
325998E161	Carburetor and choke cleaners	9	X	X	36 571	N	X	X	N
325998E171	Deicers (windshield fluids, lock, etc.)	10	X	X	29 875	N	X	X	N
325998E181	Engine starting fluids	5	X	X	8 910	N	X	X	N
325998E191	Aerosol tire inflators	5	X	X	12 563	N	X	X	N
325998E1A1	Other automotive chemicals	22	X	X	209 495	N	X	X	N
325998EY	Automotive chemicals, nsk	N	X	X	—	N	X	X	N
325998EYVV	Automotive chemicals, nsk	N	X	X	—	N	X	X	N
325998H	Chemical preparations, nec, including essential oils @	N	X	X	6 411 055	N	X	X	N
325998H1	Chemical preparations, nec, including essential oils	N	X	X	5 443 215	N	X	X	N
325998H101	Citrus fruit essential oils (unblended, natural), including orange, lemon, and lime mil lb ..	15	X	S	79 714	16	X	^{Q20.0}	104 962
325998H103	Other essential oils (unblended, natural), including spearmint, peppermint, cedar wood, clove, and nutmeg oils mil lb ..	14	X	S	175 337	23	X	^{P27.5}	149 945
325998H106	Fireworks	10	X	X	20 813	20	X	X	22 915
325998H107	Pyrotechnics (including flares, jet fuel igniters, railroad torpedoes, toy pistol caps, etc.)	16	X	X	101 494	14	X	X	123 414
325998H109	Rubber processing preparations, including red lead and 2-mercaptoimidazole rubber accelerator composition mil lb ..	4	X	S	91 988	11	X	^{P50.5}	48 950
325998H111	Concrete curing and floor hardening materials	29	X	X	226 582	31	X	X	113 935
325998H121	Drilling mud materials (mud thinners, thickeners, and purifiers) mil lb ..	16	X	S	122 372	14	X	98.7	48 971
325998H131	Chemical foundry supplies, including binders, core oils, core wash, etc.	14	X	X	279 293	20	X	X	240 480
325998H141	Household tints and dyes mil lb ..	1	X	D	D	4	X	D	D
325998H151	Metal-treating compounds (nonoil-base) for nitriding, pickling, drawing, and cutting	42	X	X	281 881	51	X	X	277 024

See footnotes at end of table.

Table 6a. **Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
325998	All other miscellaneous chemical products—Con.								
325998H	Chemical preparations, nec, including essential oils @—Con.								
325998H1	Chemical preparations, nec, including essential oils—Con.								
325998H161	Oil-treating compounds (nonoil-base)	14	X	X	180 780	16	X	X	69 722
325998H171	Sizes (textile, paper, and other) mil lb..	16	X	S	201 718	27	X	696.9	231 491
325998H181	Writing and stamp pad ink, including indelible ink and marking fluid, excluding drawing and printing inks	22	X	X	62 943	39	X	X	78 938
325998H191	Waterproofing compounds (textile, paper, electrical, leather, masonry, etc.)	17	X	X	41 877	34	X	X	187 585
325998H1A1	Plating compounds mil lb..	19	X	S	229 279	30	X	S	181 233
325998H1B1	Lighter fluids (cigarette, charcoal, etc.) mil gal..	3	X	D	D	12	X	46.9	61 078
325998H1C1	Waxes (animal, vegetable, mineral, including blends), except petroleum waxes and polishing preparations	20	X	X	261 708	18	X	X	D
325998H1D1	Distilled water mil gal..	9	X	D	D	12	X	S	48 150
325998H1E1	Other industrial chemical specialties, including fluxes, plastics wood preparations, embalming preparations, etc.	199	X	X	2 991 031	N	X	X	N
325998HY	Chemical preparations, nec, nsk	N	X	X	967 840	N	X	X	N
325998HYWV	Chemical preparations, nec, nsk	N	X	X	967 840	N	X	X	N
325998W	Miscellaneous chemical products, nec, nsk, total	N	X	X	1 698 207	N	X	X	N
325998WY	Miscellaneous chemical products, nec, nsk, total	N	X	X	1 698 207	N	X	X	N
325998WYWW	Miscellaneous chemical products, nec, nsk, for nonadministrative-record establishments	N	X	X	1 420 447	N	X	X	N
325998WYWY	Miscellaneous chemical products, nec, nsk, for administrative-record establishments	N	X	X	277 760	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3259981	EVAPORATED SALT (BULK, PRESSED BLOCKS, AND PACKAGED), EXCEPT TABLE SALT		
	United States	408 210	N
	California.....	38 182	N
	Kansas	98 471	N
3259984	MATCHES		
	United States	53 406	62 222
3259987	GELATIN, EXCEPT READY-TO-EAT DESSERTS (INCLUDING FOOD GRADE, PHARMACEUTICAL, PHOTOGRAPHIC, UNFILLED CAPSULES, ETC.)		
	United States	445 300	314 076
	Iowa.....	138 881	82 029

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
325998A	WATER TREATING COMPOUNDS		
	United States	2 097 455	N
	California	172 488	N
	Connecticut	3 587	N
	Florida	9 927	N
	Georgia	374 006	N
	Illinois	380 692	N
	Indiana	10 400	N
	Kansas	24 747	N
	Louisiana	37 817	N
	Michigan	47 481	N
	Minnesota	4 805	N
	New Jersey	192 729	N
	Ohio	124 081	N
	Pennsylvania	187 178	N
	Tennessee	6 283	N
	Texas	253 055	N
	Washington	26 441	N
325998E	AUTOMOTIVE CHEMICALS		
	United States	690 311	N
	Indiana	6 602	N
	Michigan	24 528	N
	Missouri	35 650	N
	Ohio	63 925	N
	Oregon	5 880	N
	Pennsylvania	51 942	N
	Texas	59 884	N
325998H	CHEMICAL PREPARATIONS, NEC, INCLUDING ESSENTIAL OILS @		
	United States	6 411 055	N
	Arkansas	26 208	N
	California	288 370	N
	Colorado	22 001	N
	Connecticut	79 872	N
	Florida	97 707	N
	Georgia	333 608	N
	Illinois	800 961	N
	Indiana	119 895	N
	Louisiana	178 552	N
	Maryland	91 952	N
	Massachusetts	343 649	N
	Michigan	393 383	N
	Minnesota	85 700	N
	Missouri	42 891	N
	New Hampshire	34 736	N
	New Jersey	204 107	N
	New York	214 823	N
	North Carolina	320 364	N
	Ohio	522 814	N
	Oklahoma	34 479	N
	Oregon	47 195	N
	Pennsylvania	322 118	N
	Rhode Island	15 119	N
	South Carolina	110 916	N
	Tennessee	139 927	N
	Texas	748 391	N
	Virginia	42 752	N
	Washington	112 881	N
	West Virginia	5 504	N
	Wisconsin	135 848	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
325998	ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT & PREPARATION MFG				
32221001	Paperboard containers, boxes, and corrugated paperboard	X	132 457	X	N
32240000	Metal containers	X	64 768	X	N
21230009	Crude nonmetallic minerals, including limestone, clay, gypsum, talc, etc.	X	119 739	X	N
31100027	Fats, oils, greases, and tallow	X	171 451	X	N
32518101	Alkalies and chlorine	X	191 719	X	N
325000A7	Industrial inorganic chemicals	X	630 280	X	N
32519101	Wood rosin, turpentine, and other wood chemicals, including tall oil	X	59 791	X	N
32510099	Synthetic organic chemicals, not elsewhere classified	X	829 716	X	N
32410001	Refined petroleum products, including naphtha solvents, petrolatum, waxes, etc.	X	298 981	X	N
32521103	Plastics and resin materials (synthetic)	X	199 600	X	N
32610029	Plastics containers	X	118 849	X	N
00970099	All other materials and components, parts, containers, and supplies	X	1 795 988	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	533 144	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ^p 10 to 19 percent estimated; ^q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry.	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

325998 ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT AND PREPARATION MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing chemical products (except basic chemicals, resins, synthetic rubber; cellulosic and noncellulosic fiber and filaments; pesticides, fertilizers, and other agricultural chemicals; pharmaceuticals and medicines; paints, coatings and adhesives; soap, cleaning compounds, and toilet preparations; printing inks; explosives; custom compounding of purchased resins; and photographic films, papers, plates, and chemicals).

The data published with NAICS code 325998 include the following SIC industries:

- 2819 Industrial inorganic chemicals, n.e.c. (pt)
- 2899 Chemical preparations, n.e.c. (pt)
- 3952 Lead pencils and art goods (pt)
- 3999 Manufacturing industries, n.e.c. (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 325998 do not include establishments primarily engaged in aerosol packaging. The NAICS definitions will be fully implemented with the 2002 Economic Census.

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@325998H.....	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

Appendix G.

Comparability of Product Classes and Product Codes:

1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3251101	28656	28656	3251820 pt.	28950	28950	325199H	28693 pt.	28693 pt
3251101111	2865658	2865658	3251820100 pt	2816388	2816388	325199H111	2869313	2869313
3251101121	2865659	2865659	3251820100 pt	2895000	2895000	325199H121	2869315	2869315
3251101YVV	2865600	2865600	3251820YWW pt	2816000 pt	2816000 pt	325199HYVV	2869300	2869300 pt
3251104	28691	28691	3251820YWW pt	2816300 pt	2816300 pt	325199K	28693 pt	28693 pt
3251104111	2869132	2869132	3251820YWW pt	2816002 pt	2816002 pt	325199K100	2869331	2869331
3251104121	2869133	2869133	3251820YWW pt	2895002	2895002	325199N	28693 pt	28693 pt
3251104YVV	2869100	2869100	3251881	28193	28193	325199N100	2869351	2869351
325110W pt.	28650 pt.	28650 pt	3251881000	2819300	2819300	325199R	28693 pt	28693 pt
325110W pt.	28690 pt	28690 pt	3251884	28194	28194	325199R100	2869399	2869300 pt
325110WYWW pt.	2865000 pt	2865000 pt	3251884000	2819400	2819400	325199T pt	28696	28696
325110WYWW pt.	2869000 pt	2869000 pt	3251887	28196	28196	325199T100 pt	28698 pt	28698 pt
325110WYWW pt.	2865002 pt	2865002 pt	3251887000	2819600	2819600	325199T100 pt	2869898	2869898
325110WYWW pt.	2869002 pt	2869002 pt	325188A	28197	28197	325199U	28697 pt	28697 pt
3251201	28132	28132	325188A000	2819700	2819700	325199U100	2869719	2869700 pt
3251201000	2813200	2813200	325188D	28198	28198	325199W pt.	28690 pt	28690 pt
3251204	28133	28133	325188D000	2819800	2819800	325199W pt.	28990 pt	28990 pt
3251204000	2813300	2813300	325188G pt.	28199 pt	28199 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207	28135	28135	325188G pt.	28697 pt	28697 pt	325199WYWW pt.	2899000 pt	2899000 pt
3251207000	2813500	2813500	325188G000 pt.	2819997	2819900 pt	325199WYWW pt.	2899000 pt	2899000 pt
325120A	28136	28136	325188G000 pt.	2819900 pt	2819900 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120A000	2813600	2813600	325188G000 pt.	2869713	2869700 pt	325199WYWW pt.	2899002 pt	2899002 pt
325120D pt.	28137	28137	325188W pt.	28190 pt	28190 pt	3252111	28213	28213
325120D pt.	28697 pt	28697 pt	325188W pt.	28690 pt	28690 pt	3252111100	2821300	2821300
325120D000 pt	2813700	2813700	325188WYWW pt.	2819000 pt	2819000 pt	3252114	28214	28214
325120D000 pt	2869711	2869700 pt	325188WYWW pt.	2869000 pt	2869000 pt	3252114100	2821400	2821400
325120W pt.	28130	28130	325188WYWW pt.	2819002 pt	2819002 pt	325211W	28210	28210
325120W pt.	28690 pt	28690 pt	3251910	28610	28610	325211WYWW	2821000	2821000
325120WYWW pt.	2813000	2813000	3251910111	2861010	2861010	325211WYWW	2821002	2821002
325120WYWW pt.	2869000 pt	2869000 pt	3251910121	2861020	2861020	3252120	28220	28220
325120WYWW pt.	2813002	2813002	3251910231	2861025	2861025	3252120111	2822011	2822011
325120WYWW pt.	2869002 pt	2869002 pt	3251910241 pt	2861031 pt	2861030	3252120211	2822012	2822012
3251311	28161	28161	3251910241 pt	2861031 pt	2861035	3252120311	2822040	2822040
3251311000	2816100	2816100	3251910291 pt	2861049 pt	2861015	3252120321	2822045	2822045
3251314	28162	28162	3251910291 pt	2861049 pt	2861040	3252120411	2822050	2822050
3251314111	2816224	2816224	3251910YWW	2861000	2861000	3252120511	2822057	2822057
3251314121	2816255	2816255	3251910YWW	2861002	2861002	3252120611	2822060	2822060
3251314131	2816265	2816265	3251921	28651	28651	3252120711	2822072	2822072
3251314YVV	2816200	2816200	3251921100	2865100	2865100	3252120811	2822082	2822082
3251317 pt.	28163 pt	28163 pt	3251924	28655	28655	3252120YWW	2822000	2822000
3251317 pt.	28199 pt	28199 pt	3251924100	2865500	2865500	3252120YWW	2822002	2822002
3251317110	2816310	2816310	325192W	28650 pt	28650 pt	3252210	28230	28230
3251317211	2816331	2816331	325192WYWW	2865000 pt	2865000 pt	3252210111	2823033	2823033
3251317311	2816327	2816327	325192WYWW	2865002 pt	2865002 pt	3252210121	2823037	2823037
3251317321	2816391	2816391	3251930 pt.	28690 pt	28690 pt	3252210131	2823036	2823036
3251317331 pt	2816398	2816398	3251930 pt.	28692	28692	3252210141	2823045	2823045
3251317331 pt	2819991	2819900 pt	3251930111	2869215	2869215	3252210YWW	2823000	2823000
3251317YVV pt	2816300 pt	2816300 pt	3251930211	2869210	2869210	3252210YWW	2823002	2823002
3251317YVV pt	2819900 pt	2819900 pt	3251930221	2869219	2869219	3252221	28241	28241
325131W pt.	28160 pt	28160 pt	3251930311	2869225	2869225	3252221111	2824115	2824115
325131W pt.	28190 pt	28190 pt	3251930411	2869220	2869220	3252221121	2824124	2824124
325131WYWW pt.	2816000 pt	2816000 pt	3251930511	2869229	2869229	3252221131	2824129	2824129
325131WYWW pt.	2819000 pt	2819000 pt	3251930YWW pt	2869000 pt	2869000 pt	3252221141	2824133	2824133
325131WYWW pt.	2816002 pt	2816002 pt	3251930YWW pt	2869200	2869200	3252221151	2824145	2824145
325131WYWW pt.	2819002 pt	2819002 pt	3251930YWW	2869002 pt	2869002 pt	3252221YVV	2824100	2824100
3251321	28652	28652	3251991 pt.	28697 pt	28697 pt	3252224	28242	28242
3251321100	2865200	2865200	3251991 pt.	28992	28992	3252224111	2824261	2824261
3251324	28653	28653	3251991111	2899211	2899211	3252224121	2824263	2824263
3251324100	2865300	2865300	3251991121	2899224	2899224	3252224131	2824265	2824265
325132W	28650 pt	28650 pt	3251991131	2899259	2899259	3252224141	2824266	2824266
325132WYWW	2865000 pt	2865000 pt	3251991141	2899261	2899261	3252224151	2824269	2824269
325132WYWW	2865002 pt	2865002 pt	3251991151	2899283	2899283	3252224YVV	2824200	2824200
3251811	28121	28121	3251991161	2899292	2899292	3252227	28244	28244
3251811000	2812100	2812100	3251991171	2899294	2899294	3252227111	2824415	2824415
3251814	28123	28123	3251991181	2869715	2869700 pt	3252227121	2824424	2824424
3251814000	2812300	2812300	3251991YVV pt	2869700	2869700 pt	3252227311	2824444	2824444
3251817	28125	28125	3251991YVV pt	2899200	2899200	3252227411	2824447	2824447
3251817000	2812500	2812500	3251994	28694	28694	3252227421	2824400	2824400
325181W	28120	28120	3251994100	2869400	2869400	3252227YVV	28249	28249
325181WYWW	2812000	2812000	3251997	28698 pt	28698 pt	325222A111	2824915	2824915
325181WYWW	2812002	2812002	3251997100	2869831	2869831	325222A121	2824917	2824917
3251820 pt.	28160 pt	28160 pt	3251997100	2869831	2869831	325222A131	2824919	2824919
3251820 pt.	28163 pt	28163 pt	325199A	28698 pt	28698 pt	325222AYVV	2824900	2824900
			325199A100	2869837	2869837	325222D	28248	28248
			325199E	28698 pt	28698 pt	325222D111	2824815	2824815
			325199E111	2869853	2869853	325222D211	2824851	2824851
			325199E121	2869855	2869855	325222D221	2824875	2824875
			325199EYVV	2869800	2869800	325222D231	2824879	2824879
						325222DYVV	2824800	2824800

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325222W	28240	28240	3253207143	2879E43	2879940 pt	3255107	28513	28513
325222WYWW	2824000	2824000	3253207145	2879E45	2879940 pt	3255107000	2851300	2851300
325222WYWW	2824002	2824002	3253207151	2879E51	2879986 pt	325510A pt	28515	28515
3253111	28731	28731	3253207155	2879E55	2879971	325510A pt	28995 pt	28995 pt
3253111000	2873100	2873100	3253207157	2879E57	2879930	325510A000 pt	2851500	2851500
3253114	28732	28732	3253207159	2879E59	2879986 pt	325510A000 pt	2899586	2899586
3253114000	2873200	2873200	3253207YVW	2879E00	2879900	325510W pt	28510	28510
3253117	28733	28733	325320W	28790	28790	325510W pt	28990 pt	28990 pt
3253117100	2873300	2873300	325320WYWW	2879000	2879000	325510WYWW pt	2851000	2851000
325311W	28730	28730	325320WYWW	2879002	2879002	325510WYWW pt	2899000 pt	2899000 pt
325311WYWW	2873000	2873000	3254111	28331	28331	325510WYWW pt	2851002	2851002
325311WYWW	2873002	2873002	3254111111	2833110	2833110	325510WYWW pt	2899002 pt	2899002 pt
3253121	28741	28741	3254111121	2833120	2833120	3255201	28913	28913
3253121000	2874100	2874100	3254111YVW	2833100	2833100	3255201111	2891311	2891311
3253124	28742	28742	3254114	28333	28333	3255201111	2891311	2891311
3253124000	2874200	2874200	3254114111	2833315	2833315	3255201121	2891326	2891326
3253127	28744	28744	3254114121	2833318	2833318	3255201131	2891350	2891350
3253127111	2874410	2874410	3254114131	2833323	2833323	3255201141	2891351	2891351
3253127121	2874411	2874411	3254114141	2833324	2833324	3255201151	2891355	2891355
3253127131	2874421	2874421	3254114151	2833326	2833326	3255201161	2891380	2891380
3253127141	2874431	2874431	3254114161	2833344	2833344	3255201YVW	2891300	2891300
3253127YVW	2874400	2874400	3254114171	2833392	2833392	3255204	28914	28914
325312W	28740	28740	3254114291	2833399	2833399	3255204111	2891411	2891411
325312WYWW	2874000	2874000	3254114YVW	2833300	2833300	3255204271	2891448	2891448
325312WYWW	2874002	2874002	325411W	2833002	2833002	32552043D1	2891465	2891465
3253140	28750	28750	325411WYWW	2833000	2833000	32552044E1	2891471	2891471
3253140111	2875010	2875010	325411WYWW	2833002	2833002	3255204541 pt	2891437 pt	2891441
3253140121	2875011	2875011	3254121	28341	28341	3255204541 pt	2891437 pt	2891443
3253140131	2875021	2875021	3254121000	2834100	2834100	3255204551	2891445	2891445
3253140141	2875041	2875000 pt	3254124	28342	28342	3255204561	2891447	2891447
3253140151	2875051	2875000 pt	3254124000	2834200	2834200	3255204561	2891424	2891424
3253140161	2875061	2875000 pt	3254127	28343	28343	3255204631	2891433	2891433
3253140241	2875031	2875031	3254127000	2834300	2834300	3255204681	2891453	2891453
3253140YVW	2875000	2875000 pt	325412A	28344	28344	3255204691	2891454	2891454
3253140YVW	2875002	2875002	325412A000	2834400	2834400	32552046A1	2891455	2891455
3253201 pt	2879A pt	28795 pt	325412D	28345	28345	32552046B1	2891457	2891457
3253201 pt	2879A pt	28796 pt	325412D000	2834500	2834500	32552046C1	2891461	2891461
3253201 pt	2879A pt	28797 pt	325412G	28346	28346	32552046F1	2891481	2891481
3253201 pt	2879A pt	28798 pt	325412G000	2834600	2834600	32552046G1	2891483	2891483
3253201111	2879A11	2879531 pt	325412L	28347	28347	32552046H1	2891499	2891499
3253201413	2879A13	2879541 pt	325412L000	2834700	2834700	3255204YVW	2891400	2891400
3253201725	2879A25	2879665 pt	325412P	28348	28348	3255207	28916	28916
3253201A15	2879A15	2879561 pt	325412P000	2834800	2834800	3255207111	2891610	2891610
3253201A17	2879A17	2879581 pt	325412T	28349	28349	3255207121	2891625	2891625
3253201A21	2879A21	2879641 pt	325412T000	2834900	2834900	3255207131	2891650	2891650
3253201A23	2879A23	2879661 pt	325412V	28352	28352	3255207YVW	2891600	2891600
3253201A27	2879A27	2879675 pt	325412V111	2835212	2835212	325520A	28917	28917
3253201A29	2879A29	2879685 pt	325412V121	2835220	2835220	325520A111	2891711	2891711
3253201A41	2879A41	2879812 pt	325412V191	2835225	2835225	325520A121	2891721	2891721
3253201A43	2879A43	2879818 pt	325412VYVW	2835200	2835200	325520A131	2891731	2891731
3253201A45	2879A45	2879822 pt	325412W pt	28340	28340	325520A151	2891746	2891746
3253201A47	2879A47	2879885 pt	325412W pt	28350 pt	28350 pt	325520AYVW	2891771	2891771
3253201D33	2879A33	2879721 pt	325412WYVW pt	2835000 pt	2835000 pt	325520W	28910	28910
3253201D33	2879A33	2879751 pt	325412WYVW pt	2835000 pt	2835000 pt	325520WYVW	2891000	2891000
3253201YVW pt	2879A00 pt	2879500 pt	325412WYVW pt	2835002 pt	2835002 pt	325520WYVW	2891002	2891002
3253201YVW pt	2879A00 pt	2879600 pt	3254130 pt	28350 pt	28350 pt	3256111	28411	28411
3253201YVW pt	2879A00 pt	2879700 pt	3254130 pt	28351	28351	3256111111 pt	2841120 pt	2841126 pt
3253201YVW pt	2879A00 pt	2879800 pt	3254130 pt	2835110	2835110	3256111111 pt	2841120 pt	2841141 pt
3253204 pt	2879C pt	28795 pt	3254130221	2835115	2835115	3256111121 pt	2841120 pt	2841143 pt
3253204 pt	2879C pt	28796 pt	3254130331	2835120	2835120	3256111121 pt	2841122 pt	2841125 pt
3253204 pt	2879C pt	28797 pt	3254130341	2835125	2835125	3256111121 pt	2841122 pt	2841146 pt
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3253204 pt	2879C pt	28798 pt	3254130361	2835135	2835135	3256111131 pt	2841127 pt	2841178 pt
3253204 pt	2879C pt	28799 pt	3254130571	2835140	2835140	3256111131 pt	2841127 pt	2841125 pt
3253204 pt	2879C pt	28798 pt	3254130691	2835145	2835145	3256111131 pt	2841127 pt	2841146 pt
3253204111	2879C11	2879531 pt	3254130YVW pt	2835000 pt	2835000 pt	3256111131 pt	2841127 pt	2841149 pt
3253204113	2879C13	2879541 pt	3254130YVW pt	2835100	2835100	3256111131 pt	2841127 pt	2841178 pt
3253204115	2879C15	2879561 pt	3254130YVW pt	2835002 pt	2835002 pt	3256111211 pt	2841129 pt	2841141 pt
3253204117	2879C17	2879581 pt	3254141	28361	28361	3256111211 pt	2841129 pt	2841143 pt
3253204121	2879C21	2879641 pt	3254141111	2836115	2836115	3256111221 pt	2841130 pt	2841145 pt
3253204123	2879C23	2879661 pt	3254141121	2836120	2836120	3256111221 pt	2841130 pt	2841146 pt
3253204125	2879C25	2879665 pt	3254141YVW	2836100	2836100	3256111221 pt	2841130 pt	2841149 pt
3253204127	2879C27	2879675 pt	325414A	28362	28362	3256111311 pt	2841131 pt	2841123
3253204129	2879C29	2879685 pt	325414A131	2836422	2836422	3256111311 pt	2841131 pt	2841141 pt
3253204131	2879C31	2879721 pt	325414A241	2836430	2836430	3256111311 pt	2841131 pt	2841141 pt
3253204133	2879C33	2879751 pt	325414AYVW	2836400	2836400	3256111311 pt	2841131 pt	2841143 pt
3253204141	2879C41	2879812 pt	3254147	28363	28363	3256111321 pt	2841132 pt	2841121
3253204143	2879C43	2879818 pt	3254147111	2836310	2836310	3256111321 pt	2841132 pt	2841145 pt
3253204145	2879C45	2879822 pt	3254147121	2836320	2836320	3256111321 pt	2841132 pt	2841146 pt
3253204147	2879C47	2879885 pt	3254147YVW	2836300	2836300	3256111321 pt	2841132 pt	2841149 pt
3253204YVW pt	2879C00 pt	2879500 pt	325414A	28364	28364	3256111411 pt	2841133 pt	2841125 pt
3253204YVW pt	2879C00 pt	2879600 pt	325414A111	2836410	2836410	3256111411 pt	2841133 pt	2841126 pt
3253204YVW pt	2879C00 pt	2879700 pt	325414A121	2836415	2836415	3256111411 pt	2841133 pt	2841128 pt
3253204YVW pt	2879C00 pt	2879800 pt	325414A131	2836422	2836422	3256111411 pt	2841133 pt	2841141 pt
3253207	2879E	28799	325414A241	2836430	2836430	3256111411 pt	2841133 pt	2841143 pt
3253207111	2879E11	2879921	325414W	28360	28360	3256111411 pt	2841133 pt	2841145 pt
3253207113	2879E13	2879924	325414WYVW	2836000	2836000	3256111411 pt	2841133 pt	2841146 pt
3253207121	2879E21	2879912	325414WYVW	2836002	2836002	3256111411 pt	2841133 pt	2841177
3253207123	2879E23	2879917	3255101	28511	28511	3256111511 pt	2841134 pt	2841124
3253207125	2879E25	2879986 pt	3255101000	2851100	2851100	3256111511 pt	2841134 pt	2841141 pt
3253207131	2879E31	2879945 pt	3255104	28512	28512	3256111511 pt	2841134 pt	2841143 pt
3253207133	2879E33	2879945 pt	3255104000	2851200	2851200	3256111511 pt	2841134 pt	2841145 pt
3253207135	2879E35	2879945 pt				3256111511 pt	2841134 pt	2841146 pt
3253207137	2879E37	2879945 pt				3256111511 pt	2841134 pt	2841149 pt
3253207141	2879E41	2879940 pt						

MANUFACTURING—INDUSTRY SERIES

U.S. Census Bureau, 1997 Economic Census

APPENDIX G G-3

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
325998E.....	28995 pt	28995 pt	325998H106	2899525	2899525	325998H1E1 pt....	3952418	3952419 pt
325998E111	2899534	2899534	325998H107	2899526	2899526	325998HYWV pt....	2819900 pt	2819900 pt
325998E121	2899532	2899543 pt	325998H109	2899531	2899531	325998HYWV pt....	2899500 pt	2899500 pt
325998E131	2899533	2899543 pt	325998H111	2899539	2899539	325998HYWV pt....	3952400 pt	3952400 pt
325998E141	2899535	2899543 pt	325998H121	2899541	2899541	325998W pt.....	28190 pt	28190 pt
325998E151	2899536	2899543 pt	325998H131	2899549	2899549	325998W pt.....	28990 pt	28990 pt
325998E161	2899537	2899543 pt	325998H141	2899553	2899553	325998W pt.....	39520 pt	39520 pt
325998E171	2899538	2899543 pt	325998H151	2899559	2899559	325998W pt.....	39990 pt	39990 pt
325998E181	2899540	2899543 pt	325998H161	2899561	2899561	325998W pt.....	2819000 pt	2819000 pt
325998E191	2899542	2899543 pt	325998H171	2899568	2899568	325998WYWWW pt...	2899000 pt	2899000 pt
325998E1A1	2899545	2899543 pt				325998WYWWW pt...	2899100 pt	2899100 pt
325998EYWV	2899500 pt.....	2899500 pt				325998WYWWW pt...	3952000 pt	3952000 pt
325998H pt	28199 pt	28199 pt	325998H181	2899572	2899572	325998WYWY pt ...	3999000 pt	3999000 pt
325998H pt	28995 pt	28995 pt	325998H191	2899581	2899581	325998WYWY pt ...	2819002 pt	2819002 pt
325998H pt	39524 pt	39524 pt	325998H1A1	2899591	2899591	325998WYWY pt ...	2899002 pt	2899002 pt
325998H101	2899513	2899513	325998H1B1	2899593	2899593	325998WYWY pt ...	3952002 pt	3952002 pt
325998H103	2899516	2899516	325998H1C1	2899595	2899595	325998WYWY pt ...	3999002 pt	3999002 pt
			325998H1D1	2899598	2899598			
			325998H1E1 pt....	2819925	2819900 pt			
			325998H1E1 pt....	2899597	2899597			

