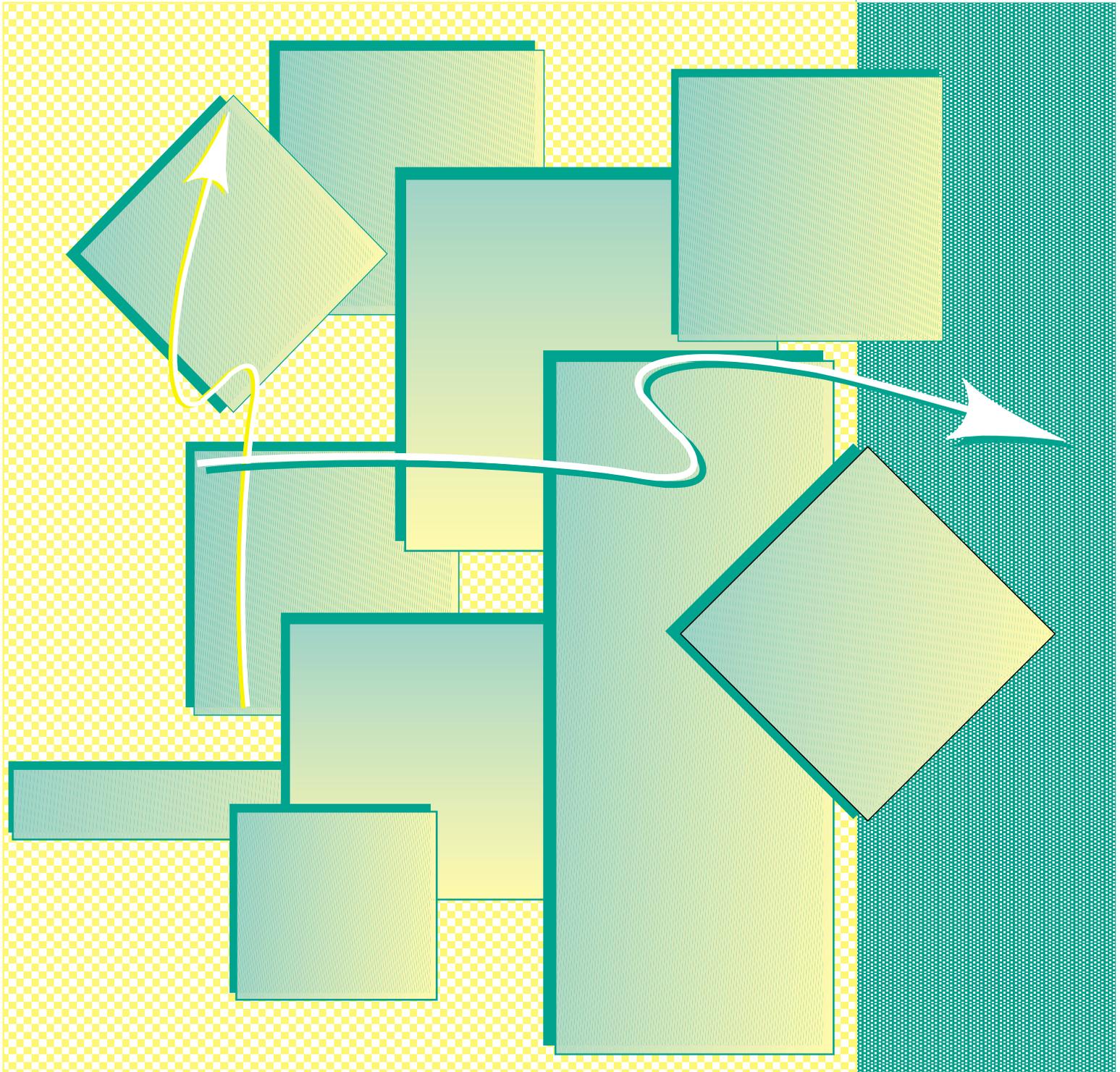


# History of the 1997 Economic Census

Issued July 2000

POL/00-HEC



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## ACKNOWLEDGMENTS

This history was prepared by **Michael A. Hovland** and **Jason G. Gauthier**, under the direction of **William F. Micarelli**, Chief, History Staff.

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### Dedication

**John P. Govoni**

March 6, 1943 - January 21, 2000

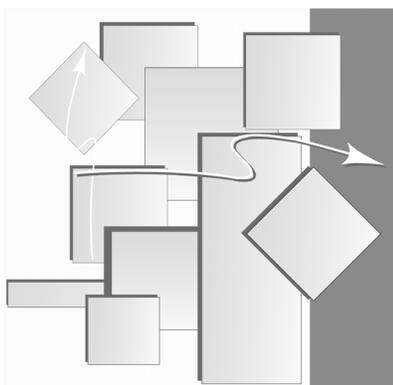
The 1997 Economic Census was the last to benefit from the leadership of **John P. Govoni**, Chief, Economic Planning and Coordination Division. The history of this census is just a small part of the history of John's tremendous contribution to the Economic Programs Directorate, to the U.S. Census Bureau, and to the people the world over whose lives he touched throughout a long and inspired career of public service.

# History of the 1997 Economic Census

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**U.S. Department Of Commerce**  
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Deputy Secretary

**Economics  
and Statistics  
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Under Secretary for  
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Director

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**Economics  
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# Introduction

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## WHAT IS THE ECONOMIC CENSUS?

The economic census can be defined as the systematic measurement of the following:

- Almost all economic activity in the U.S. (During the 1997 Economic Census, approximately 97 percent of the Gross Domestic Product (GDP) was covered. Only agriculture [1.6 percent of GDP] and a few other activities [1.2 percent of GDP] did not fall under the purview of the 1997 Economic Census.)
- Major business activity in Puerto Rico, the Virgin Islands of the United States, Guam, and the Commonwealth of the Northern Mariana Islands.
- Business activity within the scope of special programs, including—the Survey of Minority-Owned Businesses, Survey of Women-Owned Businesses, Business Expenditures Survey, Vehicle Inventory and Use Survey, and Commodity Flow Survey.

The economic census is the major economic statistical program of the United States. It constitutes the chief source of data about the structure and functioning of the Nation's economy, and provides the foundation and framework for a host of other statistical endeavors by public and private sector alike.

## LEGAL AUTHORITY

The 1997 Economic Census was carried out by the U.S. Census Bureau, an agency of the U.S. Department of Commerce, under the authority granted by Title 13, United States Code—Census. (Appendix A shows Title 13, United States Code.) Title 13 directs the Census Bureau to conduct economic censuses every 5 years, for years ending in “2” and “7.” The title's language also makes response mandatory by business firms or individuals queried by the census, establishes penalties for noncompliance, and requires that the Census Bureau maintain the confidentiality of the information provided by individual respondents.

## THE EVOLUTION OF THE ECONOMIC CENSUS

The economic census has come a long way since 1810, when a few questions on manufacturing activity were added to the population census schedule.

The U.S. Constitution requires that a census of population be carried out every 10 years to apportion representation of each state in the U.S. House of Representatives. Even as delegates to the Constitutional Convention discussed various provisions James Madison—principal author of the Constitution—urged that the census be used for more than a head count. Nothing came of his initial recommendations until 1810, after he had become President. In that year, the census collected data not only on the population, but also some data on manufacturing establishments. Questions were asked about—

- The kind, quantity, and value of goods manufactured.
- The number of manufacturing establishments.
- The number of machines of various kinds used in selected types of manufacturing establishments.

From this modest beginning, the economic census evolved into a major institution involving—

- The successive expansion in scope of business activity measured.
- An accompanying increase in the systematization of data collection.
- Advances in the systematization of data processing.
- Increasing standardization of formats for data presentation and dissemination.
- Increasing realization of the potential for integrating the data sets to disseminate to the data user, not just raw data, but value-added, integrated information—particularly via the Internet.

The few manufacturing questions asked in 1810 burgeoned, by 1997, into a separate economic census, using 479 questionnaire variations to collect data from 3.7 million companies representing over 5 million business establishments in 1,056 industry classifications. (See Chapter 4, “Questionnaire Design and Development,” for more information on the census questionnaires.) In addition, through the use of administrative records, the Census Bureau compiled data on 14 million businesses without paid employees (“mom and pop” businesses) and on 1.5 million small employers.

## WHAT'S NEW ABOUT THE 1997 ECONOMIC CENSUS?

### The North American Industry Classification System (NAICS)

The 1997 Economic Census collected, tabulated, and disseminated the bulk of the data in terms of the new North American Industry Classification System (NAICS). (Chapter 3, Introduction of the North American Industry Classification System (NAICS) describes the new system in detail). The NAICS was developed after extended negotiations among the United States, Canada, and Mexico. This international effort was undertaken to create an integrated industrial classification system for use throughout North America, providing comparable economic statistics for all three national economies. The 1997 Economic Census was the first major statistical activity conducted by one of the three signatory nations to collect and publish data in terms of the new system.

In addition to providing comparable statistics, the NAICS was designed to articulate a consistent conceptual system for classification. Since industrial statistics require that information on outputs and inputs be used together, it was agreed that the NAICS measures of economic activity would be “production-based.” Carving the economic activity into 20 sectors, instead of the 10 sectors used by the Standard Industrial Classification (SIC) system, the NAICS provided a more detailed and accurate measurement of industrial activity in the United States. This level of detail within NAICS was particularly true for industries providing services. For example, gone was the old “Services” sector, as such, and in its place was a host of far more specific industrial classifications for the services that—today—account for 34 million jobs. The SIC, developed in the late 1920s, was appropriate for measuring a manufacturing-based economy. The NAICS is more suited to a services and information-oriented economy.

The NAICS divides economic activity into these sectors: Agriculture, Forestry, Fishing, and Hunting; Mining; Utilities; Construction; Manufacturing; Wholesale Trade; Retail Trade; Transportation and Warehousing; Information; Finance and Insurance; Real Estate and Rental and Leasing; Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support, Waste Management and Remediation Services; Educational Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; Accommodation and Food Services; Other Services [except Public Administration]; and Public Administration.

Figure 1-1.  
**Employment by NAICS Sector**

Sector	1997 employment
Not covered .....	1,500,000
Governments .....	18,000,000
Agriculture.....	2,000,000
Mining .....	547,590
Utilities.....	711,053
Construction .....	5,732,691
Manufacturing.....	16,999,584
Wholesale Trade .....	5,820,391
Retail Trade .....	14,115,559
Transportation .....	2,927,060
Information .....	3,221,988
Finance and Insurance.....	5,767,840
Real Estate and Rental .....	1,761,179
Professional/Scientific/Technical.....	5,416,055
Management of Companies .....	2,656,196
Administrative Waste Mgmt.....	7,439,208
Educational Services .....	332,490
Health Care and Social Asst. ....	13,616,915
Art/Entertainment/Recreation .....	1,571,886
Accommodation/Foodservices .....	9,496,136
Other Services.....	3,317,947

Figure 1-2, illustrates the basic structure of the NAICS coding. The first five digits are common to industrial activity in the three participating nations. The NAICS, however, provides for a sixth digit in the code. This digit is for economic activity classifications that may vary from country to country.

Figure 1-2.  
**NAICS Coding Structure**

NAICS	Code	Description
Sector	51	Information
Subsector	513	Broadcasting and telecommunications
Industry group	5133	Telecommunications
Industry	51332	Wireless telecommunications carriers, except satellite
U.S. Industry	513321	Paging

### Expanded Role of Electronic Technology

Other 1997 Economic Census innovations include a significant expansion of the use of electronic technology in data collection, processing, and dissemination. A few examples include—

- **The DocuPrint technology used to print the census questionnaires.** DocuPrint made it possible to print simultaneously all forms—including questionnaires, cover letters and inserts—that would be mailed to a single company. This eliminated the need for a complex clerical assembly line, used in all previous censuses, to assemble the mailing packages.

- **Computer Self-Administered Questionnaires (CSAQ).** This newly developed technology, providing companies the capability of sending in their census reports electronically—was extended well beyond 1992 Economic Census capabilities. The Census Bureau authorized a private company to develop a diskette-based questionnaire that would run on a personal computer.
- **Standardization, across economic sectors, of the table formats.** Increased consistency in data presentation greatly assisted data users in making nearly instantaneous comparisons across databases.
- **The expanded use of the Internet.** The Internet was used, among other purposes, to promote awareness of the census at the data collection stage and to disseminate data products over the ensuing years of the census cycle.
- **The development of new products, including new software, for data users.** In response to data user requests for timely data with easy navigational capabilities, the Census Bureau augmented its electronic publication system and products. The majority of data from the 1997 Economic Census were released through improved CD-ROMs and on the Internet, with most data available free of charge.

As part of the increased use of electronic technology in the 1997 Economic Census, the issuance of paper products was reduced. The Census Bureau bridged the transition from hard copy to electronic media by providing users with the capability to access page images via portable document format (pdf) files. Users with the free Adobe Acrobat reader could print high quality pages for all key reports that—for earlier economic censuses—were issued in print.

For previous censuses, the production processes leading up to the printed reports delayed data release, sometimes, for months. Releasing data electronically gave users far more immediate access—often on the day of release.

## MAJOR USERS AND USES OF ECONOMIC CENSUS DATA

Federal Reserve Board Chairman, Alan Greenspan, called the economic census “indispensable to understanding the American economy.” Economic census data are studied and recombined into a vast array of patterns to yield essential information for government, business, industry, and the general public. The following were major users of economic census data:

- The Federal Government uses the data for composite measures such as the Gross Domestic Product (GDP), input-output measures, production and price indexes, and for other statistical series that measure short-term changes in economic conditions.

- Policymaking agencies of the Federal Government use the data for, among other things, monitoring economic activity.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract new businesses.
- Business firms compare their own internal statistics with published figures for their industry or geographic area. Then, they compute market shares and evaluate their own growth and product lines relative to how, and what, other businesses are doing.
- Manufacturers and distributors that sell their products to (or through) other businesses use the data to study those markets to plan sales territories; locate plants, warehouses, and stores; and make economic or sales forecasts.
- Small businesses use the data about their markets or their industry to enhance their business opportunity presentations to bank officers or venture capitalists, as they seek funds for expansion.
- In colleges and universities, the data are used to teach marketing and business management.
- In research units of all types, researchers apply the data in their study of long-term economic trends.
- Trade associations, business journals, and the daily press widely disseminate facts derived from the economic census. Business magazines use census statistics as technical background for articles.

Census statistics are available in most major public and college libraries designated as government depositories. Information services specialists in the Census Bureau’s regional offices (located in 12 large cities) and the staffs of the Census Bureau’s State Data Center and Business and Industry Data Center programs throughout all 50 states, the District of Columbia, Puerto Rico, the Virgin Islands of the United States, Guam, and the Commonwealth of the Northern Mariana Islands have economic census reports. Finally, the Department of Commerce’s International Trade Administration staff answers questions about the availability and uses of economic census data.

## DATA COLLECTION AND BASIC CONTENT

For the 1997 Economic Census, questionnaires were mailed out in December 1997 to about 3.7 million companies to collect data on 5 million business locations. The Census Bureau requested that responses be mailed to the National Processing Center ((NPC)—the NPC was the Data Preparation Division until the Census Bureau’s reorganization effective May, 1998) in Jeffersonville, IN, by February 12, 1998.

Responding to the census can be particularly burdensome on small businesses. To save very small businesses the expense and effort of filling out census questionnaires, the Census Bureau used administrative records provided by the Internal Revenue Service (IRS) and the Social Security Administration (SSA) to obtain basic business information—such as payroll, total receipts, and the like—for approximately 1.5 million small employer and 14 million nonemployer businesses. (The sharing of records by these agencies was strictly one-way; IRS and SSA provided their records to the Census Bureau, but the Census Bureau did not share its respondents' data with any other agency.)

Economic census data are collected at the level of the “establishment.” An establishment is defined as a business or industrial unit at a single-physical location that produces or distributes goods or that performs services. An example would be a factory or a store. Each “establishment” is owned by a “company.” A company may own just one establishment (a “single-establishment” company) or it may own many establishments spread across different geographic or political jurisdictions, or across industry types. These are “multiestablishment” companies. A set of companies under common ownership is an “enterprise.”

Economic census questionnaires are mailed to company headquarters. One mailing package to a company headquarters might contain scores or even hundreds of questionnaires for all the company's many establishments. The questionnaires requested basic information about each establishment, including—

- Kind-of-business activity (manufacturing, wholesale, retail, etc.).
- Physical location.
- Form of ownership.
- Dollar volume of business in 1997.
- Number of employees.
- Dollar amount of the payroll.

In addition to these core items, the questionnaires asked industry-specific questions (for, respectively, retail, wholesale, manufactures, and the like). For example, the Census Bureau gave high priority to establishing product lines because of the need to compare domestic output with imports and exports.

## HOW THE DATA WERE CLASSIFIED

After collecting the data, the Census Bureau classified each data item into a category that made them manageable for data users, namely—

- “Kind-of-business activity” translated into industrial categories, also called “economic sectors,” such as manufacturing, retail trade, and the like. For the 1997 Economic Census, this meant that the activity was

classified into one of the 20 NAICS-defined economic sectors. The classification of industrial data formed the starting point for the Census Bureau's *Industrial Report* series.

- “Physical location” translated into geographic categories, and at the Census Bureau's NPC the data were subclassified into the following levels of geography:
  - Nation.
  - State.
  - Metropolitan area.
  - County.
  - City or place.
  - ZIP Code.

The classification of geographic data led, ultimately, to the Census Bureau's *Geographic Area Report* series; however, not all data items were published for each geographical level. The most detailed 1997 Economic Census statistics were published only for the United States as a whole. Key data were published for states, metropolitan areas, counties, and places with 2,500 or more inhabitants. Selected data also were provided at the five-digit ZIP Code level. The smaller the geographic area, the less detailed were the data released for that area. The Census Bureau follows this practice to make sure that the identity of the individual businesses that provided the data cannot be inferred.<sup>1</sup>

- “Form of ownership” translated into categories of organizational structure, namely, single- or multiestablishment companies or enterprises.

## SUMMARY

Each time economic data have been collected in a census—from 1810 to 1997—there has been a progression toward—

- Expansion in scope or content of business activity covered.
- Increasing systematization in data collection, processing, presentation, or dissemination.

<sup>1</sup>For example, if there were just one auto dealership in a particular ZIP Code, it would violate the confidentiality of the answers provided by the dealership to publish payroll or sales receipts data on “Auto dealers by ZIP Code.” In order to keep individual business identity confidential, in this example auto dealership data would need to be published for a larger geographic entity than for a ZIP Code. Perhaps countywide or even statewide data would be the only statistic that could protect the identity of the auto dealership. At the opposite end of the spectrum, of course, would be the publication of sales receipts for auto dealerships nationwide. Since no one can infer a single dealership from data covering an entire Nation, national level data can be published in great detail.

- 
- Further integration of data sets to provide the user with greater value-added.

The 1997 Economic Census represents a substantial leap forward on most of these dimensions. Where appropriate, these advances will be emphasized throughout the *History of the 1997 Economic Census*. One fact is certain—

1997 was the year for a state-of-the-art U.S. Economic Census to close out both the century and the millennium.<sup>2</sup>

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<sup>2</sup>In November 1997, the *Government Information Quarterly Journal* published a special issue on the 1997 Economic Census. It can be found at [www.census.gov/econ97](http://www.census.gov/econ97) under "Government Information Quarterly: Symposium on the 1997 Economic Census." The *Journal* contains six articles with extensive information on how this census was planned and conducted.

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# The Players and The Plans

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## INTRODUCTION

While an economic census is conducted every 5 years, preparations for each enumeration start well before the previous one is finished. Typically, preliminary planning for an upcoming census begins at about the time the principal data collection effort for the preceding census has been completed, and may continue (due to changes in perceived data publication requirements, available funding or even technological advances) well into the operational phase of the census.

In planning and conducting the economic census, the U.S. Census Bureau must weigh the data needs of the Federal government and other public and private data users against the ability and willingness of private companies to provide the information requested. Every census planning effort involves extensive review of the data content of the questionnaires to make certain that only the most urgently required information is collected, while response burden is kept to a minimum. (Chapter 4, “Questionnaire Design and Development,” treats this subject.)

Costs are another major consideration. This was particularly true for the 1997 Economic Census: the continuing effort by the Administration and the Congress to reduce Federal spending had a significant impact on the Census Bureau’s activities. This led the 1997 Economic Census planners, at one point, to prepare several alternative census plans based on the possible reduced appropriation levels. Continued funding uncertainty, from fiscal year to fiscal year, at times led to delays in finalizing plans.

A significant new factor that had to be considered in planning the 1997 census was the decision by the Office of Management and Budget (OMB) to develop and adopt a new industrial classification system—the North American Industry Classification System (NAICS)<sup>1</sup>—to replace the Standard Industrial Classification (SIC) code. Since classification of economic activity is at the heart of the statistical tabulations derived from the census, the Census Bureau needed to integrate the new classification system at every level of the census, from mailout to publication.

## THE ECONOMIC DIRECTORATE REORGANIZATION

In June 1994, the Census Bureau reorganized the Economic Directorate to facilitate conducting both the 1997 Economic Census and the agency’s current economic

<sup>1</sup>Chapter 3 describes the North American Industry Classification System (NAICS) in detail.

programs. The Census Bureau established the Economic Planning and Coordination Division (EPCD) to provide centralized planning. The EPCD was charged with (1) formulating and developing comprehensive plans and programs for the Economic Directorate, as well as (2) coordinating the planning efforts and related activities for conducting the census. These activities included mailout, data capture, editing, tabulation, and the like.

The reorganization created a second new division—the Economic Statistical Methods and Programming Division (ESMPD)—to support and improve economic census and survey programs. This division was responsible for overseeing joint development and implementation of statistical programming and survey methods. In addition, the ESMPD ensured the consistent development and application of statistical methodologies, survey operations, automated processes, and computer programs and systems throughout the Census Bureau’s economic statistical activities.

Also in 1994, the Census Bureau merged the Construction Statistics and Industry Divisions to establish a new Manufacturing and Construction Division (MCD). The Business Division transferred its financial statistics functions and staff to the Agriculture Division (which became the Agriculture and Financial Statistics Division [AGFS]) and Business Division was renamed Services Division (SVSD).

After the transfer of the agriculture census (and part of the personnel of the AGFS) to the Department of Agriculture,<sup>2</sup> the remaining staff was reorganized once again. In June 1998, the AGFS was renamed the Company Statistics Division (CSD). At the same time, the SVSD was renamed the Service Sector Statistics Division (SSSD).

MCD and SSSD retained responsibility within the 1997 census for developing plans for data content, questionnaire design, and publication of statistical data for business enterprises falling within their respective areas. These activities were coordinated by the EPCD. The CSD was primarily responsible for the 1997 Surveys of Minority- and Women-Owned Business Enterprises, and the 1997 Business Expenditures Survey—both components of the 1997 Economic Census industry-wide programs—as

<sup>2</sup>Funding and responsibility for the Census of Agriculture was transferred from the Census Bureau, Department of Commerce, to the Department of Agriculture (USDA), National Agricultural Statistics Service (NASS) effective October 1, 1996. Effective February 2, 1997, NASS also received the transferred program positions and staff from the Census Bureau.

well as the Quarterly Financial Reports Survey and other current financial statistics reports.

The Census Bureau's Data Preparation Division (DPD), located in Jeffersonville, IN, was renamed the National Processing Center (NPC) in a reorganization effective May 1, 1998. The NPC was responsible for much of the mailout, and handled receipt and check-in of responses to the questionnaires, initial processing of questionnaires, and data entry. (Chapter 7, "Preparations for Census Mailout," treats these issues.) Computer editing, tabulation, disclosure analysis, and final preparations for data publication were carried out by EPCD, ESMPD, and staffs of the subject divisions at the Census Bureau's headquarters in Suitland, MD. (Chapter 8, "Data Collection and Processing," provides more information on these activities.)

## CONSULTATION ON THE CENSUS

### The Census Advisory Committee of Professional Associations

In planning any census, the Census Bureau seeks the advice of a variety of experts, both within and outside the Federal government. The primary sources of advice for the Census Bureau, from the nongovernment sector, are its public advisory committees. Prior to April 1994, the Census Bureau had nine public advisory committees<sup>3</sup> that provided recommendations and advice to the Director on various Census Bureau programs. Four of these committees, one each made up of representatives of the American Statistical Association (ASA), the American Economic Association (AEA), the American Marketing Association (AMA), and farm and agribusiness organizations, were the most actively involved in advising the Director on the economic and agriculture censuses.

Presidential Executive Order 12838 (signed in February 1993 and implemented the following year) reduced the total number of advisory committees and reorganized those that remained. The order created a combined advisory committee drawing its membership from four professional associations that previously had each provided a separate committee.

The new committee of professional associations consisted of representatives of the ASA, AEA, and AMA, together with the Population Association of America (PAA). Participating organizations submitted nominations of representatives for membership on the committee to the Director of the Census Bureau. Terms of appointment were

<sup>3</sup>A "public advisory committee" is any group of persons—not composed wholly of Federal employees or officials—organized under Government authority for the purpose of obtaining advice, recommendations, or other assistance. The Census Bureau's advisory committees operated under the provisions of the Federal Advisory Committee Act of 1973, which stipulated that the Director of OMB prescribe administrative guidelines and management controls.

3 years and could be renewed, although members generally were limited to a maximum of 6 years continuous service. No member received pay, other than per diem and travel expenses, for attending meetings. The new committee made recommendations on the scope, content, methodology, tabulation plans, and data product plans for the 1997 Economic Census (as well as for the Census Bureau's current survey programs and other facets of the agency's work). The committee usually met twice a year. From April 1, 1994, when the new organization was implemented, through September 31, 2000, when the bulk of the 1997 Economic Census activities were completed, the Committee met 14 times. (For more information on the advisory committees, including a list of members during the census period, see Appendix C, "Principal Advisory Committees on the 1997 Economic Census.")

### Survey of 1992 Economic Census Data Users

In mid-July 1995, the Census Bureau surveyed 5,147 users of economic and agriculture census data. Included were subscribers to census publications through the Government Printing Office (GPO), the economic program area's list of associations maintained by the (then-named) DPD, and the Census Bureau's Customer Services' list of subscribers to the 1992 Economic Census CD-ROMs. The survey also extended to State Data Center lead agencies, Census Bureau Information Centers, Business and Industry Data Centers, and Census Bureau Regional Offices, together with a 1-in-4 sample of State Data Center affiliates and a 1-in-10 sample of Federal Depository Libraries.

The survey was designed to identify users of economic census data, understand their product needs and uses, and obtain feedback to help the Census Bureau plan future products and/or adjust services provided.

## THE ECONOMIC CENSUS PLANNING TEAMS

### Organization and Objectives

After the June 1994 reorganization of the Economic Directorate, the planning effort was expanded toward a more comprehensive redesign and reengineering of the economic census and its associated processes and products. In September 1994, the Directorate established several cross-divisional planning teams, each assigned to evaluate and recommend improvements for a specified census program area or activity. These Economic Planning Teams (EPTs), 15 in all, were to identify problems encountered in the 1992 census and to recommend solutions. Their overall objectives were to—

- Improve the Census Bureau's Standard Statistical Establishment List (SSEL), the Census Bureau's Business Register, which served as the primary source of business establishment addresses for the census mailing list and also as the sampling frame for the current economic survey programs.

- Improve the dissemination, as well as the usefulness of 1997 Economic Census data products.
- Improve the tools available to the Census Bureau’s analysts and programmers.
- Introduce a generalized processing system to eliminate redundancy among the subject areas.

Each team was given an objective and was asked to estimate the resources (in terms of the number of “full-time employee” years) each proposal would require. The EPTs focused on identifying changes required for existing processing systems that could be implemented by January 1998—i.e., by the time respondents would start returning their 1997 census questionnaires.

### “Must Do” Lists

During the latter half of 1994, representatives of EPCD and ESMPD met with subject division staff (CSD, MCD, and SSSD) to develop the “must do” lists. These were the lists of improvements or changes that were considered critical to the success of the 1997 Economic Census. The EPTs, in turn, continued to work on the lists through January 1995. Ultimately, the lists from the subject divisions and the planning teams amounted to dozens of proposals, ranging from narrowly specific suggestions to major changes in Census Bureau procedures.

EPCD established an evaluation group composed of the Division Chief and Assistant Division Chiefs to review and determine the value of each item, as well as the likelihood that the Economic Directorate could implement the changes by January 1998. In considering each item, the evaluation group assumed that—

- Available resources would be limited.
- The Census Bureau would maintain the timing and quality of its key current survey programs (i.e., the census would not have absolute priority over survey needs).
- Several census-related activities had an overriding “must” priority. These included implementing the NAICS and correcting the systems programming problems identified in the 1992 census.
- Data infrastructure improvements would be necessary.
- The Census Bureau would improve the product offerings from the 1997 Economic Census compared to the 1992 census.
- Response burden must be reduced.

EPCD staff conducted its evaluations of the lists during the last quarter of 1994 through January 1995. In February and March 1995, EPCD met with EPT leaders to discuss evaluation results and to specify the direction of each team’s activities thereafter.

## Planning Team Recommendations

**General information.** May 15, 1995 was the target date for establishing the Economic Directorate’s processing goals for the 1997 census. The principal recommendations made by the planning teams and implemented for the 1997 Economic Census fell into five functional areas—(1) products and data user needs, (2) SSEL improvements, (3) data collection, (4) multiestablishment processing improvements, and (5) post-collection activities—outlined below.

**Products and data user needs.** The Census Bureau used the results of the July 1995 survey of 1992 census data users to develop plans for the 1997 Economic Census data products. The agency wanted to make data available in a more timely manner, make them easier for its customers to use, and increase the perception of the Census Bureau’s economic products as a unified whole rather than as a disjointed set of discrete products.

The planning teams recommended that the census publication program focus on electronic data products as its initial and primary dissemination media. In addition, the teams recommended that the Census Bureau implement a print (and FAX) on demand capability for data otherwise available only in electronic files. The teams suggested that data presentation be improved by standardizing file formats across subject areas to the greatest degree possible, and that data files be as comprehensive as possible to preclude the need to use multiple files. Also, the EPTs recommended that the Census Bureau issue, by early 1999, an *Advance Report*—at the trade sector level and using national data on both the NAICS and SIC bases.

Using these recommendations, the ensuing product implementation phase concentrated on fulfilling user requirements, including the provision of—

- Timely and relevant data, particularly electronic data files.
- Electronic data products that ease the transition from “hard” copy to new electronic media.
- User capability to quickly find and manipulate data for multiple sectors and census/survey years.
- Easy access to free and “for fee” data sets, together with easy and secure electronic product purchasing procedures.

**SSEL improvements.** Improvement initiatives for the Census Bureau’s Business Register—the SSEL—included editing, imputation, and multiestablishment processing. A primary objective of the planning teams was to improve data infrastructure. This also would mean substantial cost savings, as well as improvement in both the timeliness of various census activities and in the data publication program. The specific recommendations cited a strong need for more effective editing and imputation of employment

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and payroll data. Previously the Census Bureau's approach had been to spread this work across several processing steps belonging to Business Register (that is, SSEL), activities, the County Business Patterns program, and the subject divisions' census programs.

The teams also made suggestions that would have substantial short-term benefits while the Census Bureau carried out the major redesign of the SSEL (scheduled for completion by 2002). These recommendations focused upon quality assurance measures; user documentation; linkages for company organizations and longitudinal continuity; improved interactive query tools; expanded coverage of nonemployers, railroads, and municipal utilities; and the assignment of Congressional District geographic codes.

In addition, the teams wanted to strengthen basic SSEL concepts to provide a basis for the comprehensive Business Register redesign, particularly with regard to enterprise definition and sub-enterprise organizational structures and methods for maintaining them.

**Data collection.** The teams recommended using the Census Bureau's DocuPrint equipment for electronic printing of questionnaires and other materials for the 1997 Economic Census multiestablishment mailout, remails, and follow-ups.<sup>4</sup> Ultimately, this recommendation was expanded to include census mailing packages for single-establishment companies in the manufacturing and mineral industries.

To reduce response burden, the planning teams suggested expanding electronic reporting. Electronic media were already in place, such as the electronic data interchange, and computerized self-administered questionnaires (CSAQ). The Census Bureau had previously used these methods, mainly for the Company Organization Survey (COS) and the Annual Survey of Manufactures (ASM). The 1992 census had used electronic reporting on a limited basis; about 80 companies responded electronically, mostly on magnetic tape. EPCD staff estimated that nearly 600 respondents might elect to report their data electronically in the 1997 census. Ultimately, CSAQs were extended to companies in retail; finance, insurance, and real estate; and other sectors.<sup>5</sup> In addition, the teams recommended that data could be accepted on magnetic tape provided by respondents.

**Multiestablishment processing improvements.** Multiestablishment processing had been a chronic bottleneck for previous economic censuses. Completeness and coverage edits were essential for maintaining up-to-date multiestablishment coverage, but they complicated the workflow and delayed data release. The EPTs recommended streamlining multiestablishment workflow by—

- Consolidating or eliminating steps in the processing flow.
- Focusing completeness and coverage edits on critical problems.
- Improving control and tracking systems.
- Imputing for multiestablishments earlier in the processing flow.

**Post-collection activities.** The teams' principal recommendations on data processing and other post-collection activities involved the development and adoption of a generalized edit system, as well as improvements to the Census Bureau's analytical capabilities. Time constraints and the complexities of developing such a system for the entire census originally led planners to consider that it was unlikely that one could be designed and fully implemented for the 1997—census the custom coding edits for all economic sectors would need to be revised as part of the implementation of the NAICS. Hence, the Generalized Edit and Imputation System—better known as “Plain Vanilla”—was developed. (Chapter 8, “Data Collection and Processing,” elaborates on “Plain Vanilla.”) It replaced the complex edits for the 1996 Annual Survey of Manufactures (ASM) and for the 1997 census.

The EPCD established an independent cross-divisional planning team in May 1995 to develop “Plain Vanilla.” Key to the team's effectiveness was the release of its members from day-to-day operational responsibilities to enable them to devote time to developing the edit system as quickly as possible.

To improve the agency's analytical capabilities, the teams recommended that EPCD and ESMPD develop tools for analysts that would (1) enable them to access data sets across programs, (2) use graphic data analysis to supplement conventional reviews, and (3) provide a common menu for these items across both the census and the current economic surveys. This would require a significant planning and design effort. A new planning team was organized, composed of staff from the EPCD, ESMPD, and the subject divisions. The team evaluated existing software systems and developed plans for acquiring and installing new highspeed, high-capacity personal computers and the appropriate software.<sup>6</sup>

## BUDGET CONCERNS AND CONTINGENCY PLANNING

From the latter part of 1993 into 1995, planning for the 1997 Economic Census was based on the assumption that both the census and its funding would be comparable to that of the 1992 census. However, an increased emphasis on funding reductions for all Federal agencies eventually weakened this assumption.

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<sup>4</sup>This subject is covered in detail in Chapter 7, “Preparations for Census Mailout.”

<sup>5</sup>Chapter 8, “Data Collection and Processing,” discusses electronic reporting.

<sup>6</sup>The processing infrastructure upgrade is discussed in Chapter 7, “Preparations for Census Mailout.”

Pressures to hold down costs were constant, but became most severe during debate on the fiscal year (FY) 1998 Federal budget. This was, in large part, due to pressure for a balanced budget agreement and the determination of the political leadership of both the Administration and Congress to reduce, and eventually eliminate, the budget deficit. Congress considered significant “across-the-board” budget cuts for the Census Bureau and for the 1997 Economic Census. These reductions would have come at just the point in the census budget cycle when funding normally would have been sharply increased in order to support final preparations for the economic census mailout, as well as for a major proportion of the data collection phase of the census.<sup>7</sup>

Facing the possibility of large cuts in the requested budget for FY 1998, the Census Bureau’s executive staff decided that, rather than undermine the statistical credibility of the entire census, potential reductions would be accommodated by eliminating discrete programs within the overall census. The principal casualty of the budget reductions was the Enterprise Statistics Program, which was dropped from the 1997 Economic Census.

<sup>7</sup>Previous budget constraints had already led the Census Bureau to drop test plans for the 1997 Economic Census.

The Administration requested \$63.7 million for the 1997 Economic Census in its FY 1998 budget. However, based upon Congressional views with respect to the Administration’s budget request, the Census Bureau prepared contingency plans for various alternatives: (1) full funding at the requested level (\$63.7 million), (2) a \$45 million budget, and (3) a \$35 million budget.

Fortunately, Administration and Congressional negotiators were able to reach an agreement that provided funding at the \$63.7 million level.

The expenditures for the 1997 Economic Census, by fiscal year, were as follows:

Fiscal year	Expenditure
<b>Total</b> .....	<b>\$220,273,000</b>
1995 .....	1,550,000
1996 .....	26,386,000
1997 .....	29,681,000
1998 .....	62,129,000
1999 .....	54,083,000
2000 .....	46,444,000

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# Introduction of the North American Industry Classification System (NAICS)

## THE STANDARD INDUSTRIAL CLASSIFICATION CODE (SIC)

### The Development of the SIC Code

The economic census is the principal source of detailed information on economic activity in the United States, but is not, and never was, the only source of that information, even within the Federal Government. One of the major problems with multiple sources of information is that they may not, indeed probably do not, share the same concepts and definitions of the information they collect and disseminate. Standardization in collecting and publishing economic statistics has, consequently, been a primary goal for the Federal Government. To this end, in 1939 the Central Statistical Board of the Bureau of the Budget (BOB—the predecessor of today’s Office of Management and Budget [OMB]) established an Interdepartmental Committee on Industrial Classification, together with a Technical Subcommittee on Industrial Classification, and directed them to develop a standardized list of industries that could be used by all agencies or organizations and could facilitate comparisons of industrial data produced by different agencies. By 1940 the committees had produced separate draft lists and descriptions of industries and alphabetical indexes for manufacturing and nonmanufacturing industries. After review, the BOB published the first *Standard Industrial Classification (SIC) Manual* for manufacturing industries in 1941. In the following year, the BOB published a similar manual for the nonmanufacturing industries. The dual classification systems continued in use until 1954, when they were combined into a single *Manual*, which was periodically revised and reissued through 1987. The 1987 revision was used for the 1992 Economic Census.

### Limitations of the SIC Code

The SIC Code system was developed during a time when the bulk of the American economy was involved with manufacturing. After World War II, the American economy not only began a prolonged period of expansion, but became more and more complex. New industries appeared in the manufacturing sector, as did entirely new areas of commercial economic activity. The OMB and concerned agencies (including the Census Bureau, the Bureau of Economic Analysis [BEA], and the Bureau of Labor Statistics [BLS]) updated the SIC Code approximately every 10 years to try to compensate for the dislocations within the

economic statistical system caused by the development and growth of these new industries and activities. Nevertheless, the basic structure became increasingly obsolescent.

The problem was exacerbated by the explosion of new industries that appeared in the 1970s. Collecting and tabulating economic statistics became increasingly difficult when more and more economically active and important establishments could not be defined using the SIC Code. Even before the 1992 Economic Census, anomalies within the SIC Code had become painfully obvious; for example—

- While technology and the economy moved rapidly to implement and expand electronic information dissemination and telecommunication, the SIC placed print publishing activities in the Manufacturing Division, online services in the Services Division, and communications (including radio and television broadcasting, cable television services, paging services, and satellite master antenna systems services) in the Transportation, Communications, Electric, Gas, and Sanitary Services Division.
- The SIC industry 7389, Business Services, Not Elsewhere Classified, included everything from bronzing baby shoes, to telemarketing, to sound recording studios.
- Satellite communications systems were not recognized by the SIC Code.
- At a time when the Nation’s medical care system was a major focal point of public and economic interest, the 1987 SIC lacked any classification that separately identified health maintenance organizations (HMOs).

The SIC Code’s bias toward manufacturing industries caused considerable dissatisfaction as well. The system did not reflect the accelerating trend within the economy toward growth in the nonmanufacturing sectors, particularly the various services industries. By the late 1980s, there was increased interest within the Federal Government and throughout the U.S. economy in improving the ability of economists and statisticians to assess the impact of international trade and industrial practices on the domestic economy. In addition, the growing need to relate U.S. output to that of Canada and Mexico under the proposed North American Free Trade Area (NAFTA) agreement required a major overhaul of the SIC.

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## THE ECONOMIC CLASSIFICATION PLANNING COMMITTEE (ECPC)

In November 1991, the Census Bureau sponsored the International Conference on the Classification of Economic Activities, in Williamsburg, VA (the “Williamsburg Conference”), which focused on the need to reexamine the entire industry classification system. The conference involved participants from Federal and state agencies, academia, and the international statistical community, including representatives of Statistics Canada. Acting on recommendations from the Conference, the OMB, in March 1993, established the Economic Classification Policy Committee (ECPC) to consider a thorough overhaul of the classification system in place. The ECPC was chaired by the BEA and consisted of representatives from the BEA, the Census Bureau, and the BLS.

The Committee was charged with carrying out a “fresh slate” examination of economic classifications for statistical purposes, including the following:

1. Identifying the essential statistical uses of economic classifications.
2. Identifying and developing, if needed, economic concepts, new structures, and statistical methodologies that address the essential statistical uses of economic classifications.
3. Developing classification systems based on concepts developed under No. 2 above.
4. Planning the implementation of the new classification system.
5. Ensuring an opportunity for public participation in the review and planning process.

Between March 1993 and March 1994, the ECPC compiled and released six papers addressing specific issues involved in the development of a new industrial classification system—

1. **“Conceptual Issues,”** reviewed the purpose of an economic classification system, the need for a consistent conceptual framework for such a system, what grouped or classified data were needed, which classification approach or approaches should be adopted in designing a new system, and the classification unit to be used.
2. **“Aggregation Structures and Hierarchies,”** described classification hierarchies and reviewed the possibility of using multiple hierarchies and whether any new classification system should have a flexible aggregation structure.
3. **“Collectibility of Data,”** reported on the coding practices and requirements of the U.S. statistical agencies that would be the most frequent users of the

new classification system, together with the ability of businesses to supply data, and the kinds of data required for reclassification under a new system.

4. **“Criteria for Determining Industries,”** reviewed the criteria of economic significance, specialization, and coverage ratios in determining industry classification and considered alternative criteria.
5. **“The Impact of Classification Revision on Time Series,”** considered the need for historical continuity, the problems involved with time series continuity, the impact of previous classification code revisions, and the implications of a fundamental SIC revision.
6. **“Services Classifications,”** reviewed questions relating specifically to the services sector of the economy, including the boundary between “goods” and “services,” the impact of production-oriented and/or supply-oriented classification for services, examples of market-oriented classification, questions about specific services industries (e.g., nonprofit organizations), past approaches to classifying services, and the services classifications in the restructured classification system.

The ECPC asked for comments on each paper from interested users and reviewed these comments as part of its study.

In addition to the studies described in the issues papers, the ECPC evaluated the U.S. and Canadian SIC structures to determine the conformance of the respective systems to economic concepts. To this end, the Committee undertook a study of the “heterogeneity index” proposed for U.S. industries to decide whether establishments in the old SIC industries met the conditions required for the production-oriented classification system described in “Conceptual Issues,” Paper No. 1.<sup>1</sup>

## JOINT PLANNING OF THE NAICS

### The Need for Comparative Data

The SIC Code system was not compatible with industry classification systems used in other countries, and analysts had difficulties comparing industrial characteristics, trends, and developments internationally. The advent of the North American Free Trade Agreement (NAFTA) spurred consideration of a new system that would be more comparable with those of the other NAFTA signatories.

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<sup>1</sup>The results of the joint U.S. Canadian SIC study were released in two reports, one covering the U.S. and the other the Canadian SIC Codes. The U.S. report was ECPC Report No. 1, “Economic Concepts Incorporated in the Standard Industrial Classification Industries in the United States.” The Canadian SIC was covered in “The Conceptual Basis of the Standard Industrial Classification,” published by Statistics Canada. ECPC Report No. 2, “The Heterogeneity Index: A Quantitative Tool to Support Industrial Classification” evaluated U.S. industries’ new “index of heterogeneity.”

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Statistics Canada, a participant in the Williamsburg conference, also planned to revise its 1980 SIC. Shortly after the establishment of the ECPC, the Canadians joined the discussions on restructuring the respective national classification systems and creating a joint system, followed thereafter by Mexico's Instituto Nacional de Estadística, Geografía e Información (INEGI). As a result of these talks, the OMB announced in the July 26, 1994, *Federal Register*, that the statistical agencies of the North American countries had agreed to develop a North American Industry Classification System (NAICS) to introduce common industry classifications for all three countries.

## Design Principles

Planning an integrated industry classification system required agreement on a basic conceptual framework. Statistics Canada, INEGI, and the ECPC agreed to develop and put in place a single system based on the following major principles:

- Using industrial statistics requires that information on outputs and inputs be used together. The NAICS should conform to a production-oriented economic concept—i.e., industries that use like processes to produce goods or services should be grouped together.
- The respective national statistical systems should compile product data to meet the need for market-oriented or demand-based groupings of economic information. Each country agreed to improve commodity classification systems, including the Harmonized System of the Customs Cooperation Council and the United Nations provisional Central Product Classification system.
- The long-term goal of the NAICS should be to implement a production-oriented framework for economic classification. The framework would be used in 1997 and subsequently in reviewing changes to the existing list of industries.
- Any new system should include developing classifications for (1) new and emerging industries, (2) services industries in general, and (3) industries engaged in the production of advanced technologies.<sup>2</sup>
- Time series continuity should be maintained to the extent possible, but changes in the economy and evolving user needs must be taken into account. Proposals relating to all parts of the classification will be considered, so long as they are supported by a rationale and by factual information that furthers the long-term goals of NAICS.

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<sup>2</sup>“Advanced technologies” included, but were not limited to, electronic components, telecommunications equipment, computers and associated equipment, computer software, medical equipment, and advanced materials.

- The participating countries' statistical agencies agreed to conduct a detailed review of their current industry definitions to determine where differences existed between the three systems, and to move toward full commonality and the implementation of production-oriented reasoning into the new classification system.
- The participants agreed to try to develop a NAICS compatible at the two-digit level to the current International Standard Industrial Classification of All Economic Activities (ISIC, Revision 3) of the United Nations.
- When changes were required to classifications to attain international comparability, those changes would be made in the direction of the country or countries whose existing classification definitions most closely corresponded to the production-oriented concept.

The ECPC established seven subcommittees—agriculture; mining and manufacturing; construction; distribution networks; finance, insurance, and real estate; business and personal services; and health, social assistance, and public administration—composed of economists, statisticians, and classification specialists representing 19 Federal agencies that used the SIC in their work. The ECPC also established a U.S. Coordinating Committee to coordinate the work of the subcommittees with that of INEGI and Statistics Canada.

## Industry Structure Agreements

The ECPC subcommittees and representatives of INEGI and Statistics Canada developed the structure of the proposed NAICS in a series of meetings. Proposals for individual industries from all three countries were considered for acceptance if the recommended industry was based on the production-oriented concept required for the general system. As the subcommittees considered and agreed on groups of subsectors of NAICS, the ECPC published the industries proposed for inclusion in those subsectors. Between May and December 1995, a total of 31 separate agreements were developed and approved by the participating statistical offices. Each agreement described the sector and the industries included in the sector, outlined the limitations and constraints of the classification, related the NAICS industries to the United Nations' ISIC (Revision 3), and summarized changes to the respective national classification systems.

Agreement 18, for example, covered NAICS sector 51, “Information.” The “Information” sector drew many of its industries from SIC divisions D, “Manufactures”; E, “Transportation, Communications, Electric, Gas, and Sanitary Services”; and I, “Services.” Some 20 new industries were created in the NAICS Information sector, including—

- One new five-digit industry in the Publishing Industries subsector (511) for database and directory publishers.

- A NAICS industry for software publishers was created from part of the SIC industry 7372, “Prepackaged Software.”
- Eleven five- and six-digit industries were created in the “Motion Picture and Sound Recording Industries” subsector (512).
- Eleven five- and six-digit industries were created in the “Broadcasting and Telecommunications” subsector (513).

The individual agreements were approved by the respective national authorities in five groups, the first (of three agreements) on May 19 and the last (for a single sector—finance and insurance) on December 13, 1995. As the agreements were approved, the OMB published the proposed industries for those sectors and subsectors and asked for public comment in the *Federal Register*. Five notices were published between May 1995 and November 1996, with final comments requested by December 20, 1996. (The OMB received approximately 400 comments on the proposed new classification system, most involving suggestions for additional industry classifications, or title changes for industries covered by NAICS.)

The ECPC submitted its final proposals for NAICS to the OMB based on the proposals published in the last (November 5, 1996) *Federal Register* notice. In general, the OMB accepted ECPC’s recommendations, with a number of relatively minor exceptions. These exceptions typically involved renaming or renumbering specific industries. In the manufacturing sector, however, NAICS subsector 337, “Furniture and Related Product Manufacturing,” was revised to emphasize furniture manufacture by type of furniture, rather than by material (i.e., wood, metal, and other materials).

### Schedule for Implementing NAICS

Having designed a new industry classification system, the three countries faced the task of implementing that system. Delay would only exacerbate the problems inherent in the original system, so the participants determined that NAICS should be applied as soon as possible.

The Census Bureau agreed to implement the new system beginning with the 1997 Economic Census, which was scheduled to begin collecting data less than a year after the final approval of NAICS.<sup>3</sup> The Census Bureau planned to begin publishing advance general statistics data using the NAICS system early in 1999. Industry, geographic area, and subject series reports, using NAICS classifications only, would be published beginning in the

<sup>3</sup>The BEA and BLS also were scheduled to implement NAICS as quickly as possible; the earliest published data for BEA would be the 1997 Foreign Direct Investment Benchmark Survey (to be collected 1999), while BLS would begin releasing NAICS-based data in 2002 (for the 2001 Employment and Wages Report).

second quarter of 1999. A final—report with bridging tables to enable users to relate NAICS statistics to data published using the SIC Code—was scheduled for publication in March 2000.

Several components of the 1997 Economic Census were not to be converted to NAICS; these were the economic census in the outlying areas (Puerto Rico, Guam, the Virgin Islands of the United States), the Commodity Flow Survey, and the Vehicle Inventory and Use Survey. The Census Bureau’s current economic surveys—programs e.g., the 1998 Annual Survey of Manufactures (scheduled to publish using NAICS in March 2000), monthly wholesale and retail trade surveys (both in 2001), 1999 Annual Capital Expenditures Survey (Feb. 2001), Quarterly Financial Reports (March 2001, for the fourth quarter of 2000), etc. would begin using NAICS classifications after the 1997 census.

## SIC AND NAICS COMPARED

### Revisions of SIC

The SIC Code had been revised periodically since its inception over 50 years ago. The most recent changes to the SIC were made in 1987, when the system was modified to identify new high-tech industries, particularly those involved with computers and other electronic equipment. These revisions, while updating the detail of the classification system left the core characteristic of the SIC Code—its classification of industries using a mix of production- and market-based (i.e., commodities or services that have similarities in use, that belong together, or are used together for some purpose) categories—largely unaltered. The 1997 “revision” changed all this in an integrated effort to create a unified classification system for the North American free trade area based on grouping together industries that used similar production processes.

### New Sectors

The new system that was created (in the 31 industry structure agreements) grouped industries into 20 broad sectors, doubling the number of major groupings compared to the SIC Code system.<sup>4</sup> Many of the “new” sectors were recognizable as similar or modified versions of the old SIC divisions; for example, NAICS Agriculture (sector 11), Mining (sector 21), and Construction (sector 23) sectors were virtually identical in coverage to the SIC Agriculture (division A), Mineral Industries (division B), and Construction (division C) divisions respectively.

There were, however, significant changes in other areas. Under NAICS, the old Finance, Insurance, and Real Estate Division (H) was split into separate Finance and Insurance (52), and Real estate and Rental and Leasing

<sup>4</sup>The SIC Code classified industries in 10 divisions (A-J), with an eleventh division (K) used for unclassifiable establishments.

(53) Sectors; Wholesale Trade (43) and Retail Trade (44-45) were redefined. The most extensive changes involved the SIC Services Division I, which was broken up under NAICS and furnished industries to eight new sectors, including four (Education Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; and Other

Services, Except Public Administration) drawn entirely from the former Services Division.

The NAICS sectors and their corresponding SIC divisions are as follows:

Table 3-1.  
**NAICS Sectors and Their Corresponding SIC Divisions**

NAICS code	NAICS sector	SIC code	SIC divisions making the largest contribution
11	Agriculture, Forestry and Hunting and Fishing (The Census of Agriculture is conducted by the Department of Agriculture.)	A	Agriculture, Forestry and Fishing
21	Mining	B	Mineral Industries
22	Utilities	E	Transportation, Communications, and Public Utilities
23	Construction	C	Construction Industries
31-33	Manufacturing	D	Manufacturing
42	Wholesale Trade	F	Wholesale Trade
44-45	Retail Trade	G	Retail Trade
48-49	Transportation and Warehousing (The economic census excludes the U.S. Postal Service, large certificated passenger air transportation, and all rail transportation.)	E	Transportation, Communications, and Public Utilities
51	Information	D E I	Manufacturing Transportation, Communications, and Public Utilities Service industries
52	Finance and Insurance (The economic census excludes funds and trusts.)	H	Finance, Insurance, and Real Estate
53	Real Estate and Rental and Leasing	H I	Finance, Insurance, and Real Estate Service Industries
54	Professional, Scientific, and Technical Services (The economic census excludes landscape architecture and veterinary services.)	I	Service Industries
55	Management of Companies and Enterprises		Parts of all divisions
56	Administrative Support; Waste Management and Remediation Services (The economic census excludes landscaping services.)	I E	Service Industries Transportation, Communications, and Public Utilities
61	Educational Services (Census excludes elementary and secondary schools, colleges, and professional schools.)	I	Service Industries
62	Health Care and Social Assistance	I	Service Industries
71	Arts, Entertainment, and Recreation	I	Service Industries
72	Accommodation and Food Services	G I	Retail Trade Service Industries
81	Other Services Except Public Administration (Census excludes pet care; labor, political, and religious organizations; and private households.)	I	Service Industries
93	Public administration (Separate census of governments does not present data according to the NAICS or SIC systems.)	J	Public Administration

The NAICS not only doubled the number of sectors/divisions, it also increased the number of defined industries in the U.S. economy from 1,004 under the SIC to 1,170. The new system defined over 350 new industries not previously identified separately (including 250 new service industries), and revised the scope of over 330 more. Under the SIC, 45 percent of industries defined had been manufacturing activities. In NAICS, 473 of the total of 1,170 defined industries (40.3 percent) still represented manufacturing.

### The NAICS Numbering System

The SIC Code used a four-digit numbering system in which the first two digits identified the major group, the third digit the industry group, and the fourth the specific industry. The Census Bureau had developed its own supplement to the SIC in the form of five-digit product class codes, and seven-digit product codes, to enable it to apply SIC Codes to specific products. It also had created six-digit “kind-of-business” codes in the services (or non-goods producing) sectors.

NAICS planners decided that the first two characters of the new system should designate the sector (in NAICS, the term “sector” replaced “division” as used in the 1987 SIC). They also thought that modern economies were too complex to be described adequately if the first character of the coding system restricted the number of sectors to 9 or 10 as in the SIC. Therefore, NAICS used a six-digit code in which the first two digits designated the sector, the third the subsector, the fourth the industry group, and the fifth NAICS industry. The five-digit industry level is the most detailed level at which comparable data will be available for all three participating countries’ economies. A sixth digit identifies specific national industries—under NAICS, the United States has 659 such industries, i.e., those with six-digit classifications unique to the United States. The structure may be illustrated as follows:

NAICS level	NAICS code	Description
Sector	72	Accommodations and foodservices
Subsector	722	Food service and drinking places
Industry group	7222	Limited service eating places
Industry	72221	Limited service eating places
U.S. industry	722211 722212 722213	Limited service restaurants Cafeterias Snack and nonalcoholic beverage bars

The Census Bureau added additional digits for still more detailed classification in some industries. For example, for Sector 72, the six-digit “national” industry 722213, “Snack and Nonalcoholic Beverage Bars” was further broken down into three seven-digit industries:

7222131, “Ice Cream and Soft Serve Shops”; 7222132, “Frozen Yogurt Shops”; 7222133 “Donut Shops.”

### IMPLEMENTING NAICS

#### Implementation Procedures

The adoption of NAICS for the 1997 Economic Census required the Census Bureau to introduce about 300 new industry classifications and to revise about the same number of existing SIC industries. The extent of these changes meant that implementing the new system required far more complex procedures than had been necessary for previous revisions of the classification system. These procedures included the following:

- Developing a bridge code system using the 1987 SIC. The Census Bureau assigned two extra digits for each part of the 1987 SIC that had been reclassified to a different NAICS sector or industry. This allowed previous census data collected and tabulated using the SIC to be compared with the 1997 census tabulations done using NAICS.
- Conducting a “refile survey” in December 1996. This involved a mailout and follow-up to approximately 215,000 business establishments on the Standard Statistical Establishment List (SSEL) where the SIC Code for the establishment would be reclassified under a different sector in the NAICS. The SICs involved were those activities that were reclassified into multiple NAICS codes and establishments that had to be classified into a correct NAICS code. The results of the 1997 Refile Survey were used to determine which economic census questionnaire the establishment would receive.
- Using the 1996 Company Organization Survey—an annual survey used to update the SSEL’s address files on multiestablishment companies—to request classification information from approximately 51,000 multiestablishment companies.
- Modifying the 1997 Economic Census questionnaires to enable the Census Bureau to accurately classify establishments that were transferred to different industries within the same sectors or to industries in new sectors, as a result of the adoption of the NAICS.
- Mailing classification questionnaires in November 1997 to approximately 1.6 million small, single-establishment companies that were classified in SICs affected by the change over to the NAICS.

Once the businesses included in the economic census had been reclassified, the Census Bureau’s data-processing systems had to be able to identify, edit, tabulate, and correct the individual data records, as well as the tabulations and cross-tabulations made from those records. This required modifying the Census Bureau’s data-processing

procedures to produce the tables needed for comparisons of 1997 data tabulations with those of previous censuses and for publishing data using NAICS classifications and hierarchy.

### **The 1997 Refile Survey**

The 1997 Refile Survey covered establishments on the SSEL for which economic activities were reclassified in a new industrial sector under NAICS. The survey was designed to classify establishments in the correct NAICS code and so ensure that the correct questionnaire was mailed in the census. The Census Bureau mailed the survey questionnaires in December 1996 so that the information could be collected and the affected establishments identified prior to the census mailout late in 1997.

The Census Bureau's Economic Planning and Coordination Division (EPCD) identified the 80 SIC Codes that were moving to new sectors because of the change to NAICS. The Census Bureau established payroll cutoffs for each group of establishments (most did not have a minimum payroll required, but 23 had minimums ranging from \$15,000 to \$225,000 to use in selecting the sample. The final sample consisted of 215,829 establishments.

The Census Bureau designed a special classification questionnaire, Form NC-9922, "1997 Economic Census Classification Report," to use in the survey, in 17 variations—Forms NC-9922(V01) through (V17)—for specified groups of industries. The questionnaires were single sheets of paper, with a cover letter on the front side and a data-collection section on the reverse, asking the respondent to identify the establishment's principal economic activity. This provided the information for the Census Bureau to use to assign the establishment to an industry classification.<sup>5</sup> Check boxes were used to minimize response burden.

The questionnaires and other materials were printed at the Census Bureau's Data Preparation Division (DPD—renamed the National Processing Center [NPC] in the agency's reorganization effective May 1, 1998) in Jeffersonville, IN, whose staff also assembled the mailing packages. Each mailout package included the appropriate version of Form NC-9922, 1997 Economic Census Classification Report, instructions on completing it, and a return envelope.

The DPD conducted a single mail follow-up on March 10, 1997, remailing survey packages (with the outgoing envelopes overprinted "Second Request") to 47,819 addresses still nonrespondent at that time. The survey questionnaires were returned to the Jeffersonville office,

<sup>5</sup>Form 9922(V04), for example, asked whether 50 percent or more of sales were to businesses that would resell merchandise or to household consumers, what primary format the establishment used to sell in 1996, how the establishment attracted new customers (e.g., location and store attractiveness, advertising to the general public, etc.), and what was the principal line of merchandise in 1996.

where DPD staff processed the responses, sorting, screening, and keying the data from the NC-9922 to a computerized data file. (This file was later used to update the SSEL prior to the 1997 Economic Census classification questionnaire mailout in November 1997.)

Processing returns from the 1997 Refile Survey continued into the summer of 1997 to enable the data obtained to be used for preparing the 1997 census mail lists. Establishments that did not respond to the survey by the end of July were added to the 1997 census classification questionnaire mailing list as establishments with doubtful classifications.

### **The 1996 Company Organization Survey**

Further reclassification information was collected as part of the 1996 Company Organization Survey (COS). The Census Bureau uses the annual COS to update the SSEL's address files on multiestablishment companies. The survey involves sending Form NC-9901, "Report of Organization," questionnaires to all multiestablishment companies with 50 or more employees, and to a sample of smaller multiestablishment companies. As part of the 1996 COS, the Census Bureau requested information needed to classify the individual establishments of multiestablishment companies in SIC Codes significantly affected by the adoption of NAICS. This effort particularly involved those establishments whose reclassification crossed "division/sector" boundaries (e.g., from SIC Division D, "Manufacturing," to NAICS Sector 51, "Information").

The Census Bureau reviewed the 1996 COS sample (about 53,000 addresses in all) of smaller companies, retaining those with SICs impacted by the change over to NAICS and dropping the remainder (about 20,000 firms) from the sample. It then added approximately 18,000 more small multiestablishment companies from affected SICs, for a total sample mailing of 51,000. The COS mailing package contained not only the Form NC-9901, but also any 1 or more of 11 specialized inserts requesting classification information for establishments in industries most affected by NAICS.

Each of the inserts listed a set of industry descriptions, together with the bridge classification code for each industry described. Form NC-9901-IG, "Personal Services," for example, listed six-digit industry bridge codes for 10 "personal care and related services" and for 12 "other services to individuals."<sup>6</sup> The form listed the bridge classification codes covering the respondents' general area of economic activity, and asked them to enter the appropriate code in the "Major activity" section of the questionnaire.

<sup>6</sup>The various services listed were drawn from the 1987 SIC, with the corresponding NAICS Code shown for each. In several cases, a single six-digit NAICS Code covered several industries; e.g., under personal care and related services; massage salons; tanning salons; saunas, steam baths, and Turkish baths; and tattoo parlors were all classified as NAICS industry 729998.

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The Census Bureau mailed the COS packages in December 1996, requesting response in 30 days. Three mail follow-ups were carried out between the beginning of February and the end of May 1997. Responses were received from approximately 44,000 companies.

### **“Birth” Classification**

The Census Bureau used administrative records from various Federal agencies (primarily the Internal Revenue Service [IRS], the Social Security Administration [SSA], and the BLS) to update the SSEL.<sup>7</sup> The Census Bureau incorporated data identifying “births” during the first three quarters of 1997 into its census mail list preparation, and used the individual records to classify as many new companies as possible. Those companies for which no information was available, or that could not be classified using administrative records, were referred for the November 1997 classification mailout and were sent the Form NC-9923 “General Classification” questionnaire. When sufficient information existed to classify the company by economic sector or industry group, but not at the industry level, the companies also were added to the November mailout, but were sent either a Form NC-9926 (manufactures and mining companies) or the appropriate “services” sectors (i.e., virtually every other economic sector except manufacturing and mineral industries) classification questionnaire.

Data on fourth-quarter births were compiled by the Census Bureau from monthly transfers of IRS and SSA administrative records. The Census Bureau prepared an additional mailing list of new businesses and conducted a second classification mailing in February 1998 for those fourth quarter births it was unable to classify from the administrative records.

### **Changes to the 1997 Census Questionnaires**

The technical committee that had periodically reviewed the SIC following its adoption in the 1940s, rarely moved many industries from one SIC division to another. The adoption of NAICS involved doubling the number of economic divisions, called “sectors” under NAICS. This extensive reorganization involved the creation of scores of new industries and required not only establishing entirely new product and industry codes, but moving significant numbers of industries between sectors and into the new sectors. The designs of over 450 1997 Economic Census questionnaires were modified to accurately categorize establishments.

The changes made to the questionnaires specifically to implement NAICS generally fell into two categories—

- Additional products, product codes, and activities were listed where necessary to provide for the movement of an activity from an SIC division or industry to a new NAICS sector or industry.

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<sup>7</sup>These records were supplied by the agencies monthly and quarterly on a flow basis. The IRS provided the Census Bureau with its complete Business Master File (BMF) each May.

- Special inquiries were added to the questionnaires to aid in identifying specific types of economic activities not previously identified under SIC. Any additional products or activities were added to one of the following items on the questionnaires:
- Kind of business or selling characteristics.
- Method of selling.
- Merchandise lines (retail trade).
- Commodity lines (wholesale trade).
- Sources of receipts or revenues.
- Type of construction (construction industries).
- Consumption of selected materials (manufactures and mineral industries).
- Products and services of this establishing during 1997.

The “special inquiries” questions frequently were incorporated into other items on the questionnaires. That is, the response to items on the questionnaires enabled analysts to confirm the classification of the respondent establishment. (For more information on changes to the questionnaires, and for examples of changes made specifically to accommodate NAICS, see Chapter 4, “Questionnaire Development.”)

### **1997 Economic Census Classification Questionnaire Mailout**

Once the 1997 Economic Census mail list had been compiled from the SSEL in the fall of 1997 (see Chapter 7, “Preparation for Census Mailout,” for details), the Census Bureau sampled the list for small companies or establishments from the SICs most affected by the introduction of NAICS. In November 1997, the Census Bureau conducted a mailout to those establishments considered most likely to require reclassification once NAICS was adopted, sending classification questionnaires to approximately 1.6 million addresses. (By comparison, the 1992 Economic Census mailing had included 886,120 classification forms of all kinds.) Addressees were asked to complete and return the questionnaires within 30 days. This mailing was timed to enable the DPD, which carried out the mailing and to which all the census mail questionnaires were to be returned, time to process at least part of the responses before the main census mailout. (For further details of the census classification mailing, see Chapter 8, “Data Collection and Processing.”)

### **Processing System Modifications**

The problems created for the Census Bureau’s 1997 Economic Census data-processing systems by the adoption of NAICS involved the systems’ capacity to account for the new classifications in both the microdata (i.e., processing individual census records from the questionnaires)

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and the macrodata (the census data file) areas. Changes for microdata processing involved the complex edit of records and the interactive editing systems that enabled edit clerks and/or subject-matter specialists to review and edit individual records. The complex edit had to be modified by:

- Adding classification routines to bridge NAICS and the SIC Code systems.
- Modifying code validation procedures to account for the new code ranges and lengths.
- Rewriting the classification programs to enable the system to properly classify establishments that were new to the specific economic sector involved (i.e., industries previously part of a different division under SIC).

The Census Bureau used interactive systems to key data from questionnaires to the economic census data files and also to review and edit the individual data records created when the data were keyed from the questionnaires. The adoption of NAICS required that the interactive systems originally designed for use with the SIC Code be modified to account for the new bridge codes allowing linkages between the NAICS and SIC Code. Similar modifications had to be made to the economic census tabulation programs.

## COMPARABILITY OF THE DATA AND MAINTENANCE OF TIME SERIES

### Scope of Data Comparability

Data users will be able to derive NAICS data for roughly two-thirds of the four-digit SIC Code industries, either because the industries have not been changed (other than the numerical code), or because any new industries are subdivisions of an old industry. For example, the SIC industry 4953, "Refuse Systems," was subdivided under NAICS into eight new industries. These eight differentiated among collection and disposal, separating hazardous waste, materials recovery, landfills, and incinerators. However, many other industries were significantly altered by the adoption of NAICS—544 SIC industries either were not continued or could not be identified under the new system. In turn, 710 industries were created, or had their classifications significantly revised by NAICS. To assist data users, OMB published tables showing the full NAICS hierarchy, as well as tables showing NAICS industries matched to the equivalent 1987 SIC Code, and vice versa.

### Maintenance of Time Series

**NAICS and economic census time series.** Economic data are generally most useful in time series, providing comparable data over a significant period of time. The adoption of a new classification system breaks time series, since the data collected using the new definitions and

codes will not be identical to that produced by the old system. In the best of all statistical worlds, the need to enable data users to familiarize themselves with the new system would require the application of the new classifications to existing data before (or at least contemporaneously with) the collection and publication of new data using the new classifications. In the case of the census, it would be desirable to reclassify the data from the 1992 Economic Census prior to the publication of 1997 statistics. However, for accurate classification, NAICS requires more and/or different information about the operations of individual establishments than did the SIC, so that while some of the 1992 data will have direct counterparts in the 1997 statistics, much of the statistical data produced will have no such immediate connection. The Census Bureau recognized that users need to maintain critical time series data for comparability, and the agency addressed this problem in two ways—through its plans for data publication and in a research program to determine the feasibility of reclassifying 1992 census data using NAICS.

**Publication plans.** The sheer volume of data that would be generated by the census, as well as time and cost restraints, meant that any reasonable response to the problem of complete tables "bridging" between the old and new classification systems necessarily would be extremely difficult and costly. Ideally, a complete parallel publication program, showing all the data classified under both systems, would have been done. Since that was impossible if the data were to be published on a timely basis and within any possible budget, the Census Bureau had to develop a more limited plan.

The 1997 Economic Census data were published in three phases—an *Advance Report*, detailed data, and bridge reports. Early in 1999, the agency released the *Advance Report*, covering all sectors—at the national level—included in the 1997 Economic Census. This report showed data down to the three-digit industry group level, using NAICS. Preliminary "comparative statistics"—that is, tables presenting 1997 and 1992 data on the 1987 SIC basis also were shown at the two-digit levels for the United States. (A separate *Comparative Statistics* report was released later in the publishing cycle, with two-, three-, and four-digit SIC summaries that superseded the data in the *Advance Report*.)

Detailed data from the *Industry Series* and *Geographic Area Series* reports were released throughout 1999, covering industry and summary statistics for various NAICS and geographic area levels. In early 2000, a final *Comparative Statistics Report* was issued, covering 1997 and 1992 basic data items at the SIC trade area and selected two-, three-, and four-digit levels for all establishments for the United States and states.

At approximately the same time, the Census Bureau released "bridge tables" for the United States that included 1997 statistics showing the distribution of NAICS-based

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industries at the more detailed level among SIC-based industries at the four-digit level, as well as 1997 statistics showing the distribution of SIC-based industries at the four-digit level among NAICS-based industries at the more detailed level.

All other data from the 1997 census were published using only NAICS. The first industry-specific numbers published in 1999 did not enable comparisons to be made to earlier censuses for any industries that changed in definition. Only limited historical data appeared for industries that were unmodified by the change to NAICS, or that could easily and cleanly (i.e., without fragmentation of the SIC Coded industry) be connected to NAICS. As in previous censuses following changes in the SIC, no comparability tables were available below the state level—i.e., substate level statistics were published using NAICS only.

**The reclassification of 1992 Economic Census**

**data.** The disruption of data time series occasioned by the adoption of NAICS caused considerable concern among many economic census data users. The Census

Bureau's Professional Associations' Advisory Committee urged that the agency try to alleviate this situation to the greatest extent possible. While it proved impossible to completely reclassify the 1992 Economic Census data, the Census Bureau's Center for Economic Studies (CES) undertook a study of the possibility of reclassifying at least part of the 1992 statistical data to conform to NAICS.

CES staff found that, by making extensive use of modeling, some degree of reclassification could be accomplished, although the resultant data would have to be used with considerable caution. Accordingly, the CES staff carried out the reclassification of the 1992 manufacturing, retail, and wholesale data, completing the process by mid-1999. The services industries, which had undergone perhaps the most extensive changes in the adoption of the new system (e.g., the creation of eight new major services economic sectors under NAICS), was considered the most difficult sector to attempt to reclassify, and the CES was still working on that reclassification at the time of this writing.

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# Questionnaire Design and Development

## INTRODUCTION

Questionnaire design and development began in January 1994. The majority of the work on the design and content of the census questionnaires was done by the staffs of the Census Bureau's economic subject divisions—Manufacturing and Construction Division (MCD), Company Statistics Division (CSD), and Service Sector Statistics Division (SSSD). These divisions were assisted by Economic Planning and Coordination Division (EPCD) and Administrative and Customer Services Division (ACSD). Subject specialists, together with forms design specialists and EPCD staff, made many decisions: size and format of the questionnaires, questionnaire identification (i.e., form numbers and titles), wording and sequencing of standard questions, file copy requirements, design techniques, color schemes for the paper and ink, shading, type of processing equipment to be used, and microfilming requirements.

The Census Bureau developed separate questionnaires for each of the economic sectors covered by the census, and, within each sector, developed questionnaire variations for the different industries. Table 4-1 shows the numbers of questionnaires used for the major economic areas covered by the 1997 Economic Census.

Table 4-1.  
1997 Economic Census Questionnaires

<b>Total</b>	479*
Manufacturing	253
Mining	12
Construction	11
Retail Trade and Accommodations and Foodservices	44
Wholesale Trade	48
Service Industries	54
Finance, Insurance, and Real Estate	24
Utilities (utilities, transportation, and communications)	8
Vehicle Inventory and Use Survey	4
Business Owners and Self-Employed Persons	2
Business Expenditures Survey	9
Economic Census of Outlying Areas	6**
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\*The Economic Directorate also was responsible for coordinating the design and printing of the 48 kinds of envelopes used in the census, and the report forms for the 1997 Census of Agriculture (43 questionnaires and 37 envelopes).

\*\*Includes Spanish and English questionnaires for Puerto Rico and the Virgin Islands of the United States.

While the Census Bureau designed the questionnaires, the Office of Management and Budget (OMB) exercised final authority for approving or denying approval for all economic census forms. The OMB was required, by law, to review the questionnaires and to determine that the information requested—

- Was necessary.
- Was not available from other government or private sector sources.
- Was available from the records customarily maintained by businesses or organizations being enumerated, or that reasonable estimates of the requested information could be made by respondents.

The OMB also verified conformance to the reporting burden control program for Federal agencies, the objective of which is to keep the response burden of the business community to a certain minimum number of hours.

Prior to its submission of the draft questionnaires for OMB approval, the Census Bureau was required to publish a notice in the *Federal Register* of its intention to carry out the economic census. This was to inform interested parties of their opportunity to comment on the questionnaire content. For the 1997 Economic Census, the Census Bureau made draft versions of the questionnaires available at its economic census Web site, [www.census.gov/econ97](http://www.census.gov/econ97).

## DESIGN CONSIDERATIONS

The chief goal of questionnaire design was to obtain information, while imposing the least possible respondent burden. This task was complicated by the requirement that the 1997 census collect, tabulate, and publish data using the new North American Industry Classification System (NAICS). (The NAICS is described in detail in Chapter 3, "Introduction of the North American Industry Classification System (NAICS).") Replacing the Standard Industrial Classification (SIC) Code in use in the U.S. since the 1930s, the NAICS doubled the classification of sectors at the two-digit level from 10 to 20, and added over 300 new industry classifications to capture business activity in the U.S. economy.

The adoption of the NAICS, only a year before the mailout of the census questionnaires, imposed a very tight schedule for designing, approving, and printing the questionnaires. Given the additional requirements for classification information, the Census Bureau decided that minimal changes should be made to the overall content

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and format of the questionnaires. To avoid complications and possible delays in the design and approval of the various economic census forms, the Census Bureau simplified and standardized the designs to the greatest extent possible.

## **CONSULTATION ON THE QUESTIONNAIRES**

### **General Information**

The Census Bureau asked for comments and suggestions on questionnaire content and design from a wide variety of professional, industry, and business associations.<sup>1</sup> Since this process began before the final proposals for the adoption of the NAICS were published in the Federal Register (November 1996), the Census Bureau's consultations with the various associations were based on SIC industry divisions. In the discussion that follows, therefore, the consultations are described in terms of SIC categories.

Mailing packages sent to the associations each consisted of a cover letter explaining the request for comments, a draft copy of the questionnaire for the respective industry, a response sheet that provided both space for comments as well as a check box for respondents who had no comments, and a return envelope.

Census Bureau staff also consulted various Federal agencies (e.g., the Federal Reserve Board, the Bureau of Labor Statistics, the Office of Trade and Economic Analysis, and the Bureau of Economic Analysis) that use economic census data as benchmarks for their own statistical work, or as primary data for their own programs. In addition, the Census Bureau sought comments on questionnaire content from its advisory committees.

### **Retail Trade; Wholesale Trade; Service Industries; Finance, Insurance, and Real Estate; Transportation and Utilities**

In January and February of 1995, the Census Bureau canvassed national professional and trade associations in services; retail and wholesale trades; transportation; and finance, insurance, and real estate sectors. Packages were mailed to 558 business associations, Federal agencies, and other organizations with response requested by March 31, 1995. The Census Bureau followed up selected nonrespondents by mail and telephone, receiving 160 replies by the end of August. Census Bureau staff carefully reviewed the responses, and also met with selected public and private organizations for detailed discussions of their recommendations.

### **Manufacturing, Construction, and Mining**

The Census Bureau mailed requests for comments on a flow basis beginning in the spring of 1995, as drafts of the proposed questionnaires became available. Requests

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<sup>1</sup>The names of these organizations are contained in Appendix D, "Consultation on the Census Questionnaires."

went to over 700 manufacturing, construction, and mining business and trade associations, and to various Federal agencies that use data from these sectors. The packages for the manufacturing, construction, and mining differed from those used in the round of consultations for the other economic sectors in that they included descriptions of both proposed changes to the questionnaires and publication formats for the 1997 census. Many of the organizations on the mailing list received multiple packages—over 2,000 were mailed in all—because they conducted business across several industrial classifications.

By the end of August 1996, the Census Bureau had received comments on over 960 of the packages sent for review. The MCD staff reviewed the responses and met with selected respondents to discuss their recommendations before finalizing the questionnaire content.

## **DESIGN AND CONTENT**

### **General Information**

The enormous variety of activities within the economy and within the major economic sectors precluded conventional standardization in questionnaire design and content.<sup>2</sup> However, the following basic data items were requested of all respondents to the 1997 Economic Census:

- Employer identification number (EIN).
- Physical location of the economic activity.
- Number of employees.
- Payroll.
- Value of sales, receipts, work done, or equivalent.

The general instructions and certification (name, address, telephone number, etc., of the person completing the questionnaire) were similar for all questionnaires. Within each major economic sector, the Census Bureau customized the questionnaires to the greatest extent possible for ease of response, but the data requested varied enormously from sector to sector. For example, product data for manufacturing establishments was necessarily different from product data for financial and insurance businesses. The sector-specific data content of the questionnaires for each major economic sector covered in the 1997 Economic Census is outlined below.

### **Retail Trade; Wholesale Trade; Services Industries; Finance, Insurance, and Real Estate; Transportation and Utilities**

The questionnaires for the retail and wholesale trades; the service industries; and for finance, insurance, and real estate, asked for legal form of organization (i.e., individual

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<sup>2</sup>For example, 48 separate questionnaires ultimately were used to enumerate wholesale trades.

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proprietorship, partnership, cooperative association, government, corporation, other), and operational status (in operation, temporarily or seasonally inactive, ceased operation). The wholesale trade questionnaires included additional items on type of operation, operating expenses, and inventories, while the service industries' questionnaires asked for Federal tax status and operating expenses for tax-exempt organizations. The transportation and utilities industries' questionnaires included an item on operational status, and requested data on sources of revenue. Many of the questionnaires included special inquiries—e.g., sales by merchandise, commodity, or receipts line; sales by class of customer; and employment by occupation.

### **Construction**

Eleven questionnaires were used for enumerating construction firms. These forms included relatively detailed inquiries on costs, as follows:

- Employers' cost of fringe benefits (voluntary and legally required).
- Costs of (1) work subcontracted out; (2) materials, components, and supplies; (3) selected power and fuels; (4) selected purchased services; (5) rental machinery, equipment, and buildings.
- Value of business done.
- Estimated percentage of dollar value of construction work done for various kinds of business.
- Estimated percentage of dollar value of construction work done for various types of construction and how much was new construction, additions, alterations, or reconstruction; or maintenance and repair work.
- Percentage breakdowns of government-owned and privately-owned construction, of construction work subcontracted from other contractors, and for the location of construction work by state.
- Capital expenditures, depreciable assets, and inventories.

### **Manufacturing and Mining**

The Census Bureau used 35 short- and 218 long-form questionnaires for the manufacturing sector. The short questionnaires were two pages each, with a standardized first page that requested—

- Employer identification number.
- Physical location.
- Employment in 1997.
- Annual payroll.
- Value of products exported.

- Total capital expenditures and gross value of depreciable assets (excluding land).
- Total rental payments (buildings, machinery, and equipment, including land).
- Cost of materials for 1997.
- Value of inventories.
- Legal form of organization.
- Operational status.

The second page of the short forms (identified by form numbers based on the industry-specific NAICS Code) asked for value of products shipped and other receipts (by type of product), as well as total value of shipments and other receipts.

The first four pages of all 218 long questionnaires were standardized (three pages of questions and one of instructions) and were virtually identical to the general questionnaire used in the Annual Survey of Manufactures (ASM). The remainder of each questionnaire was designed for enumerating the specific industries. In fact, the 1997 ASM questionnaire, Form MA-1000, was used as the first four pages of the manufacturing questionnaire for companies on the ASM sample list. A variant of the ASM questionnaire formed the first four pages of the questionnaires used for the rest of the census of manufacturing long-questionnaire mailing list.

The long questionnaires included the following standardized items:

- Employer's cost for fringe benefits.
- First-quarter payroll before deductions.
- Plant hours worked by production workers.
- Total shipments and other receipts, value of products exported, and shipments to other domestic plants.
- Cost of materials and contract work.
- Establishment inventories at end of year. Depreciable assets, capital expenditures, and retirements (of debt).
- Rental payments.
- Selected purchased services (MA-1000 only).
- Quantity of electricity used (kilowatt hours) (MA-1000 only).
- Total depreciation charges (MA-1000 only).
- Method of valuation for inventories not subject to last-in/first-out (LIFO) costing (MA 1000 only).
- Ownership, control, and location.

The individual industry long questionnaires asked for information on consumption of selected materials, products and services provided by the respondent establishment, total shipments and receipts, and also included special inquiries for particular industries (e.g., selected products that were produced and used to manufacture other products by the responding establishment).

For mining, the census gathered data using 2 short- and 10 long-form questionnaires. All of these included the standardized questions, as well as many of the items appearing on the MA-1000 questionnaire. The short-form questionnaires (Forms 1371 [Oil and Gas Field Operations] and 1471 [Stone, Sand, and Gravel]) requested data on—

- Capital expenditures and gross value of assets at end of year.
- Total rental payments and cost of supplies.
- Legal form of organization.
- Operational status.
- Products and services provided in 1997.
- Total shipments and other receipts.

The long-form questionnaires asked for all the data on the short versions, and the following additional information:

- Establishment inventories.
- Debt retirement.
- Total depreciation.
- Current account expenditures for mineral properties.
- Detailed cost of supplies and contract work. Ownership, control, and location of operations.
- Detailed cost of supplies used, minerals for preparation, and purchased machinery installed in 1997.
- Detailed fuels used.
- Detailed rental payments.
- Type of operations.
- Selected purchased services.

## CHANGES TO THE QUESTIONNAIRES

The 1997 Economic Census questionnaires were based on those used in the 1992 enumeration, and were updated as necessary. The specialized nature of the questionnaires for each economic sector meant that most of the content modifications for the 1997 census applied only to a single questionnaire, or to a small group of questions covering a particular economic sector or group of sectors. By contrast, the general design changes focused primarily on identification of the questionnaires and their handling prior to data processing. For example, the most prominent

change in the overall design of the questionnaires was the title “1997 Economic Census” in place of the specific census designations previously used (e.g., “1992 Census of Manufactures,” “1992 Census of Retail Trade,” etc). This change applied to questionnaires for all trade areas covered by the census except mineral industries and (part of) transportation, which retained their individual census designations (e.g., “1997 Census of Mineral Industries,” “1997 Census of Transportation, Vehicle Inventory and Use Survey”). The trade area identifiers appeared in the individual form numbers; that is, an alphabetic prefix identified the general economic area that would process the forms:

<b>Prefix</b>	<b>Economic area</b>
AU	Auxiliaries
CC	Construction
FI	Finance and insurance, and real estate and rental and leasing industries
MC	Manufacturing
MI	Mining
RT	Retail trade and accommodations and foodservices
SV	Service industries
TC	Vehicle inventory and use survey
UT	Transportation and utilities
WH	Distributive (wholesale) trades

The Census Bureau also added a barcode to the right margin of each page of the questionnaire. This served as an alignment aid for microfilming equipment. The census due date was changed from February 15, in 1993 to February 12, in 1998.

The adoption of the NAICS was a substantial factor leading to changes in the content of individual questionnaires. These changes were primarily of two kinds—

- Additional products shipped and materials consumed or kinds of business activities were listed on the questionnaires where necessary to provide for the movement of an activity from an SIC sector or industry to a new NAICS sector or industry. It also provided for comparability between data from previous censuses—published using the SIC—and 1997 data collected and published under the NAICS.
- Special inquiries were added to the questionnaires to aid in classifying specific types of economic activities not previously covered.

Depending on the specific sector, additional or “new” products shipped and product or activities codes were added to one of the following items on the questionnaires; (1) kind of business or selling characteristics, (2) method of selling, (3) merchandise lines (retail trades), (4) commodity lines (wholesale trade), (5) sources of receipts or

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revenue, (6) type of construction (construction), or (7) consumption of selected materials (manufacturing and mining). The “special inquiries” questions frequently appeared in separate items at the end of the questionnaire, but also could be incorporated in other items. In the latter case, responses could be used by analysts to confirm the classification of the establishment without asking an explicit question.

The changes made to the questionnaires are summarized below, by industry sector or related sectors, together with some illustrative examples of specific additions, deletions, or changes to the questionnaires.

### Retail Trade

The retail trade sector expanded under the NAICS to include establishments primarily engaged in providing accommodations (e.g., motels) and food services (e.g., restaurants). The changes made to the 48 retail trade questionnaires generally fell into three broad categories—

- Deletion of special inquiries not critical for kind-of-business classification.
- Changes to the merchandise lines (item 10) of the questionnaires, made at the request of the industry to collect more useful data.
- Changes made to facilitate kind-of-business classification under the NAICS.

A considerable variety of special inquiries were added to the retail trade questionnaires, primarily to provide detailed data on specific characteristics of limited sectors of the retail sector.

Retail trade is a relatively volatile sector of the economy, in terms of the importance of specific kinds of merchandise at any given time. There were considerable changes made to Item 10, “Merchandise Lines,” on many questionnaires. For example, on Form 5901, “Health and Personal Care Stores,” lines of merchandise considered no longer relevant to the establishments covered—e.g., major household appliances, furniture and sleeping equipment, floor coverings, automotive fuels, and paint and related preservatives and supplies—were deleted, and new lines requesting data on hearing aids and seasonal decorations were added.

The adoption of the NAICS also had an impact on the retail questionnaires, including the addition of two new questionnaires—Forms RT-7001, “Traveler Accommodations,” and RT7002, “Recreational and Other Accommodations.” These covered industries reclassified from services to retail trade. Other changes made to facilitate kind-of-business classification under the NAICS required modification of existing forms, such as combining items on paint, glass, wallpaper, and hardware dealers from two 1992 census questionnaires into Form 5201, “Building Materials

and Supplies Dealers.” Also, a single 1992 questionnaire on contract feeding and vending operators was split into Forms RT-5802, “Contract Feeders,” and RT5803, “Vending Operators.”

### Wholesale Trade

The bulk of the changes to individual questionnaires in the wholesale trade sector involved either Item 11, “Kind of Business,” or Item 13 (13a on some forms), “Commodity Lines.” However, there also were some general content changes to nearly all questionnaires for wholesale establishments, as follows:

- An additional option was added to Item 6, “Employment,” section b, “List the above employees by the employee’s primary function”—“Sales support (including office and clerical, warehousing, customer service, maintenance employees, and drivers).”
- The Census Bureau added Item 11b, “Selling Characteristics,” asking (1) “In what format did this establishment primarily sell in 1997?” and (2) “How did this establishment primarily attract new customers in 1997?” to all long-form questionnaires (except Form WH-5170, “Petroleum and Petroleum Products”).
- In Item 10, “Sales by Class of Customer,” choices “b” through “f” were reworded to accommodate changes required by the adoption of the NAICS (e.g., Item 10b, originally read “Restaurants, food services, and contract feeding,” and was changed to “Restaurants, hotels, food services, and contract feeding,” while Item 10d, originally “Other wholesale establishments” was reworded “Other wholesale establishments for resale.”

Most other changes made to individual questionnaires stemmed from the NAICS classification requirements, or resulted from the aforementioned consultations. For example, under the NAICS, all fluid-power equipment was classified under industrial machinery and equipment. Consequently, the Census Bureau added a line to Item 11, “Kind of Business,” on “Hydraulic and pneumatic valves, cylinders, rotary actuators, connectors, and assemblies, filters, accessories, and parts,” to Form WH-5084, “Industrial Machinery and Equipment.” This, in turn, led to changes in Item 13, “Commodity Lines,” of the same form, adding lines for hydraulic and pneumatic valves, cylinders and rotary actuators, and connectors.

Consultation with the industry led to considerable rewording of the detail lines in Item 13 of Form WH-5060, “Electrical Goods,” where 10 new lines—on power and distribution transformers; switchgear and switchboard apparatus; motors and generators; conduits, raceways, and fittings; electric bulbs; interior wiring; exterior wiring; lighting fixtures; industrial controls; and other electrical apparatus and equipment—were added to the item.

Six of the 48 wholesale questionnaires were intended for small companies.<sup>3</sup> Aside from the prefix (i.e., “WH”) change and the request for county in the item on location, the principal changes made to the short-form questionnaires was the adoption of the items on “Sales By Class of Customer” (Item 9 on most questionnaires) and “Selling Characteristics” (Part b of Item 11, “Kind of Business”) on the long forms.

## Manufacturing

The adoption of the NAICS that had the greatest impact on content changes for the manufacturing sector. These changes required additions and elaborations of product lines on most of the manufacturing questionnaires. For example, Form 2023, “Dried Food, Pickles, and Macaroni,” added “Vegetable flour” (product code 20343 38) to Item 18. Form MC-2207, “Spinning and Throwing of Yarn and Thread,” expanded the 1992 equivalent product line for “rewound and novelty yarns” (1992 product code 22822 21 7) into two new product lines: “Rewound yarns, other than wool, ...” (product code 22822 22 5) and “Novelty yarns, other than wool, ...” (product code 22822 23 3).

For the 1997 census, the Census Bureau made several changes to the standardized portion of the manufacturing questionnaire by eliminating the following items that appeared on the 1992 questionnaire:

- Separate data for voluntary and legally required fringe benefits. This item was dropped in order to reduce response burden.
- Separate data for new and used assets and expenditures and detail for new machinery expenditures. These data were collected in the Census Bureau’s Annual Capital Expenditures Survey (ACES).
- Request for data on methods of inventory valuation not subject to last-in, first-out (LIFO) costing (eliminated from the MA-1000 only).

The industry-specific items of the manufacturing questionnaires (pp. 5-11 for long-form questionnaires, p. 2 for the short-form questionnaires) covered the particular characteristics of the individual establishments’ operations. Changes in these items were made based on (1) expected growth or decline in importance of a material, product, or special inquiry item, (2) revisions required to promote comparability between the Census Bureau’s classification system and the international Harmonized

<sup>3</sup>Payroll cutoffs for small wholesale establishments varied by kind of business, but small establishments typically included firms with one to three employees. These companies represented about 10 percent of total annual wholesale sales.

Commodity Description and Coding System (HS)<sup>4</sup>, and (3) revisions needed to implement the change over from SIC to NAICS. For example, Form MC 2004, “Dairy Products,” Item 18, “Products and Services of This Establishment in 1997,” was modified to add new product lines on “Lowfat Natural Cheese, Except Cottage Cheese” (shipped in packages of less than three pounds, and three pounds or more). The Census Bureau added the new product lines because it expected the total value of these products shipped in 1997 to exceed \$50 million. A product line could be deleted if the value to be shipped was expected to fall below \$25 million.

## Construction

For the 1992 census, the Census Bureau used 22 questionnaires to cover construction—11 long and 11 short. Both the long and short questionnaires were 4 pages, with virtually identical layout and design for pages 1, 2, and 4. Page 3 on each questionnaire was customized and contained items requesting information on kind of business and type of construction.

For the 1997 Economic Census, MCD reevaluated the 1992 questionnaire designs and decided that there were few, if any, advantages to using short questionnaires. The short questionnaires requested information from a sample of small construction firms and, for 1997, the Census Bureau planned to reduce such sampling.

There were limited changes to the overall design and format of the long questionnaires, as follows:

- On page 2, an additional instruction (to include receipts or billings derived from contract construction, design/build contracts, and construction management) was added to two of the questionnaires (Forms 1508 and 1608).
- Page 3 of each questionnaire, which contained Items 13, “Kind of Business,” and 14, “Type of Construction,” was customized for each questionnaire. The Census Bureau deleted requests for detail on new and used depreciable assets and detail on buildings, structures, and machinery from Item 18, “Assets, Capital Expenditures, and Depreciation in 1997.”
- On page 4, Form 1508 included new items asking for data on housing starts and nonresidential design/build work and Form 1608 asked for information on nonresidential design/build work.

<sup>4</sup>The U.S. adopted the Harmonized Commodity Description and Coding system (HS) in 1989 for classifying commodities in international trade. Under HS, both exported and imported commodities carried the same codes to the six-digit level. This allowed closer comparisons than under previous systems (the process was assisted by adjustments made to the SIC Code). The HS was intended to serve as a universally accepted product nomenclature and could be used for classifying goods for customs programs, as well as for collecting data on exports and imports.

Other relatively minor wording changes were made, primarily to clarify the data requested. Since write-in responses to the kind-of-business and type-of-construction questions would require time-consuming manual coding by analysts during processing, the MCD tried to reduce the need for write-in response by anticipating activities and adding ready-made codes.

As with the questionnaires for other sectors, construction industry forms underwent certain changes to accommodate adoption of the NAICS. Reclassified activities and their attendant codes were added to the appropriate questionnaires. For example, stucco contractors were part of SIC Industry 1771, "Concrete Work." Under the NAICS, stucco construction was transferred to NAICS Industry 23542, "Drywall, Plastering, Acoustical and Insulation Construction."

## Mining

The 1997 Economic Census used 12 questionnaires to enumerate mining. Content changes to the questionnaires paralleled those made for manufacturing, deleting—

- Breakdown between legally required and voluntary fringe benefits paid to employees.
- Detailed breakdowns of (1) beginning and ending assets, (2) retirements, and (3) depreciation/depletion changes between buildings, machinery, mineral exploration/development, and land and rights. Detailed breakdown of capital expenditures between buildings and machinery.
- Detailed breakdown of current account expenditures for mineral properties between mineral exploration/development, and mineral land and rights.

Industry-specific changes also were made to the questionnaires, primarily to Item 17, "Supplies Used, Ores for Treatment, and Purchased Machinery Installed During 1997," and 18B, "Products and Services of This Establishment in 1997." For example, on Form MI-1001, lines in Item 17C for "Iron ore concentrate" and "Bauxite" were combined with "Other ores and concentrates" for 1997. Separately, they were no longer as significant to the industry as was the case in 1992. Other changes to Item 18B stemmed from the transition to the NAICS. On Form 1303, "Oil and Gas Field Services," a product line on "Geophysical surveying for oil and gas" was added to facilitate classifying establishments in the NAICS. Similarly, Form 1403, "Chemical and Fertilizer Minerals and Nonmetallic Minerals," split "Bituminous limestone and bituminous sandstone" from the product line for "Native asphalt and bitumens" to attain comparability within the NAICS. On several questionnaires, "Lubricating oils and greases" were combined with "All other supplies" because separate data could not be published without disclosure problems.

## Service Industries

For the 1997 census, the former SIC Service Industries division was expanded and reorganized into eight NAICS service sectors. The new NAICS sectors, derived largely, but not exclusively, from Service Industries were as follows: Information; Professional, Scientific, and Technical Services; Administrative Support, Waste Management and Remediation Services; Educational Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; Other Services (Except Public Administration); and Management of Companies and Enterprises (the latter drew elements from all the SIC divisions).

The items asking for the EIN and physical location on the 54 services questionnaires were changed to conform to those used on the rest of the census questionnaires. Specific lines or items were dropped from various questionnaires due to poor response or to budget limitations (e.g., for Form SV-7903, "Gambling, Amusement and Gambling," lines asking for data on docking and storage capacity, as well as on bowling, were deleted from Item 9, "Sources of Revenue"). On taxable and nontaxable businesses questionnaires (e.g., Form 8704, "Management and Consulting Services" (taxable) and Form SV 8004, "Hospitals" (nontaxable), instructions were added to Item 4, "Legal Form of Organization," to help companies select the appropriate check box and to resolve problems with data on limited liability partnerships.

The adoption of the NAICS also led to the creation of several new questionnaires, including long-form questionnaires Forms 7303, "Specialized Design Services," and 7309, "Miscellaneous Professional Services," and five short-form questionnaires, to cover newly identified industries. In addition, communications industries (former SIC Major Group 48, covering telecommunications, including telephone and telegraph, radio and television broadcasting, cable and other pay television services, and communications services not elsewhere classified) was transferred from Transportation, Communications, Electric, Gas, and Sanitary Services to the NAICS "Telecommunications (consolidated)"—one of the new service classifications.

Most changes to the service questionnaires added inquiries to Items 8, "Kind of Business," and 9, "Sources of Receipts." These changes either improved the level of detail data available from the census or facilitated industry classification. For example, Form 7302, "Administrative and Other Support Services," combined inquiries from three 1992 questionnaires into eight new lines in Item 8, "Kind of Business"—(1) collection services, (2) adjustment bureau, (3) secretarial services, (4) court reporting, (5) all other support services, (6) all other administrative services, (7) telemarketing bureau and soliciting services, and (8) recovery and repossession services—while deleting two lines (blueprinting and photocopying, and duplicating services) to facilitate classification under the NAICS.

Form 7301, "Advertising and Related Services," had seven new lines added to Item 9—(1) display advertising

services, (2) direct mail, (3) distribution or delivery of advertising materials, (4) fees for soliciting advertising for media, (5) commissions from buying advertising space or time and reselling, (6) sales of “specialty advertising” products, and (7) sales of merchandise except special advertising products—to provide support for industry coding and improved industry detail.

### **Finance, Insurance, and Real Estate**

Changes made to the 24 questionnaires for these industries reflected (1) improvements from experience gained in earlier census coverage, (2) detail needed for classification under the NAICS, and (3) items deleted because of poor response in previous censuses or because of budget limitations. Based on previous experience, the Census Bureau added “Subchapter ‘S’ corporations” to Item 7, “Legal Form of Organization” on all questionnaires to help respondents select the correct check box. The 1992 Form CB-6000, “Depository Institutions,” was split into three questionnaires for the 1997 census—FI-6001, “Banks and Depository Credit Intermediaries, Except Credit Unions”; FI-6002, “Credit Unions”; and FI-6300, “Foreign Banks and International Trade Finance”—because the amount of detail required to cover all these industries on a single questionnaire had confused the respondents. Items on questionnaires directed to insurance agencies and to real estate agents and managers were reworded to improve data capture on commissions paid to independent agents.

Changes made to accommodate the NAICS required adding, deleting, or rewording lines in Item 8, “Kind of Business or Activity,” and Item 9, “Sources of Revenue.” For example, on Form FI-6102, “Activities Related to Credit Intermediation,” the Census Bureau added a kind-of-business check box and a revenue line for loan servicing. This activity is recognized in the NAICS industry 52239, “Other Activities Related to Credit Intermediation.” Three new questionnaires were added to cover rental and leasing of automotive and other machinery and equipment were FI-6504, “Automotive Equipment”; FI-6505, “Rental and Leasing of Machinery and Equipment”; and FI6506, “Miscellaneous Rental and Leasing.”

Finally, certain inquiries originally intended to assist in assigning industry classification codes were dropped due to poor response or to budget limitations (e.g., from the 1992 Form FI6501, “Real Estate Operators and Lessors,” an item asking about managed or leased properties).

### **Transportation and Utilities Industries**

The biggest change within this group of questionnaires resulted from the transfer of communications industries out of the sector. Also, in previous censuses, transportation, communications, and utilities industries had covered telecommunications firms, but for the 1997 Economic Census, this subsector was transferred into one of the service industries.

For the 1992 census, the design of the transportation, communications, and utilities industries questionnaires differed from those for other economic sectors in the placement of the kind-of-business and source-of-revenue items. By contrast, in the 1997 census—for the transportation and utilities industries—this organization was changed to conform with that of other questionnaires. The effect was to standardize overall design and to facilitate processing of all census materials. As with other questionnaires, minor wording changes were made and the question on physical location of the establishment was changed to request the county.

Most of the more substantial changes in the transportation questionnaires were made to individual lines (i.e., sources) listed in Item 9, “Sources of Revenue,” either to facilitate classification or to improve comparability under the NAICS. For example, on Form UT-4200, “Trucking and Warehousing,” the Census Bureau—

- Added a line asking for revenue from “Process, physical distribution, and logistics consulting.”
- Deleted the line on “waste collection—operation of incinerator, landfill, transfer station, or other disposal site.”
- Modified the wording on several lines to conform to the NAICS language (e.g., “sanitary services” was changed to “waste collection,” and “...and disposal” was deleted from the line originally reading “hazardous waste collection and disposal”).

The NAICS classification requirements also affected the content of the utilities questionnaires. On Form 4900, “Electric, Gas, and Water Utilities,” the Census Bureau added a line to Item 9, “Sources of Revenue,” for “electric power transmission,” and deleted lines on “sanitary services” and “sales of scraps and waste materials.”

### **SUMMARY**

Questionnaire design and development for the 1997 Economic Census was a carefully considered and lengthy process. From the consultations, to notifications in the *Federal Register*, and the incorporation of the NAICS, the Census Bureau created questionnaires gathering the most specific data ever reported on the Nation’s business activity.

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# Promoting Census and Product Awareness

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“Every census—whether of people or of business establishments—must persuade those from whom they would collect the data to *provide the information*. No data response, no census results.”

John P. Govoni, Chief  
Economic Planning and Coordination Division  
U.S. Census Bureau

## INTRODUCTION

In promoting the economic census, the U.S. Census Bureau must consider how to increase the willingness of businesses to participate. Even though response is required by law, many businesses fail to participate. Various causes have been identified, including the cumulative effects of the paperwork burden, changing attitudes toward government, and diminishing administrative resources because of business downsizing.

The economic census is absolutely critical to supporting ongoing survey programs, to maintaining the Standard Statistical Establishment List (SSEL), which serves as the Census Bureau’s Business Register, and to providing the benchmark data upon which many other national economic measures are predicated—including the Gross Domestic Product (GDP) estimates. Therefore, the Census Bureau undertakes a wide array of activities to guarantee that this most important of all business data collection effort gains notice and obtains responses from the business sectors. Those activities are the subject of this chapter.

### Two Moments of Truth: 1954 and 1997

Each economic census occurs within unique historical circumstances that condition the Census Bureau’s approach to promoting awareness. The 1954 Economic Census, for example, received tremendous advance coverage. Scheduled to take place in 1953, funds for the census were never appropriated. Instead, an Intensive Review—Committee headed by Dr. Ralph J. Watkins—was commissioned in October 1953 by the Eisenhower Administration to study if the economic census was necessary. Business, financial, professional, and governmental groups were represented on the committee which, in February 1954, issued its unreserved support for the economic census—

We are in the midst of great technological revolution which is accelerating change, hastening obsolescence, creating new industries and transforming old ones,

remaking the industrial map of the country, and bringing within the range of the feasible great heights of production, productivity, and well-being. . . The need for the benchmark statistics provided by the Census Bureau is greater today than ever before, and promises to grow in intensity.— *Watkins Commission Report*, 1954.

Within months, the economic census was reinstated, and the 1954 Economic Census had taken its special place in the history books. No promotional campaign has quite topped that one, but to promote awareness of the 1997 Economic Census, a booklet was produced, *The Economic Census—Two Moments of Truth: 1954 and 1997*. The booklet drew parallels between the 1954 and the 1997 economic censuses. An original print run of 10,000 booklets in September 1997 was quickly followed by another print run of 14,000 in June 1998: the item was highly popular in the 1997 promotional effort. (See Appendix B, “Historical Development of the Economic Census of the United States,” for more information on the history of the economic censuses.)

### NAICS and the 1997 Promotional Campaign

Like the 1954 Economic Census, the 1997 Economic Census found itself at a special juncture in history—particularly with reference to the creating of new industries and the transforming of old ones. The 1997 census was to be the first to collect data in terms of the new North American Industry Classification System (NAICS) which replaced the Standard Industrial Classification (SIC) system. The SIC had been in use, and revised several times, since the 1930s. The new system identified several hundred new industries that had not been recognized separately in earlier censuses, and it revised the classification of many hundreds more. Therefore, in addition to traditional activities, the promotional campaign for the 1997 took into consideration that—

- Respondents needed to know that their answers would establish the baseline for a new coding system.

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- Data users needed to know that 1997 Economic Census products would have many advantages not known to them before, and that using these products would present unfamiliar challenges.

Special brochures, question and answer sheets, and other promotional materials were formulated to explain the NAICS and its effects on both those preparing the census forms as well as data users.

The introduction of the NAICS gave additional impetus to the integration of two objectives for the awareness campaign:

- Promoting awareness of the economic census during the data collection effort.
- Promoting awareness of products and services that the Census Bureau would provide after data were tabulated and released.

### **LESSONS DERIVED FROM THE 1992 ECONOMIC CENSUS**

Following the 1992 census, the Census Bureau formed several committees to evaluate the census and to recommend improvements for the 1997 enumeration. Thus, the 1992 Economic Census Multiunit Response Improvement Committee came into being and issued a report. In 1995, this report was used as a departure point by the 1997 Economic Census Response Improvement Team which, in turn, made additional recommendations of its own. In effect, these recommendations centered around the following principles:

- Clarify—in the minds of respondents—that the economic census is a unified event.
- Coordinate and integrate response and product marketing.
- Remind respondents of the mandatory nature of their response.
- Improve the ease—that is, reduce the costs—of companies in responding to the census.
- Target large companies.

### **Unify and Clarify the Economic Census**

Prior to 1997, the economic census lacked a unified, recognizable identity. As a whole, it was routinely referred to as “the economic censuses.” It was perceived and conducted in terms of a series of discrete events, namely, the census of retail trade, the census of manufactures, and the like. Therefore, a business executive might read about “the economic census” in the media, but fail to connect it to the data he may have referenced from a census of manufactures report of the last census, or to the census of services industries questionnaire that just arrived in the

mail. Each of these censuses had equal status, and the economic census was characterized as a unified endeavor only administratively, via budget submissions.

Lack of a clear identity for the economic census presented a singular task to those charged with promoting response, given that no business would receive a form by that name. To correct this situation, the “1997 Economic Census” was adopted as the formal name for the data collection effort. This title appeared above—and in larger print than—references to sector-specific titles on the census forms, instruction sheets, cover letters, and data products. Keeping the sector titles in a subordinate status while publicizing the larger effort enhanced the presentation of the economic census as an integral whole, rather than as a collection of separate economic measures. More importantly, this approach raised the profile of the economic census as the major measurement event of the Nation’s economy.

### **Integrated Response and Product Marketing**

Response marketing—i.e., making respondents aware that the census was being taken and that, by law, they must fill out the census forms and return them to the Census Bureau by the February 12, 1998 due date—was a key step in successfully conducting the 1997 Economic Census. Even though the Census Bureau had long observed a “disconnect” between the user and the provider of census information, the agency knew these were two sides of the same coin. Therefore, in its promotion efforts, it was important to link collection with dissemination. Awareness of benefits would motivate some respondents and also would help legitimize the Census Bureau’s requests for media attention.

Moreover, the Census Bureau was intent upon showing appreciation to “intermediaries”—i.e., the Chambers of Commerce, associations, news media, and others that carried its promotional messages to potential respondents—by informing those intermediaries about the results of the census. Since results are always in terms of products, the close synchronization of census and product promotion was reinforced.

To coordinate the collection and dissemination functions, staff members at all levels of Census Bureau divisions participating in this census were informed and involved in the 1997 awareness campaign. It was imperative that the themes developed in marketing the census response were carried into the marketing of economic products and services, providing a focused, consistent message. In order to accomplish this, the data product portfolio was developed early on in the census planning phase. The publicizing of the mix of data products and services was anticipated from the outset of respondent outreach efforts.

**Objectives of response marketing.** The chief goal of response marketing was to raise awareness that data collection was taking place and that response was important.

Both those preparing the forms (such as accountants) and those who might influence the preparers (such as company CEOs, the media, Chambers of Commerce and other organizations) needed to be targeted with this message. The Census Bureau expected that increased awareness would help to increase the overall level of response to the census, and to accelerate the rate of response—particularly by very large companies. Also, response marketing was intended to set the stage for product and services marketing.

**Objectives of product and services marketing.** The chief goals of product and services marketing were to increase awareness of the Census Bureau’s products and services and to increase their use by data users. The Census Bureau wished to cultivate satisfied users who could, in turn, serve as advocates, spokespersons, and role models for the 1997 Economic Census. This would facilitate future data collection activity. The Census Bureau does, after all, conduct a population census every 10 years, an economic census every 5 years, and hundreds of economic and demographic surveys every year.

### **Remind Respondents That Response Is Mandatory by Law**

Taking a cue from the 1992 Economic Census—in which it was demonstrated that placing the mandatory message on the mailout envelope<sup>1</sup> was perhaps the most effective element of 1992 response improvement efforts—planning for 1997 expanded on this principle as follows:

- Included the message—“Your response is required by law”—on all outgoing form packages, multiestablishment companies, as well as single-establishment companies and on follow-ups and remails.
- Retailed to reinforce the message. In 1992, the Census Bureau only retailed questionnaires to single-establishments (3 remails); in 1997, questionnaire remails also were sent to small and medium multiestablishment companies (1 remail). For 1997, businesses that had been granted time extensions were reminded of the reporting requirement; in 1992, businesses with extensions were excluded from reminder mailings.

### **Improve the Ease/Reduce the Costs of Business Response to the Census**

Responding to the census takes time. This is the case whether in-house staff of large companies, or accountants hired by small companies, complete the questionnaires. How might the Census Bureau make this response less burdensome? An important lesson in this regard from the 1992 census was applied to the Census Bureau’s focus on the response rate for the 1997 census. During the 1992

<sup>1</sup>For the 1992 census, the message appeared only on envelopes for mailout to single-establishment companies.

census, the Census Bureau inadvertently exacerbated unwillingness to respond to the census. That is, two economic surveys were conducted for the first time—the Annual Capital Expenditure Survey (ACES) and the Commodity Flow Survey (CFS)—and responses to these surveys were to be compiled by businesses already answering the 1992 Economic Census questionnaires. The paperwork burden was substantial. The Census Bureau took care not to repeat this error in 1997—the CFS was conducted throughout the year, previous to the mailout of the 1997 census questionnaires, so that this survey was not in the “field” at the same time as the 1997 Economic Census. The ACES was done as well, but the survey actually lowered respondent burden by allowing the Census Bureau to discontinue other surveys of business investment.

Further lessons from the 1992 census were applied for the 1997 census to ease the way for businesses to respond in a timely, cost-effective manner. To this end, the Census Bureau—

- Made electronic reporting easier. For 1997, the Census Bureau greatly expanded its outreach to the business sector in this regard, inviting approximately 600 companies to report electronically—using either the Windows-based Computerized Self-Administered Questionnaire (CSAQ) or magnetic computer tape. (See the “Account Manager/Company Contact Program” below for more information on electronic reporting. Chapter 8, “Data Collection and Processing,” also discusses electronic reporting.)
- Projected greater accessibility. To answer business questions, the Census Bureau prominently included an 800 number on the questionnaires and provided its Web site address—[www.census.gov/econ97](http://www.census.gov/econ97)—on all census cover letters. The web page included an “Ask Dr. Census” feature.
- Provided sample questionnaires on the Internet.
- Uploaded Portable Document Format (pdf) questionnaires to the Internet, so that respondents could preview the 1997 Economic Census questions specific to their industry. This was done in March 1997.

### **Target Large Companies**

Multiestablishment companies classified as “large” (“L”) companies constituted only 7 percent of all establishments to which forms and classification cards were mailed in the census, but these companies represented over 30 percent of the economic activity of the country. (The classification mailout is discussed in Chapter 8, “Data Collection and Processing.”) Their responses were essential to ensure data accuracy—particularly because of the need to obtain correct NAICS Codes. Thus, a significant part of the census awareness program was devoted—as in previous economic censuses—to “large company response.” (For the 1997 Economic Census, the final response rate for multiestablishment “L” companies was 88.9 percent.)

## PROMOTIONAL ROLES PLAYED BY VARIOUS CENSUS BUREAU DIVISIONS

The following Census divisions and other organizations coordinated their actions to promote awareness of this census.

### Economic Planning and Coordination Division (EPCD)

Census and product awareness activities were centered within the Economic Planning Staff (EPS) of EPCD. This staff coordinated with, and provided input and guidance to, the outside contractor advertising agency—Lisboa Associates, hired in the Fall of 1996. An outside contractor also had been used in the 1992 Economic Census.

**Lisboa Associates.** The advertising agency was responsible for implementing most aspects of the communications contract, under oversight by the Contracting Officer's Technical Representative. Lisboa Associates' functions included the following:

- Research: Interviewing Census Bureau staff. Conducting focus groups with potential respondents (accountants) and intermediaries (news media, Chambers of Commerce, and trade associations) and interpreting the results.
- Strategy: Recommending approaches based upon research findings.
- Creativity: Developing artwork and editorial copy. This artwork was to convey a unified census, and in that regard, distinguished itself from the graphics of previous economic censuses.



- Development and distribution of media kits: Facts for Media contained press releases, sample editorials, fact sheets, a NAICS brochure, clip art, response dates, information on available assistance, answers to typically asked questions about the economic census, examples of how the data are used, findings from the 1992 census, and Public Service Announcements (PSAs). In all, 10,000 media kits were distributed to general business publications (1,021), industry associations (2,112), newspapers (905), regional business publications (823), Chambers of Commerce (3,027), and Data Center/Business and Industry Data Center affiliates (2,189).
- Distribution of over 50,000 *Accountants' Guide to the 1997 Economic Census*. These booklets were sent to

independent accountants who were members of the National Accounting Association and the American Society of Certified Public Accountants. The 1987 Economic Census Advertising & Response Behavior Study showed that about six percent of small businesses used outside accountants to complete their census forms.

- Duplication/distribution: Producing print materials and two radio PSAs. In three waves, print materials in information kits were “direct-mailed” to media, business groups, and intermediaries. The press releases, editorials, and PSAs were tailored to reflect the census timetable, as follows:
  - Wave 1 Message: “The questionnaires are coming.” (for use September to December 1997).
  - Wave 2 Message: “The questionnaires are here.” (for use January to February 1998).
  - Wave 3 Message: “The questionnaires responses are past due.” (for use March 1998).
- Internet: Creation of digital versions of editorial and ad copy, radio programs, and other materials. Development of web pages organizing the material to be posted on the Census Bureau Internet site.
- Analysis and evaluation: Providing a newspaper clipping service, maintaining statistics on clips, response cards, and the like.
- Fulfillment: Sending profiles to media requesting them (in response to offers contained in response cards), and sending messages to media who provided coverage or donated—space thanking them for their help.

After the above activities had been implemented, the Census Bureau extended the contract of Lisboa Associates to handle promotion of 1997 census products (see last section of this chapter).

In addition to coordinating with the ad agency, EPS handled most media interface and interviews. For use in its own direct contacts with associations, trade press, and respondents, EPS also distributed copies of promotional materials in quantity.

### Public Information Office (PIO)

The PIO was responsible for—

- Working with the contractor as part of the creative team, specifying contract details, developing and evaluating components of the package, and integrating contract output with other publicity activity.
- Developing press releases and other publicity materials related to contract elements.
- Developing video and radio materials, and distributing them through existing channels, including network feeds.

- Engineering cooperative efforts, such as the National Association of Broadcaster satellite transmission on February 12, 1998.
- Cultivating and/or assisting in interviews between Census Bureau staff and government officials, business leaders or data users. These taped interviews were useful as elements of the media kit, in radio and TV materials, and in brochures to make appeals to “stakeholders.”

### **Congressional Affairs Office (CAO)**

The CAO engaged in—

- Assisting in development of strategies for communicating with the Congress about the 1997 Economic Census.
- Helping design a version of the media kit for congressional offices.
- Setting up Congressional staff briefings on the economic census.

### **The Marketing Services Office (MSO)**

The MSO participated by providing guidance with respect to product marketing activities.

### **Customer Liaison Office (CLO)**

The CLO had jurisdiction over—

- Assisting in development of strategies to communicate with the business community through State Data Center/Business and Industry Data Center (SDC/BIDC) units.
- Helping to develop mailing lists of SDC/BIDC affiliates.
- Setting up briefings for SDC/BIDCs—telling them of the Census Bureau’s plans.

The promotional roles of Economic Statistical Methods and Programming Division (ESMPD), Governments Division (GOV), various subject matter divisions, and the National Processing Center (NPC)<sup>2</sup> in Jeffersonville, IN, are discussed in the next section.

## **LARGE COMPANY PROGRAM**

If the goal of the Census Bureau was to publish results of the 1997 Economic Census earlier than ever before, then the corresponding mission of the Large Company Program was to promote a prompt turnaround time for the census questionnaires. As mentioned, nearly one-third of 1997 Economic Census data were furnished by seven percent of the Nation’s companies. However, the issue was not simply one of “large company response”—large firms

do respond, eventually. But, responses from some large firms come in so late that they significantly diminish the utility of census results. The question addressed by the 1997 Large Company Program, therefore, was “How can the Census Bureau motivate large companies to respond earlier than ever before—while maintaining the excellent rates of response (89 percent) attained in the 1992 Economic Census?”

Survey staff from subject divisions served as “account managers” to specific companies with whom they formed a direct “contact.” The Account Manager Program will be detailed below, but first, it is necessary to describe the work of the many census divisions that established the foundation for the program.

### **Groundwork for Identifying and Contacting Large Companies**

**Economic Statistical Methods and Programming Division (ESMPD).** ESMPD assembled a list of potential “L” and “M” (medium) companies.<sup>3</sup> The Large Company Response improvement team set the criteria: namely, the top 1,000 companies—by establishment and by payroll—in each SIC division were to be chosen. This resulted in a list of about 10,000 companies—

- At mailout there were 1,000 “Ls” and 9,000 “Ms.”
- After mailout, for purposes of follow-up and Management Information System reporting, the Census Bureau redefined “M” companies to include any company with 1,000 or more employees.

ESMPD also produced several mailing materials, including the Contact Exchange Card and cover letters, both of which are referred to below.

**Governments Division (GOV).** For the 1997 census, the ESMPD did not have the resources to develop the account manager Intranet application. Therefore, GOV developed the application, and account managers used it to record their contacts with “L” companies. Since there was no direct interface between the intranet application and the SSEL, data were downloaded and sent to ESMPD to be applied to the SSEL. This took place in July 1997, in order to apply the account manager and Contact Exchange Card names/addresses to the SSEL before mailout.

**Subject divisions.** The subject divisions participated in early planning and fact-finding stages of the census. They examined the list of potential “L” companies assembled by ESMPD and then applied criteria for selecting companies for the Large Company Program. The criteria included

<sup>3</sup>The designations “L” and “M” do not refer to statistical data collection, tabulation, and publication categories. “L” and “M” are simply ways the Census Bureau identifies companies needing successive levels of follow-up (see also footnote 4 in Chapter 8, Data Collection and Processing).

<sup>2</sup>Until a reorganization effective on May 1, 1998, the NPC was called Data Preparation Division (DPD).

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importance of the company in the sector, as well as response history of that company. Subject division staff also helped evaluate alternative strategies.

The largest involvement of subject division staff was through serving as account managers in the Large Company Program.<sup>4</sup> Selected division staff were so designated, and each staffer was assigned 5 to 25 companies. The subject divisions and the number of companies assigned to each were as follows—

- MCD—400 companies
- SSSD—500 companies
- EPCD—136 companies

**National Processing Center (NPC).** While “M” companies were not assigned individual account managers, a Contact Exchange Card sent to these companies listed a phone number from either MCD or SSSD that the company could call. In addition, NPC staff conducted several telephone follow-ups from June through August 1999.

### **The Account Manager/Company Contact Program**

**Advance information.** In November 1996, the NPC mailed advance materials to “L” and “M” companies. Each packet contained—

- A customized cover letter (including lists of forms the company would receive).
- A Contact Exchange Card consisting of two components: (1) a “rolodex” card with either an account manager’s name, phone number, and e-mail address or a list of census sectors and corresponding phone numbers for assistance, and (2) a blank form that requested address correction, name of contact person at the company, and contact person’s supervisor.
- An electronic reporting flyer inviting about 600 companies to report electronically. Ultimately, 671 companies—representing 317,593 establishments—availed themselves of the electronic reporting option.
- An *Advance Information* booklet (featuring a list of census contacts, a census *Question and Answer* sheet, a guide for obtaining census questionnaires from the Internet, and two sample forms).

One of the key tasks for an account manager was to identify to whom to address correspondence, phone calls, questionnaires and the like throughout the duration of the process until completed census forms were received. The “addressee” was the “company contact,” and was

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<sup>4</sup>Account managers were assigned only to “L” companies, not to “M” companies. However, “M” companies were included in other aspects of the Large Company Program. Fifty mining companies were selected as “Ls.” but were converted to “Ms” when it appeared that the mining census might be canceled.

requested on the Contact Exchange Card, as well as in telephone calls from the account manager. This name and address also would be used to mail forms to the company.

For 1997, initial calls by account managers occurred earlier than at the equivalent juncture in the 1992 census. The purpose of the calls was to—

- Verify receipt of advance materials, obtain the identity of the company contact, and verify the mailing address for sending census forms before the census mail file was frozen in July 1997.
- Raise awareness of the coming census forms and the need for the company to begin preparations.
- Offer assistance throughout the census-taking interval.

One of the guiding principles of the Account Manager/Company Contact Programs was that only account managers should be able to grant time extensions or negotiate reporting arrangements. To do this, account managers had more information than ever before about their “L” companies—including a company profile and copies of all advance information sent to companies. In addition, account managers had access not only to Internet resources (including e-mail, and access to Security and Exchange Commission filings and company lookups) but also to several new tools such as the SSEL search and query tool and the electronic company notepad.

**SSEL search and query tool.** This feature displayed companies and their establishments based upon size, industry, form, extension date, and other factors. With search and query, it was easier for account managers to—

- Isolate reporting problems—such as a single subsidiary of a company in which most other units had reported.
- Identify delinquent companies significant in a particular geographic area or industry.

**Electronic company notepad.** In 1992, the capacity of account managers to act effectively was limited by a predominantly paper-based record-keeping system. Sharing of information was difficult or impossible. A business might contact any of several dozen persons located in three separate buildings at Census Bureau headquarters in Suitland, MD, or any of hundreds of analysts and telephone operators in Jeffersonville, IN. Thus, one individual might have worked out an arrangement with a company—and recorded it on a paper document that no one else may have seen—only to have someone else grant the company an extension or reach a different agreement. By developing the electronic company notepad linked to the SSEL, the Census Bureau enabled staffers to leave a record of what had been done, and why, so that all arrangements would be visible and up-to-date. The electronic company notepad was used, predominantly, by NPC staff.

## Account Manager Calling System

The GOV Division developed and maintained the account manager calling system for the documentation of account manager contacts with companies. Using the system, it was possible to record to whom the account manager talked, when, why, and with what results. The contact name and address was used to update the mailing address for census forms, particularly if the company did not return a Contact Exchange Card.

**Account manager's calling cycle.** Figure 5-1 shows the account manager's calling cycle i.e., the intervals when account managers were to contact companies and obtain information or offer assistance.

Figure 5-1.  
Account Manager's Calling Cycle

Account Managers Calling Cycle		
Call No.	Purpose of Call	Timing of Call
1	<ul style="list-style-type: none"> <li>Verify receipt of advance information booklet.</li> <li>Encourage return of exchange card.</li> <li>Introduce yourself as the Account Manager and offer assistance in preparing for the census.</li> </ul>	Dec 96 - Jan 97
**	<i>Follow-up mailing of advance information to companies not returning cards or receiving calls.</i>	mid-Feb 97
2	Calls to companies not satisfied in Round 1, even if they returned cards. <b>Complete by March 31.</b> <ul style="list-style-type: none"> <li>If we received the card, acknowledge it.</li> <li>If we have not received card, alert company that material is coming, encourage return of contact exchange card.</li> <li>Introduce yourself as the Account Manager and offer assistance in preparing for the census.</li> </ul>	Feb - Mar 97
3	Re-establish contact to obtain name/address changes prior to census mailout. <b>Complete by July 15.</b> <ul style="list-style-type: none"> <li>Discuss special requirements such as split mail or electronic reporting.</li> <li>Discuss ways to improve quality and timeliness of reporting.</li> <li>Remind company that forms will be mail December 1997.</li> <li>Offer assistance in preparing for the census.</li> </ul>	June 97
**	<i>Final mail file preparation</i>	Sep 97
**	<b>Forms mailed</b>	mid - Dec 97
4	<ul style="list-style-type: none"> <li>Verify that company received its census forms. Remind that forms are due February 12, 1997.</li> <li>If necessary offer extension not to exceed May 1, 1997.</li> <li>Offer assistance in reporting for the 1997 Economic Census.</li> </ul>	Jan 98
**	Forms due	Feb 12, 1997
5	Companies that respond <ul style="list-style-type: none"> <li>Thank the company for their response</li> </ul>	After check-in
6	Companies that do not respond <ul style="list-style-type: none"> <li>Remind company that forms were due February 12, 1998.</li> <li>Get an estimate of when forms will be returned.</li> <li>Offer assistance in reporting for the 1997 Economic Census.</li> </ul>	Mar 98
**	Reminder mailings to delinquents and unexpired extensions	April - June 98
7	Companies that do not respond <ul style="list-style-type: none"> <li>Remind company that forms were due Feb. 12, extensions have expired, forms are due now.</li> <li>Obtain an estimate of when forms will be returned.</li> <li>If the company contact is uncooperative, appeal to the executive on the contact exchange card.</li> <li>Offer assistance in developing estimates.</li> </ul>	June 98
8	Companies that do not respond <ul style="list-style-type: none"> <li>Remind company that forms were due Feb 12, extensions have expired, forms are due now.</li> <li>Obtain an estimate of when forms will be returned.</li> <li>If the company contact is uncooperative, appeal to the executive on the exchange card.</li> <li>Offer assistance in developing estimates.</li> </ul>	As required

## The Mail Campaign

**Original mailout letters.** The essence of the mail campaign was to emphasize the existence of the census, the due date, and the legal requirement to respond, as well as to incrementally escalate the messages contained in each

successive letter. For example, the original mailout letters— each of which were signed by the Director of the Census Bureau—

- Highlighted the due date of February 12, 1998.
- Emphasized the importance of the data.
- Cited applicable sections of Title 13, United States Code.
- Indicated that response was mandatory and would be kept confidential.
- Provided the toll-free telephone number. Provided the Web site address.
- Contained frequently asked questions, with answers on the back of the letter.
- Quoted Alan Greenspan, Chairman of the Federal Reserve Board, in endorsing the unique function of the economic census in gathering benchmark economic data for the Nation.

**Successive letters.** Successive letters “upped the ante.” There were 17 variations of follow-up letters, depending upon whether the company was in the ASM or not, was a single-establishment company or a multiestablishment company, or had replied with only a partial response to the census questionnaire. These letters included the following additions to the original message:

- “OVERDUE NOTICE” printed in bold caps at the top of the page.
- “Please complete and return your census forms within 10 days” or “immediately.”
- Stronger assurances of confidentiality.
- “You may be subject to penalties for not returning this form” or “You are subject to. . .”
- Reminder notice, if there was a pending extension.

## SPECIAL ROLE OF THE INTERNET

For the 1997 Economic Census, the Internet played a greater role in both response and product marketing than in any previous economic census. The economic census web page ([www.census.gov/econ97](http://www.census.gov/econ97)) invited businesses to “Ask Dr. Census.” E-mail queries addressed to “Ask Dr. Census” peaked at about 300 per month during January through March 1998, then slowed to 200 per month until phase-out in September 1998. In addition, a directory of questionnaires in portable document format (pdf) received thousands of “hits” between December 1997, and June 1998, when data were being collected. In addition, a page was established to describe and provide an example of how to use the Computerized Self-Administered Questionnaire (CSAQ).

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## Writer's Tool Kit

The economic census Internet page also was used to help reporters prepare stories about the census. The "Writer's Tool Kit" was established to provide an electronic version of public service announcements (PSAs) and other media kit contacts, also listing quotes from Alan Greenspan and other prominent economists and business leaders.

## Product Marketing

In promoting products and services from the 1997 census, the Census Bureau was responding to data users' wishes for flexible products that would keep up with changing needs. Moreover, the Census Bureau fulfilled an implied promise—made during the response marketing phase—by providing census results to the media, business organizations, and intermediaries who helped promote census response.

Therefore, the 1997 product mix included fewer paper products and more electronic products. In addition, there were fewer "fixed" format data tables and more access to data bases. This enabled users to extract, download, and work with the data in their own formats. While Census products and services resulting from the 1997 Economic Census will be discussed in detail in Chapter 12, Publication Program, suffice to say here that the Internet was highly instrumental in product marketing. It provided—

- Database files.
- "Screen shots" enabling customers to "test drive" selected data products, before deciding to buy them. These included downloadable summary data files and CD-ROMs, and accompanying software.

## TARGET MARKETS FOR PRODUCT MARKETING

### Congress and the Administration

This constituency relies upon census information to build profiles, evaluate the need for legislative changes, determine the performance of programs, judge the effect of legislative and program changes on constituency, and estimate the costs of legislation. Users looked at both the primary data and the value added products, such as GDP.

### Corporations, Small Businesses, and Communications Sector Trade Associations

These users employ census information to prepare their marketing plans, growth plans, estimates, trends and forecasts, news reports, articles, feature stories and books, research projects. They use economic data to establish new associations and to build membership of existing ones, as well as to create strong positions for proposed legislation, debates, and other issues. Included in this category are the questionnaire respondents.

## Federal Agencies, State, County, and Local Governments

Public agencies use census data to prepare legislation and to plan development and programs. This group also uses the data as a reference point for current statistics such as the GDP, the Producer Price Index, and the like.

## SDCs/BIDCs, Depository Libraries, Small Business Development Centers (SBDCs), Chambers of Commerce, Manufactures Extension Plants (MEPs), Agricultural Extension Offices, Universities and Other Researchers and Educators

This array of users relies upon economic census data to maintain a snapshot of the economy for various levels of geography, and for a given time frame. They typically assist the Census Bureau in distributing data locally, and in educating the public about myriad data uses.

## Data Retailers

Data retailers acquire census data and repackage it for sale to their own customers. They need high-quality data, as well as metadata (descriptive and formatting material in terms of which data are presented), to assure proper use of the information.

## MARKETING TACTICS TO PROMOTE DATA PRODUCTS

The Census Bureau understood that any good promotional campaign consists of a multifaceted approach to announcing its products to the user community. The agency pursued the following strategies:

- Extended the contract with Lisboa Associates to promote the data products resulting from the 1997 Economic Census.
- Produced the *Preview of the 1997 Economic Census* summarizing facts about the census, such as its purpose, classifications, data items, products, and the data release schedule.
- Selected "New Data for Today's Economy" as the new theme.
- Assembled media kits for products and sent them to the original media kit mailing list.
- Used drop-in advertising in trade and professional magazines to reach nonusers. After development, the ads were placed on the Internet for even further dissemination.
- Disseminated news releases (press releases, state stories, and feature stories) to business organizations, trade associations, state and Federal government agencies, universities, newspapers and magazines—all announcing the availability of data.

- Mailed information kits directly to key data user organizations (journalists, Members of Congress, marketers, and the like).
- Targeted key media (through PIO) at the time of release of key reports.
- Conducted user conferences, coordinating them with Census 2000 conferences. This included scheduling conferences to coincide with the availability of local area data products.
- Highlighted major data results in multimedia (audio/video) presentations.
- Made presentations and staffed booths at national and state exhibits and at trade shows, complete with an array of census publications. These were augmented by specialty items (pens, “post-its”), as well as by various brochures and data summaries.
- Produced the *Economic Census Slide Rule*, a data summary device showing 1997 summary results by sector (manufacturing, services, etc.) on both a SIC and a NAICS basis.

Figure 5-2. **Hungry for Business Data?**

**ECONOMIC CENSUS**

**HUNGRY for BUSINESS DATA?**

Manufacturing	200,740
Professional, Scientific, and Technical Services	57,354
Picture and Sound Recording Industries	22,700
Transportation and Electronic Equipment Manufacturers	17,240
Food Manufacturing	26,870
Motor Vehicle and Parts Dealers	122,800
Health and Personal Care Stores	85,164
Wholesalers and Merchants	70,800
Advertising and Telecommunications Companies	44,800
Accommodation and Food Services Industries	82,800
Other Services	13,100

Your TABLE is waiting.

[www.census.gov/business](http://www.census.gov/business)

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. Census Bureau

**RESERVED FOR OFFICIAL BUSINESS**  
Penalty for Private Use: \$300

**U.S. DEPARTMENT OF COMMERCE**  
Economics and Statistics Administration  
Washington, DC 20540-0001

**OFFICIAL BUSINESS**  
Penalty for Private Use: \$300

**Thanks!**

Last year, businesses nationwide completed their economic census forms. We appreciate the effort it took to do this accurately.

**ECONOMIC CENSUS**

Census results can help your business... and your continued participation in business surveys fuels our information economy.

You will find facts about your industry or community on the web—  
[www.census.gov/business](http://www.census.gov/business)—  
and use our new **American FactFinder** to get data fast.

Representing the essence of the effort to integrate census and product awareness, this post card was sent to respondents—both to thank them for their response and to let them know that the data were now available for their use.

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# Geographic Area Coding

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## INTRODUCTION

### General Information

To publish tables of economic activity by geographic areas, the U.S. Census Bureau geocoded—that is, assigned geographic codes—to each establishment record for which data were collected for the 1997 Economic Census. After geocoding, the data from the establishment records were tabulated by geographic area. These geographic areas were legally or administratively established, and statistically defined, geographic entities.

The Geography Division (GEO) developed the geocoding process used in the 1997 Economic Census processing. To be geocoded, each establishment in the 1997 Economic Census needed to have an address, or supplemental information, that provided the physical location for that establishment.

Prior to mailout, the selected address for each establishment record in the 1997 Economic Census control file was processed through the geocoding system and a state, county, and place code was assigned to each record. This process set the initial geocodes in the control file for the 1997 Economic Census cycle. Subsequent geocoding of the physical location response information and address changes from the responses to the economic census questionnaires were used to update the geocodes in the control file as follows—

- For single-unit establishments, the physical location address was selected for geocoding. If no physical location address was available, the 1992 Economic Census mailing address was selected.
- For multiunit establishments, only one address field was maintained on the control file. The address was defined as both the physical location and the mail address, and was used for geocoding.
- For the economic data collected by the Census Bureau from administrative records, only one address was available on the record for geocoding and no additional physical location information was received.

Other geographic products, described separately in this chapter, were provided by GEO to the economic census divisions for use in tabulation, analysis, and publication of the 1997 Economic Census data.

### The Geographic Interface Team (GIT)

In the fall of 1994, the Census Bureau established the 1997 Economic Census Geographic Interface Team (GIT). Their mission was to plan the geocoding operation for

both the 1997 Economic and Agricultural Censuses.<sup>1</sup> The team consisted of representatives from the following Census Bureau divisions or offices—

- Agriculture and Financial Statistics Division (renamed Company Statistics Division [CSD] in April 1998).
- Services Division (renamed Service Sector Statistics Division [SSSD] in April 1998).
- Manufacturing and Construction Division (MCD).
- Economic Planning and Coordination Division (EPCD).
- Economic Statistical Methods and Programming Division (ESMPD).
- Geography Division (GEO).
- Computer Assisted Survey Research Office (CASRO).

The team met periodically until the summer of 1998, by which time the basic geographic plans for the 1997 Economic Census had been finalized. It was decided that the geographic code structure for the 1997 Economic Census would be similar to that used for the 1992 Economic Census.

The major questions addressed by the GIT included the overall geographic code structure—i.e., how the geographic boundaries were to be set and what sources should be used—and the designation of respective responsibilities of the various Census Bureau divisions. In particular, GEO was responsible for developing a free-standing geocoding production system that would include the geocoding software and all reference files needed to meet the geocoding processing requirements of the 1997 Economic Census. GEO supplied the geocoding production system to ESMPD, who, in turn, installed the system on its own computer platforms for production work.

## GEOGRAPHIC CODE STRUCTURE

### General Information

For the 1997 Economic Census, the Census Bureau recognized regions, divisions, states, counties, consolidated

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<sup>1</sup>While responsibility for the 1997 Census of Agriculture was transferred to the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) in 1996, the planning stage was underway well before that. Thus, the GIT played a major role in preparing for the census of agriculture, as well as for the economic census. Note 3 in chapter 2, *The Players and the Plans*, describes the transfer of the census of agriculture in more detail.

cities, places, and metropolitan areas. The 1997 Economic Census included the United States, Puerto Rico, Guam, the Northern Mariana Islands, and the Virgin Islands of the United States.

The boundaries honored for geographic entities for the 1997 Economic Census were those in effect on January 1, 1997, except for MAs, for which June 30, 1997 boundaries, and the 105th Congressional Districts, which took effect in January 1997, were used. Changes occurring after these dates were not recognized for the 1997 Economic Census. Boundaries for states, counties, and selected incorporated places were reported to the Census Bureau in response to the annual Boundary and Annexation Survey. Where the code structure includes a population size criterion, the population was based on the 1990 Decennial Census, tabulation counts, corrected counts from Count Question Review, updated counts based on special census counts, and counts as updated by the Population Division to reflect major annexations.

### Regions

The Census Bureau recognized four regions within the 50 states and the District of Columbia: Northeast, Midwest, South and West. Each region was subdivided into divisions and was identified by a set of one-digit codes. Puerto Rico and the outlying areas were not part of any region, they were assigned a region code of 9.

### Divisions

The Census Bureau recognized nine divisions within the 50 states and the District of Columbia, and within a census geographic region: East North Central, East South Central, Middle Atlantic, Mountain, New England, Pacific, South Atlantic, West North Central, and West South Central. Divisions were identified by a set of one-digit codes that were shown as the first digit of the component census state codes. Puerto Rico and the outlying areas were not part of any division, they were assigned a division code of 0.

### States

The Census Bureau recognized the following areas as states or as statistically equivalent entities of states—

- The 50 states of the United States.
- District of Columbia.
- Puerto Rico.
- Guam.
- Northern Mariana Islands.
- Virgin Islands of the United States.
- Nationwide.
- Foreign.

- Offshore Areas.

The state codes used for the economic census were the two-digit Federal Information Processing Standard (FIPS)<sup>2</sup> state codes. The FIPS state codes were assigned in alphabetic sequence for the 50 states and the District of Columbia. The FIPS state codes for Puerto Rico and the outlying areas were assigned in a separate alphabetic sequence following the states.

For the special situations of United States, nationwide, foreign, and offshore areas, state equivalent codes were used as follows—

**United States.** A United States record was in the stub file, with a state equivalent code of 99 in both the FIPS Code field and the census code field. This code was provided in the stub file for publication purposes only. It was never assigned directly by the geographic coding system.

**Nationwide.** If the establishment could not be assigned an acceptable state code and was not categorized as foreign, the geocoding system assigned a nationwide state equivalent code of 97. Code 97 was used in both the FIPS state and the census state code fields. The county and place fields on this record were filled with zeros.

**Foreign.** Foreign establishments were assigned a foreign state equivalent code of 98 in both the FIPS state code field and the census state code field. The county and place fields on this record were filled with zeros. To be assigned a foreign state code, an establishment record had to meet one of the following pairs of conditions—

State abbreviation	with ZIP Code
ZZ	00000
YY	00000
AE	09000-09899
AA	34000-34099
AP	96200-96699

Note: Ships at sea, previously recognized as a separate category assigned with 00 as the FIPS state and census state codes, were now assigned a foreign state code of 98.

**Offshore Areas.** The mineral industries geographic code structure provided for either a two-digit FIPS state code or a Census Bureau pseudo-state code, and a three-digit pseudo-county code. The codes provided for offshore areas were—

<sup>2</sup>The FIPS Code is the standard geographic coding scheme used by all Federal agencies. The FIPS codes are unique identification numbers for geographic entities. They are assigned by the National Institute of Standards and Technology.

Offshore area	State abbreviation	FIPS state code	Census state code	FIPS county code
Atlantic . . . . .	AT	81	29	886
Northern Gulf of Mexico . . . . .	NG	82	69	886
Pacific . . . . .	PC	83	89	886

These codes were not assigned directly by the geographic coding system. Addresses identified as “offshore” were assigned a state code for one of the 50 states, District of Columbia, Puerto Rico, outlying areas, or nationwide.

MCD assigned the offshore area codes, where applicable. This enabled the tabulation of oil and gas establishment statistics to a state, an offshore area within a state, and offshore areas not associated with a particular state, rather than the usual state, county, or place level. It reflected a classification of oil and gas operations based on where their “bottoming out” actually occurred. Operations that bottomed out on land or inland waters were classified as “onshore,” if within a coastal state; if within a noncoastal state, as “statewide.” Operations that bottomed out seaward of the coastal line were classified as “offshore.”

## Counties

The Census Bureau recognized the following areas as counties or as statistically equivalent entities of counties for the economic census—

**The 50 states.** (except Alaska and Louisiana) Counties were recognized.

- Alaska: Boroughs and census areas were recognized.
- Louisiana: Parishes were recognized.

**District of Columbia.** The District of Columbia was recognized as both a statistical equivalent of a county and a state. The county and state are coextensive.

**Montana.** The part of Yellowstone National Park located in Montana was not included in any county and was recognized as a statistically equivalent entity (in addition to the counties).

**Maryland, Missouri, Nevada, and Virginia.** Independent cities (in addition to the counties). Independent cities were independent of any county and thus constitute primary divisions of their states. Independent cities are different from coextensive cities and counties because no county existed for an independent city. In order to give complete coverage to the state at the county level, county equivalent records represented the independent cities. Data for the independent city were identical to the data for its county equivalent.

**Hawaii.** Kalawao County, which had no functioning local government, was included with Maui County for statistical purposes.

**Puerto Rico.** Municipios were recognized.

**Guam.** No county or statistical equivalent entities were recognized.

**Northern Mariana Islands.** No county or statistically equivalent entities were recognized.

**Virgin Islands.** No county or statistically equivalent entities were recognized.

**Undistributed.** Code 000 was used if the county code was not known or not applicable, as in nationwide, foreign, offshore and undistributed addresses. Code 000 appears in the stub file with the name “undistributed.”

Counties were identified by a three-digit FIPS county code. The FIPS county codes were assigned in alphabetic sequence with the names of all counties and county equivalents (excluding independent cities) within each state, usually beginning with code 001. County codes for independent cities were assigned as a separate alphabetic sequence beginning with code 510.

## Places

The economic census recognized the following areas as places or as statistically equivalent entities of places—

**Incorporated place.** Incorporated places with a population of 2,500 or more were recognized for economic census data tabulations. New places reported to the Census Bureau and legally in effect on January 1, 1997 were recognized if they had a population of 2,500 or more.

Three incorporated places with a population of less than 2,500 were recognized as places for previous economic census tabulations because of their economic importance. The Census Bureau continued to recognize these places for the 1997 Economic Census. They were: Industry, California; Vernon, California; and Bedford Park, Illinois.

Coextensive cities and counties occur where two governmental units, the city and the county or county equivalent, both have the same boundaries. In these cases, both the city and the county were recognized. Data for the city were identical to the data for the county.

**Census designated place (CDP).** CDPs were not recognized as places for the economic census, except in Hawaii. For Hawaii, which does not have incorporated municipalities recognized for decennial census purposes, places have been delineated for statistical purposes by the state government in cooperation with the Census Bureau. In agreement with the state government, the Census Bureau does not recognize the City of Honolulu, coextensive with the county of Honolulu, as a place for decennial census

purposes. Those CDPs in Hawaii with a population of 2,500 or more (from the 1990 Decennial Census) were recognized as place equivalents for the economic census.

Maui County, Hawaii consisted of four islands. At the request of the state of Hawaii, the Census Bureau recognized the “Island of Lanai” and the “Island of Molokai” as places for previous economic census tabulations, and continued to recognize them as places for the 1997 Economic Census. Kalawao County, a nonfunctioning governmental unit, was included in the “Island of Molokai” place.

**Consolidated city.** Some consolidated governments include separately incorporated municipalities. The Census Bureau referred to such entities as consolidated cities. Each consolidated city had a one-character alphabetic census code. See the discussion of “balance of consolidated city” below for a list and description of the consolidated cities.

**Balance of consolidated city.** Some of the consolidated governments included separately incorporated municipalities. The Census Bureau referred to such entities as “consolidated cities.” For the economic census, the Census Bureau recognized the portion (balance) of a consolidated city that excluded the incorporated place(s) that are recognized separately for the economic census. If a municipality within a consolidated city had a population of 2,500 or more, the Census Bureau treated it as a separate place for the economic census and omitted it from the balance of the consolidated city. If it had fewer than 2,500 inhabitants, it was included as part of the balance of the consolidated city. The balance of a consolidated city may refer to a whole consolidated city if none of the included places contain a population of 2,500 or more. The consolidated cities and their components were—

- **Milford, Connecticut** consolidated city is coextensive with Milford town. It included Woodmont, which was not populous enough for separate tabulation. Therefore, “Milford” referred to the whole consolidated city.
- **Jacksonville, Florida** consolidated city was coextensive with Duval County. It included Atlantic Beach, Jacksonville Beach, and Neptune Beach, which were tabulated separately. “Jacksonville (balance),” which was a place equivalent, includes Baldwin, which was not populous enough for separate tabulation.
- **Athens-Clarke County, Georgia** consolidated city was coextensive with Clarke County. It included Winterville and Bogart (part in Clarke County), which were not populous enough for separate tabulation. Therefore, “Athens-Clarke County” referred to the whole consolidated city.
- **Augusta-Richmond County, Georgia** (new for 1997 Economic Census) consolidated city was coextensive with Richmond County. It included Hephzibah, which was tabulated separately. “Augusta-Richmond County

(balance),” which was a place equivalent, included Blythe (part in Richmond County), which was not populous enough for separate tabulation.

- **Columbus, Georgia** consolidated city was coextensive with Muscogee County. It included Bibb City, which was not populous enough for separate tabulation. Therefore, “Columbus” referred to the whole consolidated city.
- **Indianapolis, Indiana** consolidated city included all of Marion County except Beech Grove, Lawrence, Southport, and Speedway, which were tabulated separately. The consolidated city included Cumberland (part in Marion County), which also was tabulated separately. “Indianapolis (balance),” which was a place equivalent, included Clermont, Crows Nest, Homecroft, Meridian Hills, North Crows Nest, Rocky Ripple, Spring Hill, Warren Park, Williams Creek, and Wynnedale, which were not populous enough for separate tabulation.
- **Butte-Silver Bow, Montana** consolidated city was coextensive with Silver Bow County. It included Walkerville, which was not populous enough for separate tabulation. Therefore, “Butte-Silver Bow” referred to the whole consolidated city.
- **Nashville-Davidson, Tennessee** consolidated city was coextensive with Davidson County. It included Belle Meade, Forest Hills, Goodlettsville (part in Davidson County), and Oak Hill, which were tabulated separately. “Nashville-Davidson (balance),” which was a place equivalent, includes Berry Hill, Lakewood, and Ridgetop (part in Davidson County), which were not populous enough for separate tabulation.

**Special Economic Urban Areas (SEUA).** SEUAs were townships in Michigan, Minnesota, New Jersey, and Pennsylvania; and towns in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, and Wisconsin with a population of 10,000 or more. If a town or township that qualified as a SEUA contained an incorporated place that was recognized separately for economic census tabulations, the Census Bureau recognized the balance of the SEUA as a place equivalent, if the balance had a population of 10,000 or more.

**Balance of metropolitan area.** In the six New England states (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) “Balance of metropolitan area (MA)” was used for cities and towns located in an MA but not qualifying for economic census tabulations. This was needed to maintain the ability to tabulate data for MA’s in the New England states because MAS are defined in terms of cities and towns rather than counties in these states.

**Balance of county.** “Balance of county” included those areas not recognized as places and place equivalents under the above definitions.

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The 1997 Economic Census used the four-digit decennial census place codes for internal processing. These place codes were assigned in alphabetic sequence within state or state equivalent. Additional place equivalent codes were assigned in the sequence as needed to accommodate economic census needs. A place code of 9999 designated “Balance of county.” The first digit of the “Balance of MA” census place code is 9, and the last three digits were the same as the first three digits of the metropolitan statistical area (MSA) or primary metropolitan statistical area (PMSA) code.

### **Metropolitan Areas**

The Census Bureau recognized the three types of metropolitan areas (MAs) established by the Statistical Policy Office, Office of Information and Regulatory Affairs, Office of Management and Budget. The three types of MAs were: Metropolitan Statistical Areas (MSAs), Consolidated Metropolitan Statistical Areas (CMSAs), and Primary Metropolitan Statistical Areas (PMSAs). MSAs and CMSAs were equivalent levels of geography; PMSAs were subdivisions of CMSAs. GEO recognized the June 30, 1997 boundaries for the MAs. The portion of Sullivan city in Crawford County, Missouri was legally part of the St. Louis, MO-IL MSA. However, it was not included in the 1997 Economic Census code structure because it did not adhere to the requirement that whole counties be used to define the MAs (except in New England).

Each MA had a four-digit FIPS Code that was assigned in alphabetic sequence. The code was 9999 for nonmetropolitan areas. In addition, each CMSA had a two-digit FIPS Code also assigned in alphabetic sequence.

### **Congressional Districts**

The Census Bureau originally planned to publish economic census data for the congressional districts of the 105th Congress of the United States. Budget reductions resulted in the cancellation of this program for the 1997 Economic Census.

### **Census Tract/BNA and Census Blocks**

The geocoding system assigned census tract/BNA and block numbers to as many economic establishments as possible during the geocoding process.<sup>3</sup> These census tract/BNA and block numbers were used as a linkage to the higher level geographic codes required for economic census data publications. The census tract/BNA and block codes, however, were not posted to the economic census control file, nor were data tabulated for these areas.

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<sup>3</sup>Census tracts and BNAs were subdivisions of a county or county equivalent. Census blocks were small areas bounded on all sides by visible (e.g., streets, streams, or railroad tracks) or invisible features (e.g., place or congressional district boundaries, property lines, or short, imaginary extensions of streets or roads).

## **GEOGRAPHIC RECODE AND REFERENCE FILES**

### **General Information**

In addition to the freestanding geocoding system, GEO created other products to support economic census processing and data tabulation. A two-thirds reduction in the GEO budget allocations for the 1997 Economic Census five-year budget cycle resulted in significant reductions in the level of services, as well as elimination of selected products provided by GEO.

Products eliminated were: initial geocoding processing and monitoring by GEO; the Metropolitan Area Appendixes for the geographic publications; publication-ready tables for, and the printing of, the Geographic Reference Manual; the County Place Code Change File; the Duplicate Names File; Establishment Cluster Files; and clerical geocoding. The level of services were greatly reduced for the following products: manual reviews and updates to enhance the City Reference File (CRF) beyond the capabilities of the automated file creation process, and the Publication Stub File. The CRF will be treated in detail below.

### **Census to Economic Recode File**

The purpose of the census to economic recode file was to provide a source of geographic codes for use in converting the current (1997) decennial census based geocodes to the economic census tabulation geocodes. This file was created uniquely for use in the economic census geocoding process.

### **1992 Economic to Current Census Recode File**

The purpose of the 1992 economic to current census recode file was to provide a source of geographic codes for use in converting the historic (1992 Economic Census) tabulation geocodes on the establishment records to their equivalent current (1997) decennial census based geocodes. The historic geocodes were used as one of the tie breakers in the geocoding process. This recode file was used only during the initial geocoding of the control file. The historic geocodes on the establishment records in the control file were defined as the 1992 Economic Census tabulation geocodes. The 1992 economic to current census recode file was one of two historic recode files created uniquely for use in the economic census geocoding process.

### **1997 Economic to Current Census Recode File**

The purpose of the 1997 economic to current census recode file was to provide a source of geographic codes for use in converting the historic (1997) economic tabulation geocodes on the establishment records to their equivalent current (1997) census based geocodes. The historic geocodes were used as one of the tie breakers in the geocoding process. This recode file was used during the geocoding of the physical location responses from the

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economic census questionnaires, and all subsequent economic census geocoding. The historic geocodes on the establishment records for physical location and subsequent geocoding were defined as the previously assigned 1997 economic tabulation geocodes. The 1997 economic to current census recode file was one of two historic recode files created uniquely for use in the economic census geocoding process.

### **Clustering Program Module**

The purpose of the establishment cluster review process was to identify multiple establishments reporting to the same address. This situation often occurs when the address reported for an establishment was the mail address, not the physical location address. Once identified, the establishment clusters were eligible for review and address correction where applicable.

An establishment cluster was defined by SSSD as a group of establishment records with a common address and industry code. Address types requested by SSSD for consideration in the clustering program module were: structure number and street name, building name, and post office boxes. The criteria for industry codes considered in the clustering program module was limited to those requested by SSSD.

The GEO clustering program module selected a subset of control file records that later became part of the input for the traditional clustering process. The GEO clustering program module was incorporated into the initial control file geocoding only. Control file records that met the criteria defined by address type and industry code were identified and written to a separate file, along with their standardized address, for further establishment cluster processing by ESMPD. The traditional automated clustering was programmed and executed by ESMPD for the 1997 Economic Census.

### **County Code Change File**

The purpose of the county code change file was to convert the 1992 county codes to the 1997 county code structure. The GEO provided a one-to-one recode in this file. Only counties with code changes were included in the county code change file. For whole county changes, the file contained one county record with its historic state and county codes (1992) and its current (1997) state and county codes. When one 1992 county split into two counties for 1997, the file contained a record for each 1992 qualifying economic census place. Prior to creating questionnaire mailing labels, ESMPD used the county code change file to recode the 1992 county codes assigned to establishment records.

### **County Alpha Recode File**

The purpose of the county alpha recode file was to convert the FIPS county code to a six-character abbreviation of the county name, which was printed on the questionnaire mailing label. The ESMPD performed the county

alpha recode operation after the county code changes had been made. The county alpha recode file contained one record for each 1997 county or county equivalent.

### **Geographic Stub File**

The purpose of the geographic stub file was to provide the staffs of the subject-matter divisions with the ability to insert geographic entity names in the stubs of the publication tables and other data products. The “stub” is the list of geographic entities in the left column or in the box-head.

This file contained all the information necessary to convert the geographic codes associated with establishment records to the publication geographic entity names for publications and other data products. The stub file had one record for each of the following—

- Metropolitan area (Metropolitan Statistical Areas/Consolidated Metropolitan Statistical Areas/Primary Metropolitan Statistical Areas).
- Region.
- Division.
- State or state equivalent (included the 50 states, the District of Columbia, Puerto Rico, Guam, the Northern Mariana Islands, the Virgin Islands of the United States, ships at sea, three offshore areas for mineral industries, foreign establishments, and nationwide establishments), plus one record representing the United States as a whole, in the same format as a state record, with a state code of “99.”
- County or county equivalent, plus a record in each state or state equivalent for “undistributed,” used for industries with operations not designated to specific counties, and a county record for each offshore area.
- Consolidated city.
- Place and place part within county (qualifying economic census places only).

For consolidated cities that contained separately incorporated places, this file had a record for each consolidated city, each separately incorporated place that qualified for economic census recognition, and each consolidated city balance. Each place record included the place description, which distinguished between various types of places and the ways they related to metropolitan and urban areas.

### **Subject Review City Reference File (CRF)**

The purpose of the subject review CRF was used by the economic census subject matter divisions to facilitate their review of the geographic coding and tabulation results. The subject review city reference file was an extract of the city reference file used for general geocoding. It contained

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all post office name, state abbreviation, and ZIP Code combinations from the city reference file, collapsed to the economic census tabulation geocode level.

### **Geographic Notes File**

The purpose of the geographic notes file was to identify and document geographic changes that occurred between January 1, 1992 and January 1, 1997, as well as any changes that occurred prior to January 1, 1992, but were reported too late for inclusion in the 1992 Economic Census. The geographic notes file was used to prepare appendixes for the relevant census report publication products.

The types of changes documented in the geographic notes file were—

- Economic census-recognized places that were in more than one county and the names of the counties in which each multicounty place was located.
- Special economic urban area balances and economic census recognized incorporated places excluded from them.
- Differences between 1992 and 1997 Economic Census recognized geography and the reasons for the changes (i.e., new incorporations, dis-incorporations, annexations, detachments, name changes, consolidations, mergers, and county changes).
- Anomalous situations that involved economic census geography.

### **Geographic Reference Manual Table Files**

The purpose of the geographic reference manual table files was to provide an easily accessible reference source for the components, names, and geocodes of geographic areas. The tables encompassed all of the geographic areas that qualified for economic census tabulations.

The geographic reference manual tables were made available as a series of 12 files, one for each table, in the following sequence—

- States and Statistically Equivalent Areas.
- Metropolitan Statistical Areas, Consolidated Metropolitan Statistical Areas, and Primary Metropolitan Statistical Areas.
- Metropolitan Statistical Areas, Consolidated Metropolitan Statistical Areas, and Primary Metropolitan Statistical Areas by State.
- Counties.
- Consolidated Cities.
- Places.
- Places by County.
- Special Economic Urban Areas.

- Places Located in More than One County.
- Census of Mineral Industries: Offshore Areas.
- Places in 1992 Economic Census, Not in 1997 Economic Census.
- Places in 1997 Economic Census, Not in 1992 Economic Census.

### **ZIP Code Legality File**

The purpose of the ZIP Code legality file was to provide a source of all legal ZIP Codes within each state or state equivalent. GEO provided ESMPD with a file extracted from the U.S. Postal Service's City State File. The ZIP Code to state relationships were extracted from the City State File and supplemented with additional relationships from the CRF.

### **GEOCODING PROCESS**

#### **Freestanding Geocoding System**

For the economic census the GEO developed a free-standing geocoding production system that encompassed the geocoding software and all reference files necessary to meet the geocoding processing requirements of the economic census. After extensive testing, the economic census geocoding production system was installed on the ESMPD computer platform in November 1997. The installation included a comprehensive production test that ensured all components were performing as required on the ESMPD platform.

The GEO general purpose geocoding system was used as a basis for the economic census geocoding system. Modifications were made to meet the specific requirements of the economic census. The Census to Economic Recode File, the 1992 Economic to Current Census Recode File, and the 1997 Economic to Current Census Recode File were incorporated into the general purpose geocoding system to provide conversions between decennial census based geocodes and economic census tabulation geocodes.

For the economic census, place level geocodes were required for all establishment addresses, including those without a structure number and street name type address. To meet this requirement, both detail geocoding and header geocoding were needed. The process referred to as detail geocoding matches the structure number and street name part of an address to the Address Reference File to obtain geographic codes. The process referred to as header geocoding matches the last line components of an address (post office name, state abbreviation, and ZIP Code) to the CRF to obtain geographic codes. For the economic census, both detail and header coding were linked to ensure all establishments addresses received the most accurate codes based on the address information presented to the geocoding system. The Census to Economic

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Recode File converted the decennial census based geocodes from the general purpose geocoding programs to the economic census tabulation geocodes.

### **City Reference File (CRF)**

The CRF contained records that link the post office name, state abbreviation, and five-digit ZIP Code (referred to as the last line of an address) to its associated decennial census state, county, MCD, and place codes. Each CRF record contained a post office name, state abbreviation, and five-digit ZIP Code. In addition to the official post office names and alternate names, the CRF also contained variant spellings for post office names and postal neighborhood names, together with supplementary county name information for matching county names when a county name response is given. The GEO general purpose geocoding system matched to a CRF with decennial census based geography. Modifications made uniquely for the economic census geocoding system subsequently converted the decennial census based geocodes to economic census tabulation geocodes.

### **Address Reference File**

The Address Reference File (ARF) was an extract of the Topologically Integrated Geographic Encoding and Referencing (TIGER) Files, reformatted and reorganized to a convenient matching structure. The ARF contained street address information from TIGER linked to its associated state, county, tract, and block codes. The components of the street address were house number, street name, and ZIP Code. The geocodes and linkages associated with each ARF record could be associated to all of the higher level geographic codes. The GEO general purpose geocoding system matched to an ARF with decennial census based geography. Modifications made uniquely for the economic census geocoding system subsequently converted the decennial census based geocodes to economic census tabulation geocodes.

### **Legality Files**

The legality files were maintained by GEO for general geocoding applications. The purpose of the legality files was to provide a source of geographic codes, names, and

other attributes for editing legal geographic codes in other files, for assigning attributes based on geographic codes, and as a source of information for the geographic stubs for publications. The Census to Economic Recode File, the 1992 Economic to Current Census Recode File, and the 1997 Economic to Current Census Recode File were added to this group of files as part of the modifications made to the GEO general purpose geocoding system uniquely for the economic census.

### **VALIDATING AND UPDATING INCOMING DATA**

Responses to the 1997 Economic Census were received by mail or telephone at the National Processing Center in Jeffersonville, Indiana, where respondent records underwent data entry processing.

In turn, ESMPD staff, each night, processed address information received from respondents in order to update the geocodes on the Standard Statistical Establishment List (SSEL). The SSEL functioned as the Census Bureau's register of all business addresses. This updating continued throughout the 1997 Economic Census processing operations.

The geocoding system referred for EPCD review any establishment that it was unable to fully code, or that had been assigned a low confidence code (e.g., only a state code assigned with no corresponding county or place code). EPCD staff, often in collaboration with GEO staff, checked problem records against maps and other sources of geographic information and made corrections to the records.

Subject-matter staff also participated in identifying problems. During their review of geographic tabulations, analysts found some individual establishments, or groups of establishments, that appeared to have questionable codes. GEO staff researched the geocodes to determine correct tabulation geography, and returned the referrals to subject matter staff for retabulation.

In sum, the goals established by the (Geographic Interface Team (GIT) in 1994 had excellent results for the 1997 Economic Census. The freestanding geocoding production system was successful in meeting the requirements of this census, and set the pattern for future economic censuses.

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# Preparations for Census Mailout

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## INTRODUCTION

Planning, development of questionnaire content, and—new for the 1997 Economic Census—the development and implementation of the North American Industry Classification System (NAICS) were long-term activities that merged, eventually, into the more particular preparations for the actual conduct of the enumeration. Census preparations included (1) upgrading the Economic Directorate's electronic processing infrastructure, (2) compiling the census mail list, (3) acquiring and using administrative records, (4) assigning Census File Numbers (CFNs) to provide identification for each company, (5) printing and assembling mailing packages of questionnaires, instructions, and cover letters for over four million companies, and (6) establishing and maintaining pre-census contacts between U.S. Census Bureau staff and the largest companies covered by the 1997 Economic Census.

## UPGRADING THE PROCESSING INFRASTRUCTURE

During the 2 years prior to the 1997 Economic Census, the Economic Directorate dramatically improved its data-processing infrastructure's capabilities. This was accomplished by upgrading existing computer systems, replacing obsolete hardware, and installing new software applications. The upgrade reduced the Directorate's support costs, increased processing efficiency, and created a user friendly network.

The upgrade—

- Replaced the Local Area Network (LAN) servers with more powerful machines.
- Installed faster Virtual Memory System (VMS).
- Replaced Virtual Access Extension (VAX) 7600 processor equipment with Alpha processors.
- Installed Common Use Interface (CUI) applications.
- Expanded use of the operating system and its associated hardware to replace the Unysis computer

The LAN upgrade included both the staff work stations and computer servers. At Census Bureau headquarters in Suitland, MD, the Economic Directorate acquired nearly 600 new personal computers with Pentium chips, while the National Processing Center (NPC)<sup>1</sup> office in Jeffersonville, IN received 110. Adding Pentium technology

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<sup>1</sup>Until a reorganization effective May 1, 1998, this unit was called Data Preparation Division (DPD).

increased the speed of the individual workstations by 60 percent (from 166 megahertz [MHZ] to 266 MHZ each) and allowed more rapid communication with the mainframe computers.

Eight new servers increased the total to 46. All local networks had identical applications installed to maintain consistency among work stations. New software was added to eliminate the need for paper copy of documents and files in favor of electronic transmission to individual work stations and to the public. This promoted information sharing, reduced mailing demands, and diminished storage and filing needs. It also resulted in controlled access to information and it provided a search function of all electronically stored material.

At the Census Bureau's headquarters, the upgrade eliminated one VMS station, but the new technology increased input/output speed and total storage capacity to the remaining systems. The development cluster<sup>2</sup> upgrade increased processing speed over 700 percent, from 77 million lines of information per minute to 551. Memory increased 600 percent, from 640 megabytes to four gigabytes, and disc space nearly tripled (50 to 141 gigabytes). The production cluster counted three fewer systems, yet increased processing speed from 154 to 4,085 million lines of information per minute. In turn, memory was increased from 2.6 to 12 gigabytes, and disc space grew from 325 to 865 gigabytes. The NPC used 10 fewer VMS stations, but increased processing speed by two million lines per second and expanded disc space by 14 gigabytes. Memory was reduced from 672 to 352 megabytes.

The infrastructure upgrade also addressed the real and predicted difficulties of the aging Virtual Address Extension 7600 clusters (support for this equipment was becoming difficult, since the system was gradually being retired for more open architecture systems). The Census Bureau replaced all but one of the 7600 processors with Alpha 4100 and 8400 processors by the spring of 1998. The Alpha processors, which incorporated 64-byte processor technology, outperformed the capabilities of a larger number of the Virtual Address Extension 7600 systems that they replaced.

The final aspect of the technology upgrade was the replacement of older and slower UNIX systems with new

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<sup>2</sup>A cluster is a group of disc sectors, or units, into which the operating system divides the disc. This allows the operating system and disc drive to identify where information is stored.

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equipment. Advances in UNIX technology required fewer machines to handle the required workload. The new system featured an open architecture that enabled most computer languages to be converted into a language that the new—system and subsequently all systems on the local network—could use.

As a result of the UNIX upgrade, the Economic Directorate discontinued using the Unysis computer. Unysis was incapable of conversion to an open architecture system: the networks could “understand” Unysis communications, but Unysis could not understand the networks. The deactivation of Unysis required the transfer of its original COBOL/FORTRAN processing programs to UNIX. There was insufficient time for the complete conversion of Unysis programs to UNIX for use in the 1997 census. Therefore, the Census Bureau concentrated on the most vital processing programs, and delayed completing the changeover for all programs until the 2002 Economic Census.

## COMPILING THE CENSUS MAIL LIST

### The Standard Statistical Establishment List (SSEL)

**Background information.** The SSEL is a centralized, multipurpose, computerized data file of U.S. business establishments and companies. Prior to 1974, Federal agencies collecting and tabulating economic data each compiled and maintained their own business registers. Since each agency designed programs for its own purposes, there were serious comparability problems, significant duplication of effort, and increased costs for those using economic data across agencies. In 1968, the Office of Management and Budget (OMB) addressed the problem by designating the Census Bureau to develop, establish, and operate a general, multipurpose business directory. While the new directory would be used as the sampling frame for the entire Federal statistical establishment, the Census Bureau was never permitted to share the listing itself with any other Federal agency. Funding for the project began with Fiscal Year (FY) 1972 and the new directory—the SSEL—became operational for data year 1974.

The SSEL includes the Nation’s employer and nonemployer business establishments (except private households and governments) and organizational units of multiestablishment businesses. “Businesses” are legal or administrative entities assigned an employer identification number (EIN) by the Internal Revenue Service (IRS), and “units” include divisions, subsidiaries, companies, and other affiliated organizations. For the 1997 Economic Census, the SSEL included over 19 million businesses—180,000 multiestablishment companies (with approximately 1.5 million affiliated establishments), 5 million single-establishment companies, and nearly 14 million nonemployer businesses.

**SSEL content.** The SSEL was designed to (1) identify the most useful definition of business establishment units for

statistical analysis, (2) build bridges between these statistical units and legal entities for which administrative records were available, and (3) facilitate more efficient use of administrative records for statistical purposes. The SSEL systems design was based on a variable word-length record that allowed additional information to be added whenever necessary. The establishment was the basic building block of the list, and, for economic census purposes, was the smallest unit for which key data on economic activity (e.g., employment and payroll) were available.

For each organizational unit, the SSEL contained—

- Employer identification number (EIN).
- SSEL identification number.
- Company name, mailing address, and physical location.
- Industry classification.
- Geographic code.
- Legal form of organization.
- Operating data (i.e., receipts, payroll, and other economic variables).

By matching the EINs assigned to each establishment with employees to the SSEL identification numbers, the Census Bureau could link and identify affiliations for parent companies, subsidiary firms, and their establishments through all phases of economic activity.

**Sources for the SSEL.** The SSEL database was maintained as two cross-classified lists, one each for single- and multiestablishment companies. The list information for single-establishment companies was updated continuously, using both payroll tax records and receipts data from tax records provided by the IRS. Information on multiestablishment companies was updated annually based on information from the Census Bureau’s current economic surveys, such as the Current Industrial Reports-(CIRs), the Company Organization Survey (COS—see Chapter 3, “Introduction of the North American Industry Classification System (NAICS),” for more information on this survey), and the like.

The operating data were initially derived from information collected in the COS for multiestablishment companies, and from the IRS records for first-quarter employment, quarterly payroll, as well as for annual payroll. The size codes covered payroll, sales, and receipts at the establishment, legal-entity, and enterprise levels, and used a set of standard size ranges for each characteristic for all industries. The SSEL system retains administrative data for establishments for the current and immediately previous years.

**Using the SSEL.** For the economic census, the SSEL functioned as a universe file to control questionnaire mailing and data processing. The Census Bureau used the SSEL

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source files for a final pre-census update of the SSEL in the Summer of 1997. These source files included administrative data from the Social Security Administration (SSA), IRS, Bureau of Labor Statistics (BLS), as well as the results of the 1996 COS. Of particular importance in the update were the mailing addresses for individual establishments and the industry classifications.

During mail-list compilation, the Census Bureau used the SSEL as the principal source for mailing addresses for individual establishments. For multiestablishment companies, the Census Bureau used the SSEL to—

- Select all active companies (excluding farms) and all active establishments.
- Identify consolidated companies/establishments.<sup>3</sup>
- Assign report form (questionnaire type) numbers for the following:
  - Out-of-scope or suspected out-of-scope establishments (Form 9901).
  - Finance, insurance, and real estate, and communications establishments (consolidated questionnaires).
  - Auxiliary establishments (Form 9202).
  - Other establishments based on program division information/NAICS/SIC.

For single-establishment companies, the Census Bureau used the SSEL to—

- Select establishments with 1997 payroll.
- Split the single-establishment company universe, using NAICS and program division information, to assign appropriate questionnaire.
- Sample by trade area.

During data processing, NPC staff keyed information from census questionnaires into a computer system that interfaced with the SSEL and individual records were matched to the SSEL to confirm coverage. During quality assurance processing, the SSEL file enabled the Census Bureau to determine whether all the establishments of a multiestablishment company had been enumerated.

### **Split Mail and Electronic Reporter Identification**

The multiestablishment mailout system also was designed to make it easy to identify two other contingencies: “split mail companies” and those companies that wanted to respond electronically. This was done using a parameter-driven identification system that enabled an

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<sup>3</sup>Consolidated companies/establishments were multiestablishment companies that, because of their relatively small size, and/or the kind of economic operations of their various individual establishments, were sent a consolidated questionnaire requesting summary data on all their establishments, rather than individual questionnaires for each establishment.

analyst to identify which parts of a company needed questionnaires mailed separately to another location within the company (i.e., “split mail”) and/or allowed companies that wished to respond electronically also to receive the proper electronic reporting medium in the company package. Initially, about 600 companies were mailed the electronic reporting media. Seventy one more companies requested the media during data collection. (Chapter 8, “Data Collection and Processing,” discusses electronic reporting.)

### **Sampling**

**Background information.** The 1997 Economic Census covered over 14 million establishments. The smallest of these—based on payroll cutoffs set for each four-digit SIC or five-digit NAICS industry—were covered using administrative records provided to the Census Bureau by the IRS and SSA. These establishments were not required to complete census questionnaires. The cutoffs established for each industry were set so that the establishments exempted from the requirement to complete census forms accounted for only about three percent of the total value of shipments for that industry. Establishments that would otherwise have been accounted for using administrative records—but for which the Census Bureau lacked the necessary information to assign a six-digit NAICS industry code—were sent classification forms in the census mail-out.

These latter totaled approximately 1.6 million. The preparation of the mail list, and the arrangements made for collecting detailed information on the long questionnaires, varied by trade area. All multiestablishment companies in a given sector or trade area were included in the census and were enumerated using the long questionnaires. The largest single-establishment companies—based on payroll cutoffs that varied by trade area—were included and were sent long questionnaires. These large single-unit companies, together with the multiestablishment companies, were subjected to intense follow-up.

For smaller single-establishment companies in all trade areas except transportation and auxiliaries,<sup>4</sup> the Census Bureau used stratified samples to select establishments to be included in the census or to determine whether to send them long or short questionnaires. Selection for the samples was based on formulae designed to enable the Census Bureau to compile reliable estimates for industries at specified geographic levels, while keeping overall respondent burden to a minimum.

**Construction industries.** The Census Bureau selected a probability sample of 131,000 of the approximately 625,000 establishments in the NAICS construction sector

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<sup>4</sup>Transportation industries were covered in two surveys—the 1997 Truck Inventory and Use Survey and the Commodity Flow Survey—while auxiliary establishments were part of multiestablishment companies. For more information on these surveys, see Chapter 10, “Transportation Surveys.”

to participate in the 1997 census. The sample included all 12,000 identified multiestablishment construction companies, plus a stratified random sample of single-establishment companies. The single-establishment sample was stratified by state and industry, then by payroll size. Within each state/industry level, the Census Bureau established five payroll intervals. The cutoff interval for each industry was set so that the sample drawn would include approximately 50 percent of the total payroll attributable to single establishments within that industry. Single-establishment companies in the largest payroll size category were identified as “certainty” cases. The complete sample consisted of 12,000 multiestablishment companies, 51,000 single-establishment “certainty” cases, and 68,000 other single-establishment companies. The data collected were used to generate national- and state-level estimates for each of the 27 NAICS construction sector industries.

**Manufacturing industries.** The 1997 Economic Census included approximately 380,000 manufacturing establishments. Nearly 83,000 single-establishment companies for which the Census Bureau lacked sufficient information to assign a six-digit NAICS industry code were sent the NC-9922, “Classification Form,” in the census mailout. All other single- and multiestablishment manufacturing companies were split into three categories—Annual Survey of Manufacturers (ASM) establishments, large and medium (based on payroll; the cut-offs varied by industry) non-ASM establishments, and small non-ASM establishments. There were approximately 61,000 ASM cases, about 21,000 of which were single-establishment companies. The medium and large non-ASM establishments—about 167,000 in all—were enumerated using the more than 200 manufacturing industries census long questionnaires. Approximately 29,000 small non-ASM establishments were sent one of the short census questionnaires.

**Retail trade.** The 1997 Economic Census initial mailout plans called for inclusion of all multiestablishment retail firms (approximately 530,000). An additional 320,000 single-establishment companies for which the Census Bureau had insufficient classification information would be sent the classification form. The remaining small single-establishment retail trade companies were sampled at a rate of 13.8 percent, creating a sample mail file of 121,309 firms. These were sent one of 37 retail trade long questionnaires.

**Wholesale trade.** The initial census mailout included all multiestablishment wholesale firms, and all wholesale single-establishment companies with employees approximately 458,600. (Nonemployer wholesalers were considered statistically insignificant.) Some 266,000 large- and medium-size wholesalers—those with a specified number of employees or level of payroll—were sent one of 42 product-specific long questionnaires. The remaining

61,000 smaller wholesalers were enumerated using one of six short questionnaires asking for summary data on products, materials, and key variables.

**Service industries.**<sup>5</sup> The Census Bureau identified approximately 330,000 multiestablishment firms in the service industries for the initial census mailout. An additional 662,263 companies, for which the Census Bureau lacked adequate information to classify at the six-digit level, were selected for inclusion in the classification questionnaire mailout. Large and medium-size single-establishment service—firms some 651,145 companies, identified based on payroll and/or volume of sales cutoffs established for each five-digit industry—were identified for the mailout and were sent the appropriate long form questionnaire. The Census Bureau drew an approximate 3.1 percent stratified sample of the remaining 1.55 million small single-establishment firms within the service sector. This yielded a sample of 48,654 addresses, which were mailed one of the 41 services industries long questionnaires.

**Financial, insurance, and real estate industries.** Mailout plans for the Financial, Insurance, and Real Estate sector called for mailing questionnaires or classification forms to approximately 157,000 multiestablishment firms, and to just over 246,000 large- and medium-sized single-establishment companies. A 2.4-percent sample of small single-establishments added 8,384 companies to the mailing list to receive the long questionnaires.

**Utilities.** All utilities industries multiestablishment companies were sent the long questionnaires in the initial census mailout. An additional 32,000 single-establishment companies were selected to receive classification questionnaires, while 66,500 large- and medium-size single-establishment firms were sent long form questionnaires. The remaining small single-establishment utility companies were sampled at a 5.9 percent rate, yielding 6,615 additional companies that were sent questionnaires.

### Geographic Coding

Conducting a mailout/mailback enumeration, and processing the responses, required place-level geographic codes for all establishment addresses. The Census Bureau’s Geography Division developed a freestanding geocoding production system that incorporated the geocoding software and all necessary reference files to meet the geocoding processing requirements of the 1997 Economic Census. The production system was installed on

<sup>5</sup>Part or all of the following NAICS sectors were in the old SIC service industries—51, Information; 54, Professional, Scientific, and Technical Services; 56, Administrative Support; Waste Management and Remediation Services; 61, Educational Services; 62, Health Care and Social Assistance; 71, Arts, Entertainment, and Recreation; 72, Accommodation and Foodservices; and 81, Other Services, Except Public Administration

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the Economic Statistical Methods and Programming Division's (ESMPD's) computer platform, and ESMPD used the coding system to apply geographic area codes to the address records on the Census Bureau's 1997 mail list. (For more information on geocoding see Chapter 6, "Geographic Area Coding.")

## ADMINISTRATIVE RECORDS

### Background Information

The census first used administrative records to collect data in the 1890 enumeration, when special enumerators visited real estate recorders' office records to obtain data on individual and corporate debt. However, the Census Bureau did not try large-scale use of administrative records in the economic censuses until 1954, when selected data items (employment, payroll, and sales) for small retail (\$2,500 or more in sales) and services (\$1,000 or more in sales) nonemployers were tabulated from IRS tax returns. Thereafter, administrative records obtained from Federal agencies were a significant data source for the Census Bureau's economic statistical programs.

Access to already existing administrative records and their use in the 1997 Economic Census—

- Reduced the cost of data collection for the Census Bureau.
- Reduced company response burden, particularly for smaller companies.
- Provided company and establishment names and addresses for the mailing and sampling lists used in the Census Bureau's data collection programs.
- Supplied information the Census Bureau used in editing reported data.

The principal sources of the administrative records used by the Census Bureau were the IRS, SSA, and BLS. Information from these records was compiled by the Census Bureau under the confidentiality laws governing the Census Bureau, as well as under the confidentiality regulations of the supplying agencies. The statistics collected by the Census Bureau could not be used for taxation, regulation, or investigation. Moreover, only statistical totals could be released to the public.<sup>6</sup>

### Obtaining the Records

**Preparation.** Prior to the 1997 census, the Census Bureau reviewed the content of the administrative records available from other agencies to determine which economic sectors and firms could be covered by using those

files, rather than by enumeration. This task was complicated by the adoption of NAICS, which defined twice as many major economic sectors as SIC, and which transferred entire industries into new sectors. Nevertheless, administrative records use in the 1997 census paralleled that of previous economic censuses.

Each of the contributing agencies had confidentiality requirements of its own governing the use of its records, and special provisions of various kinds were made to enable them to supply the records to the Census Bureau.<sup>7</sup>

**IRS records.** In the case of IRS, a clause in the Federal regulations governing that agency (Title 26, United States Code) specifically authorized it to provide tax data to the Census Bureau for the latter's data collection programs. The Census Bureau, however, made a specific request for the records that were supplied on computer tape. IRS supplied two primary kinds of records—payroll data files (e.g., total payroll for companies) and business data (i.e., business receipts and principal type of business activity). The records were received weekly, monthly, or annually from the following files—

- Annual Business Master File (BMF) containing each legal entity's EIN, business name, address, and principal industrial activity code.
- Monthly BMF entity change file supplementing the annual BMF with changes in names, addresses, etc.
- Weekly employer quarterly Federal tax return file consisting of all firms that reported Federal payroll withholding taxes. This file included the EIN, total number of employees as of the March 12 pay period, total quarterly payroll, taxable tips, and payroll subject to the Federal Insurance Contribution Act.
- Weekly business tax return files, including selected business-related information, such as company revenues, returns and allowances, months in business, and principal industrial activity code for all corporations, partnerships, sole proprietorships, and nonprofit organizations.

Each May, the IRS gave the Census Bureau its current BMF as a benchmark for the monthly data. The Census Bureau converted the IRS's principal business activities codes into census industry codes.<sup>8</sup> Establishments that could not be assigned an industrial classification code based on file information were assigned codes based on trade name whenever possible, or were assigned to the Form NC-9923, "Classification Form," mail file for the census.

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<sup>6</sup>Title 13, United States Code, prohibits the Census Bureau from releasing any information that, directly or indirectly, might be used to identify an individual or company. See Appendix A for the provisions of title 13.

<sup>7</sup>The Census Bureau reimbursed the cooperating agencies for staff and other costs associated with the records transfer.

<sup>8</sup>Time and resource constraints prevented the complete conversion of the IRS Codes into the new NAICS Codes. Therefore, SIC Codes were used in some instances.

**SSA records.** The records provided by the SSA were drawn from IRS birth<sup>9</sup> classification files: these contained information reported to the SSE on EIN applications, such as SIC classification and type of activity in which the company was engaged. When the Census Bureau made its annual request to the IRS for administrative records, the latter agency authorized the SSA to provide the IRS-derived files to the Census Bureau, as well.

**BLS records.** The Census Bureau and the BLS signed a memorandum of understanding in 1992 regarding the use of the BLS records by the Census Bureau. Under the 1992 agreement, the Census Bureau compiled a list of single-establishment EINs for which it needed the BLS industrial classification codes. The BLS matched the Census Bureau's list against its own Business Establishment List, and returned a listing of matched records with the appropriate industrial classification codes. Unmatched records were "returned" to the SSEL without industrial classification codes. If no other source for an industrial classification was available, unmatched records were coded based on trade name.

### Using Administrative Records in the Economic Census

The Census Bureau received the administrative records files on a flow basis and used them first to update the SSEL. The multiestablishment portion of the SSEL was updated annually by the Company Organization Survey (COS). During each update, the staff merged and unduplicated new administrative records, and then matched them to the SSEL. These records were used to update payroll, employment, industrial classification code (SIC or NAICS), and address information.<sup>10</sup> Establishments not matched to the list were added as births.

After converting the activity codes into usable industry codes, the Bureau used information from the administrative records to divide the census mail file into four major groups for data collection purposes—

- Multiestablishment firms, ASM sample, and out-of-scope establishments.
- Large single-establishment and classification-form cases to be canvassed by mail.
- Small single-establishment firms.
- Nonemployers (i.e. firms with no paid employees during 1997).

<sup>9</sup>"Births" were businesses that came into being during the specified reference period. For example, a "third-quarter birth" was a business that began during the third quarter of the reference year.

<sup>10</sup>The Census Bureau staff imputed missing payroll and employment data by computer for the administrative records portion of the data file during the final closeout in late Summer, 1998.

Additional administrative record information (e.g., births; SIC Codes; name and address changes; 1997 second-, third-, and fourth-quarter payroll; receipts) arrived at Bureau headquarters throughout the first half of 1998. For the births, the Census Bureau added the data to the census mail file and sent the new businesses the appropriate questionnaires. Throughout census processing, the Census Bureau also used the administrative data in the SSEL to edit incoming questionnaire data. Administrative records data for nonmail and delinquent cases were sent to the appropriate subject divisions for processing. (Name and address information obtained from administrative records between closeout and the end of December 1997 was used to mail questionnaires in the third-quarter "birth" mailout conducted in April 1998.)

The Census Bureau also extracted selected data from administrative records for tabulation in the census data files, covered in more detail in Chapter 8, "Data Collection and Processing," for more information.

### ASSIGNING CENSUS FILE NUMBERS

The Census Bureau assigned a unique identification—the Census File Number (CFN)—to each establishment covered by the census. For single-establishment employer companies, the Census Bureau assigned numbers from the administrative records used in preparing the census mailing list. Each of these records contained a nine-digit EIN (assigned by the IRS for tax purposes) identifying each company. The Census Bureau modified this number by inserting a zero as a prefix digit indicating the company was a single-establishment firm. For multiestablishment firms, the Census Bureau used its own files, adding four digits to the parent company's census-assigned six-digit identification number (ID) to create a unique identifier for each establishment.

During mail list preparation, the computer added a check-digit to the ten-digit CFNs to verify accuracy during processing. These CFN/check-digits were printed both in numerics and as a bar code on the address label of each questionnaire.

### PRINTING AND ASSEMBLING THE MAILOUT PACKAGES

#### Cover Letters, Instruction Sheets, and Other Mailing Materials

**General information.** Questionnaires and other package materials for multiestablishment companies, as well as those for single-establishment manufacturing and mining firms, were printed using four DocuPrint programmable graphics printers at the NPC. In addition to questionnaires, the census mailing packages included several other items—return envelope(s), cover letters, instruction sheets, and, for multiestablishment addressees, inventory listings (i.e., a complete listing of the location of each

establishment in the company). The Census Bureau developed specifications for these materials during 1996 and early 1997 to ensure that the individual items could be prepared and assembled into the census mailing packages when the questionnaires were ready.

**Cover letters.** The Census Bureau prepared two basic cover letters, one each for single-establishment and multi-establishment companies. The letters informed recipients that Federal law required them to complete and return the census questionnaires, and that the information would be kept confidential. They also provided the response date. Some special situations required special letters: for example, mailing packages to manufacturing establishments that were part of the 1997 ASM panel included a letter explaining that the survey was being integrated into the 1997 Economic Census.

**Instructions.** The Census Bureau tried to include the necessary instructions on the various questionnaires, but had to supplement these with separate instruction sheets in the mailout packages sent to firms with establishments classified in construction; finance, insurance, and real estate; retail trade; services industries; wholesale trade; transportation, communications, and utilities; as well as for three specific industries within the manufacturing sector (apparel manufacturers, loggers, and publishers). In addition, the Census Bureau prepared and distributed an eight-page instruction manual (Form MA-1000-R1) for companies on the 1997 ASM panel.

**Inventory sheets.** Multiestablishment companies' census packages included an inventory list of all their establishments, including those not in scope of the census. This gave respondents the opportunity to confirm that all the firm's establishments were covered by the census, and to coordinate and control responses by subsidiaries. If one or more of a company's establishments were missing from the Census Bureau's inventory, the respondent was asked to call the NPC's toll-free telephone number to ask for additional questionnaires.

**Printing the questionnaires and other mailing materials.** For both the census and the follow-up mailings, private contractors printed and assembled the bulk of the census mailout packages for single-establishment companies that were not in manufacturing or mining. Single-establishment packages for the sectors listed in Table 7-1 each consisted of a cover letter, the appropriate questionnaire, instruction sheets, and the return envelope. The contents of the packages for the census mailout and for the questionnaire follow-up mailings were identical except for the cover letters.

The Census Bureau issued three primary contracts through the Department of Commerce for commercial

printing and assembly of 1997 Economic Census questionnaire packages for the retail trades; wholesale trades; services industries; construction industries; transportation and utilities; and financial, insurance, and real estate industries.<sup>11</sup>

The Department of Commerce awarded the major contracts for questionnaires for the 50 states in November 1996, while those for the Outlying Areas questionnaires were finalized in July 1997. The contractors began delivering these materials to NPC in March 1997, completing final deliveries in December 1997.

Table 7-1.  
**1997 Economic Census Single-Establishment Mailout Packages and Questionnaires Prepared by Contract**

	Packages	"Loose" questionnaires
Total		
Short questionnaires	4,209,700	32,000
Long questionnaires	6,549,100	140,000
Retail trade		
Short questionnaires	1,058,300	7,000
Long questionnaires	1,668,100	33,000
Service Industries		
Short questionnaires	2,239,600	14,000
Long questionnaires	2,621,600	38,000
Wholesale trades		
Short questionnaires	556,400	6,000
Long questionnaires	1,050,400	42,000
Financial, insurance, and real estate		
Short questionnaires	355,400	5,000
Long questionnaires	767,000	16,000
Construction industries*		
Long questionnaires	442,000	11,000

\*The 1997 Economic Census did not use a short questionnaire for construction industries.

### Using DocuPrint for the 1997 Economic Census

**Background information.** Prior to the 1997 Economic Census, the Census Bureau relied heavily on private printing contractors to augment the Census Bureau's internal printing operations. However, for the 1997 census, the Census Bureau used the DocuPrint 4890 Highlight Laser Printing System to print questionnaires, other forms, and literature. This included all material for the multiestablishment mailing packages, as well as the single-establishment questionnaires for the manufacturing and

<sup>11</sup>Two of the primary contractors were predominantly involved in printing, and used subcontractors to fill and seal the packages. The third contractor was a packaging and mailing company that subcontracted the printing of the materials, and then, itself handled the assembling and sealing of the packages. In all cases, the printing and package assembly were subjected to Census Bureau quality control procedures to ensure that the materials met the Census Bureau's printing standards and that the packages were correctly assembled for mailing.

minerals industries. Using the DocuPrint system enabled Census Bureau staff to monitor the production process much more closely.

DocuPrint's efficiency was especially evident during the assembly of questionnaire packages. NPC staff programmed the four DocuPrint systems at the Jeffersonville facility to produce a variety of questionnaire packages and associated instructional materials. The 1997 Economic Census used 474 separate report forms: only inquiries about a specific industry, or a closely related group of industries, appeared on the questionnaire for that industry. The DocuPrint equipment stored all the questionnaires and other forms used in the census mailing packages, as "images" that could be accessed at will. The system drew from its data base all files needed to customize, print, and assemble the census questionnaires and packages. This eliminated the need to manually assemble and inspect packages prior to mailing.

**DocuPrint production.** The Administrative and Customer Services Division's (ACSD's) Forms and Mail Management Branch (FMMB) staff electronically designed, edited, and reviewed all census questionnaires from their workstations at Census Bureau headquarters. Once initial drafts had been completed, files containing the specified questionnaires and other materials were transferred to the

DocuPrint data base. Following quality control reviews, the print files were sent electronically to the four DocuPrint 4890 systems at the NPC facility. (ACSD maintained one DocuPrint 4890 at Census Bureau headquarters for test printing and for review of FMMB's materials.) DocuPrint production began on September 1, 1997 and continued (at a combined rate, for all four machines, of up to 2 million pages per day) until mid-December 1997.

Table 7-2 shows the quantities of 1997 questionnaires printed by the DocuPrint systems in Jeffersonville.

In addition, a total of 73,646 Form NC-9923 "General Schedules" were mailed to single-establishment firms (both those on the initial mail list and to second- and third-quarter "births").

### Address Labels

**Description.** The adhesive address labels for the census mailout contained information for check-in and processing of the completed questionnaire. The label was arranged in a maximum of 16 "lines" (including several blank lines) showing identification information, including the establishment's CFN, the form number of the questionnaire, mailout or follow-up letter number or correspondence category code, EIN, industry classification code, state geographic code, employment size code, county name or

Table 7-2.  
1997 Economic Questionnaires Printed By DocuPrint

Industry classification	Multiestablishment companies	Single-establishment companies*		Single-establishment company Births*	
		Long	Short	Long	Short
Questionnaire type	Long	Long	Short	Long	Short
Total	1,411,113	1,764,107	107,751	189,825	6,314
Auxiliaries	50,504	n/a	n/a	n/a	n/a
Construction	11,903	106,438	0	13,096	0
Financial, insurance, and real estate	156,675	141,783	0	12,572	0
Manufactures/ASM	69,431	95,876	47,650	2,257	2,012
Mining	6,330	5,160	2,823	250	157
Retail and accommodations and foodservices	530,905	448,570	0	55,778	0
Service	330,171	633,213	0	70,109	0
Utilities	44,753	64,027	0	8,288	0
Wholesale	131,034	241,677	57,278	21,838	4,145
Guam	292	2024	0	266	0
Northern Mariana Islands	178	781	0	132	0
Puerto Rico	4,959	23,111	0	3,150	0
Virgin Islands of the United States	332	1,447	0	215	0
Totals	1,411,113	1,764,107	107,751	189,825	6,314

\*Single-establishment company totals include second- and third-quarter (1997) "births," that is, newly identified businesses added to the SSEL during the quarters covered. Single-establishment "Births" are fourth-quarter 1997 births. abbreviation, permanent plant number (PPN), establishment or, for multiestablishments, company name and address, and the like.

**Printing.** The address labels for single-establishment companies—except manufacturing and mining—firms were printed on high-speed ink-jet printers at the NPC, using computerized address files transmitted to Jeffersonville via datalink telephone lines from the Census Bureau's headquarters. Approximately 5.4 million address labels, including 1.6 million used in the November classification mailing, were printed and then affixed to the individual mailing packages using automated labeling equipment. The NPC check-in updated the response list daily, and the Census Bureau created an address file of nonrespondents following each response cutoff date. The Jeffersonville staff used the updated address files to generate new address labels for follow-up mailings to nonrespondents. The NPC used the DocuPrint equipment to produce address labels for the classification forms, all multiestablishment mailing packages, and for the manufacturing and mining single-establishment packages.

## Quality Assurance

**Contract printing/package assembly.** NPC's Quality Assurance Section (QAS) monitored questionnaire printing at printing contractors' sites, and also inspected the contractors' materials received at Jeffersonville. On-site monitoring required that the QAS staff observe the equipment operators' method of sample selection, check that the machine counters were working properly, and select a random sample of printed material for inspection from each machine. The inspectors checked the contractors' own quality assurance plan to ensure proper record keeping and correct sample selection.

Cartons of "flat forms" (i.e., materials not assembled into packages) were randomly sampled by type and checked to ensure that the printed materials met specifications. For cartons of assembled mailing packages, the QAS staff matched the information on the label against the package specifications. The clerks selected three packages from each carton and verified (1) the color and registration of the forms and questionnaires, (2) that all inserts were present and in the proper sequence, and (3) that all documents in each package matched the envelope. Individual printed items within each package were checked to verify that each item was printed to specifications (i.e., color of shading and ink, quality of image, and dimensions), and that the envelope met requirements.<sup>12</sup> One package from the first contractor quality assurance sample for each package type was selected, and inspectors proofread all items to check for misspelling and incorrect language. The

<sup>12</sup>The questionnaires varied in size from 8 1/2 x 11 inches to 10 1/2 x 17 inches and were printed in black ink on 50-lb. offset white book stock, with shading in a variety of ink colors. All the cover letters, instruction sheets, and envelopes were printed in black ink on white stock.

quality control clerks notified their supervisors of any errors detected in the contractor-selected samples, and the supervisors or lead clerks determined what corrective action was required.

At Jeffersonville, the mailing packages from the private printing contractors underwent a second quality assurance review.<sup>13</sup> For shipments of one package/form type, two cartons were selected from each pallet for inspection, while inspectors sampled shipments containing more than one type of package or form by selecting one carton of each type of package. The staff checked each carton selected to verify that it contained the correct type and number of packages, and then selected three packages from each carton for content inspection.

Any errors detected were entered on the Quality Assurance Control/Inspection Record for the shipment, and the five preceding and succeeding items in the carton sampled were inspected. If additional errors were found, the next five preceding and succeeding items were inspected and any additional errors resulted in 100-percent verification of the contents of the carton. If no errors were identified, or if the defective items were found in the original sample but not in the expanded search, the defective packages were referred for correction and the remainder of the shipment was released.

If additional defective packages or items were identified in the expanded review, the shipment was rejected and either (1) sent back to the contractor for reprinting, (2) set aside for use (of acceptable items) only if supplies of the item ran low, or (3) used for follow-up correspondence operations.

The quality of the contractor-printed and assembled materials for the 1997 Economic Census was good. Problems that did occur were corrected by reprinting or by replacing cartons or individual packages as necessary from the overstock supplied by the contractors.

**DocuPrint printing and package assembly.** The QAS conducted quality assurance inspections of the materials printed on the DocuPrint equipment. These included multi-establishment packages, single-establishment questionnaires, classification and general questionnaires, consolidated forms, follow-up letters, and instructions and flyers. The inspections covered all DocuPrint work units (a work unit was a complete print file—about 1,500 pages of printed material). Inspections focused on two major types of defects—printing and programming errors.<sup>14</sup>

The DocuPrint quality assurance procedures involved three kinds of inspections—

<sup>13</sup>Shipments of "flat forms" did not require additional inspections.

<sup>14</sup>Printing errors (e.g., illegible printing on the label or in the establishment data, printing not centered on the page [general misalignment was a printing problem, misalignment of only part of a printed page indicated a programming error], unreadable barcode, etc.) were "noncritical errors" that could be corrected by reprinting the file. Programming errors were "critical" errors

- A sample inspection of the first production file printed for each print group.
- Daily monitoring of the printing operation.
- Inspection of all materials reprinted due to machine reject.<sup>15</sup>

The QAS chose a “start with” number from a random number table, and every tenth company package or item thereafter, for inspection until reaching the end of the file. The inspectors used laser wands to check each package/item for readable barcodes, then checked for correct format and assured that the package contained the correct questionnaires or other forms. Once the first production file for a file type<sup>16</sup> was accepted, daily monitoring was used for that file type. Inspectors selected one file from each shift (not one file of each type), and three companies’ packages (any company package with machine rejects, plus at least one randomly selected package) from the files for verification. If only printing errors were detected, the file was held and an expanded inspection<sup>17</sup> was conducted to determine the extent of the problem before reprinting. When inspectors identified programming errors, the file was rejected and the inspecting statistician contacted the EPCD staff for instructions to take further action on the file.

The DocuPrint mailing packages were assembled clerically, in the order printed, and underwent clerical verification. The clerks informed their supervisors of errors and checked the preceding and succeeding packages. Upon completion of this inspection, the clerks checked that the packages for all companies in the file were present. Files with missing packages were held until the requisite materials were added, then were subject to 100-percent verification. Once the QAS confirmed that all the packages for a file were present, and errors corrected, the file was released.

Procedures for machine-assembled mailing packages differed slightly. For packages prepared using equipment

present within the file itself and had to be referred for correction to the appropriate subject programming staff at Census Bureau headquarters.

<sup>15</sup>“Machine rejects” were any packages with an unreadable barcode. These would include not just badly printed codes (e.g., unclear, partially obscured, offline, etc.), but such things as questionnaires inserted backwards, or materials in the wrong order so that the barcode could not be read.

<sup>16</sup>The file types were as follows: Annual Survey of Manufactures single establishments; manufacturing; mineral industries; multiestablishment companies requiring split, electronic, or certified mailing; companies in a foreign location; small (other companies with less than 28 printed sheets in the package); medium (companies with 29 to 130 printed sheets in the package); and large (more than 130 printed sheets).

<sup>17</sup>The “expanded” inspection selected one company package on each side of the defective package in the work unit and inspected their materials. If further defects were found, the inspectors moved on to the next company on the side(s) of the newly identified defective package, and continued until no errors were identified, or until the next/previous selected company was reached.

programmed to assemble the materials by barcode, the machine selected a random sample of each work unit for clerical inspection, while packages assembled using a programmed number of pages of materials for a specific company were inspected on a 100-percent basis. The first 25 packages, and 1 in 100 of the remainder in the file, were inspected for content; the clerk checked that all programmed materials were included, and that the survey code and sequence number of the packages within the file (i.e., 1-25, then 125, 225, 325, etc.) were correct. For packages assembled by page number, clerks checked that all packages were present, that address information showed through the envelope window, and that all sequence numbers were present and correct. Necessary corrections were made before files were released.

Single-establishment mailout packages printed on the DocuPrint equipment were assembled clerically and subject to 100-percent verification.

**Label printing.** The quality assurance program for both the high-speed printer and DocuPrint label printing involved (1) sample inspection of the first production file produced for each print group, (2) daily monitoring of the printing operation, and (3) inspection of all materials reprinted because of printing errors.

For the first production file inspection, staff randomly picked a “start with” number for each file and checked that sheet of labels, then inspected every tenth sheet thereafter. For daily monitoring, staff selected one “file” for each printing shift, and inspecting that file (using the same sample selection method employed for the first production file inspected). Quality assurance staff checked each chosen sheet of labels for printing legibility. For each label, the clerks looked for missing alpha or numeric characters, and for mandatory entries (e.g., barcode, CFN, survey code, form number, mailout/follow-up/correspondence category code, reporting media, EIN, classification code, etc.).

When the review identified printing errors, the label sheet was placed on hold and an expanded inspection was carried out, checking succeeding and preceding sheets until the extent of the problem was found. Then, the file was referred for reprinting. When programming errors were found (for example, mandatory items missing from the labels), the sheet and file were rejected, EPCD staff was informed, and corrective action was taken.

## PRE-CENSUS COMPANY CONTACTS

### Information Mailings

In November 1996, the Census Bureau sent an information mailout to 10,000 of the largest—based on total employment and number of establishments reported in the previous census—SSEL-listed multiestablishment companies. These companies represented about half the total economic activity covered by the census. This mailing had

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three major objectives: (1) to establish initial contact with the largest companies covered by the economic census, (2) to provide those firms contacted with information on the forthcoming census and the kinds of information that would be requested, and (3) to facilitate response by giving companies a chance to assemble their data. Responses were used to update the SSEL prior to the census mailout.

Each mailing package consisting of the following:

- A cover letter signed by the Director explaining that the 1997 Economic Census would be carried out in about a year and listing the kinds of questionnaires the recipient company would receive in the census.
- Form EC97-PR-1, *Preparing for the 1997 Economic Census*, a 24-page booklet presenting basic information on the plans for the 1997 census (including basic data to be collected, timing of the enumeration, and samples of census questionnaires), how respondents could use the World Wide Web to view census questionnaires and obtain more information on the 1997 Economic Census; telephone and fax numbers, and e-mail addresses for subject division contacts at the Census Bureau.
- A Contact Exchange Card showing the mailing address shown in the SSEL for the recipient, and asking respondents to (1) make address corrections, (2) provide the

name of the person within the company who would be responsible for the firm's response to the census, and (3) provide the name of the supervisor of the company's responding official.

### **The Account Manager Program**

Of the 10,000 companies that received the information mailing, the Census Bureau selected 1,000 for inclusion in its Account Manager Program. The criterion for selection was the company's likelihood of either delaying its response, or not responding at all, to earlier censuses. To improve the response of these companies, the Census Bureau assigned census staff to serve as their "account managers." Each staffer was responsible for several companies, and followed up the information mailout by telephone.

Chapter 5, "Promoting Census and Product Awareness," provides details of the Account Manager Program: it shows how the Census Bureau created a system to identify the correct contact within targeted companies, and to provide account managers with the capacity to reinforce the objectives of the larger census mailout.

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# Data Collection and Processing

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## THE CLASSIFICATION MAILOUT

### Background Information

The American economy is never static; new businesses appear and old ones disappear or change to adapt to new conditions. The tabulation and publication of statistical data requires that data be summarized under specified classifications, so every economic census must identify and correctly classify new business activities, as well as revise those not accurately classified in the U.S. Census Bureau's records. For the 1997 Economic Census, the adoption of the North American Industry Classification System (NAICS) entailed doubling the number of major trade areas for classifying economic activity from 10 "divisions" under the old Standard Industrial Classification (SIC) Code to 20 "sectors" under NAICS. Since NAICS defined over 300 new industries within the U.S. economy, it was imperative to correctly classify businesses before attempting to measure their economic activity in the census.

The Census Bureau carried out a special classification questionnaire mailing to establishments for which the agency had insufficient information to determine the correct NAICS classification. These generally were small, single-establishment companies that would not have received a census long form if their classification information had been complete.

### The Three Classification Mailouts

In early November 1997, the Census Bureau mailed classification questionnaires to 1,362,914 establishments selected from the census mail list. In the general census mailout, in December 1997, the Census Bureau sent classification report forms to an additional 83,000 single-establishment manufacturing businesses that could not be classified in detail.

Although the census mail list was compiled prior to the initial mailout, the Census Bureau continued to compile listings for new businesses—"births"—identified from

Internal Revenue Service (IRS) and Social Security Administration (SSA) records throughout 1997. Thousands of new businesses identified in the third and fourth quarters of 1997 also needed to be included in the census. In March 1998, the Census Bureau carried out a supplementary classification mailing, sending classification forms to 194,893 businesses added to the census mail file for the third quarter of 1997. Fourth quarter "births" for 1997 were not mailed questionnaires; the Census Bureau used administrative records to cover these new businesses.

### Processing the Classification Mailout

Responses to the classification mailouts, together with census questionnaires, were received and processed at the National Processing Center (NPC) office in Jeffersonville, IN.<sup>1</sup> After check-in, clerks screened the classification forms to determine the industrial classification of the establishments and then referred the questionnaires for additional processing. The information on primary economic activity from the classification report forms was used to update the Census Bureau's Standard Statistical Establishment List (SSEL). The basic business data (receipts, payroll, employment, and SIC/NAICS classification) from the long-form questionnaires were keyed and added to the respective industry files.

## THE CENSUS MAILOUT

In the second half of December 1997, the NPC mailed out approximately 4.32 million census questionnaires and classification questionnaires, with response requested by February 12, 1998. In mid-March 1998, NPC mailed an additional 526,328 questionnaires (and 194,893 classification forms) to single-establishment companies that had begun operations during the second and third quarters of 1997. Together, these initial mailings totaled approximately 5.04 million questionnaires. The numbers of questionnaires and classification forms mailed, including initial mailings of single-establishment second- and third-quarter births, by type, are shown in Table 8-1.

<sup>1</sup>Until a reorganization effective May 1, 1998, this unit was called Data Preparation Division (DPD).

Table 8-1.  
Initial Mailout: 1997 Economic Census

Trade or geographic area	Multiestablishment companies			Single-establishment companies*			
	Total	Long questionnaires	Consolidated questionnaires	Total	Classification questionnaires	Long questionnaires	Short questionnaires
Total .....	1,411,113	1,400,850	10,263	3,630,777	1,557,807	1,958,704	114,266
Auxiliaries .....	50,504	50,504	0	0	0	0	0
Construction industries .....	11,903	11,903	0	0	0	119,461	0
Finance, insurance, and real estate .....	156,675	148,474	8,201	255,136	96,395	158,741	0
General (forms 9901 & 9923) .....	73,646	73,646	0	362,721	362,721	0	0
Manufacturing and annual survey of manufactures (ASM) .....	69,431	69,431	0	230,414	82,575	97,997	49,842
Mineral industries .....	6,330	6,330	0	10,865	2,409	5,437	3,019
Retail trade .....	530,905	530,905	0	823,931	319,076	504,855	0
Service industries .....	330,171	328,109	2,062	1,362,062	662,263	699,799	0
Utilities .....	44,753	44,753	0	105,162	32,368	72,794	0
Wholesale trade .....	131,034	131,034	0	327,594	0	266,189	61,405
Guam .....	292	292	0	2,446	0	2,446	0
Northern Mariana Islands .....	178	178	0	1,010	0	1,010	0
Puerto Rico .....	4,959	4,959	0	28,182	0	28,182	0
U. S. Virgin Islands .....	332 322	0	1,793	0	1,793	0	0

\*Single-establishment counts include 721,221 second- and third-quarter 1997 "births", mailed in January and March 1998.

## ELECTRONIC REPORTING

The Census Bureau first used electronic reporting to collect economic census data for the 1987 census. The agency employed the technique primarily for large retail, food services, and hotel chain enterprises—mailing magnetic computer tape reels to selected companies and requesting them to enter the data for their establishments on the reels and return them to the agency.

For the 1997 Economic Census, the Census Bureau again offered companies the option of response through magnetic tape, but also contracted with a private company to develop an electronic questionnaire on diskette for use with personal computers. The latter project produced the Windows-based Computerized Self-Administered Questionnaire (CSAQ) for use in the 1997 Economic Census. The Census Bureau established stringent requirements for the CSAQ, it had to—

- Be usable by multiestablishment companies engaged in a variety of industrial activities.
- Enable companies to export and manipulate establishment identification and address information supplied by the Census Bureau.
- Allow companies to link to internal spreadsheets and databases.
- Include necessary communications software to transmit census data.

The Census Bureau selected approximately 600 companies for electronic data collection in the 1997 Economic Census—400 were sent the CSAQ diskettes and about 200 received computer tape in the December 1997 census mailing. These companies represented 250,000 separate business establishments (about 3.8 percent of the total

establishments covered by the census). During data collection, the Census Bureau received another 71 inquiries, and sent CSAQ diskettes to these companies. By the time data collection closed out on September 23, 1998, 671 companies—representing 317,593 business establishments had responded to the census using the CSAQ or magnetic computer tape.

## FOLLOWING UP THE CENSUS MAILOUT

### Background Information

The 1997 Economic Census employed separate follow-up plans for single-establishment and multiestablishment companies. Both plans involved remailing census questionnaires to nonrespondent companies—several times in some cases—as well as telephone follow-up to large multiestablishment companies. The NPC conducted the mail follow-up in four phases, beginning in March 1998 and extending through the last week of June 1998. Telephone follow-up began prior to the requested questionnaire response date—February 12, 1998—when Census Bureau staff called selected large multiestablishment companies to confirm that the census packages had been received. Telephone follow-up continued through June 1998.

Response close-out dates were set for each major type of mailout package—classification, multiestablishment, single-establishment (Annual Survey of Manufacturers [ASM], non-ASM manufacturing and mineral, and other single-establishments), and third-quarter births. (See Table 8-2 for mailout totals.) After each close-out date, NPC staff used computerized check-in files to generate mailing lists of nonrespondents in each category. The close-out dates for the four follow-up mailings extended over several days as follows:

First follow-up	February 23-March 6, 1998 <sup>2</sup>
Second follow-up	March 27-April 4, 1998
Third follow-up	May 4-May 18, 1998
Fourth follow-up	June 12-June 26, 1998

Delinquent multiestablishment companies were subject to mail and telephone follow-up, with telephone follow-up listings generated during the second, third, and fourth follow-up closeout. Totally delinquent companies that had requested a time extension for response were followed up as well, with one letter mailing and one telephone follow-up.

The lists of nonrespondents produced after each close-out date were used, together with the NPC's high-speed printers, to print the address labels for each mail follow-up.

### Mail Follow-Up

**Single-establishment follow-up.** The single-establishment mail follow-up covered third-quarter 1997 "births," classification cases, and census and ASM single-establishment mail cases. Each category of respondents was subject to a specific follow-up procedure. One "letter" mailing to ASM single-establishment nonrespondents was carried out in February 1998, while three questionnaire follow-ups were conducted in March, April, and May. (A fourth follow-up mailing, to single-establishments with estimated annual payrolls of \$200,000 or more, was carried out in July.) Classification cases were subject to two follow-up mailings in April and May 1998.

The first classification form close-out date was March 30, with the mailing conducted during the following week. Each package included the cover letter form EC-G-L11, requesting response, the classification form and a return envelope. This first follow-up mailing sent questionnaires to approximately 1.32 million nonrespondent addresses. The final closeout for the classification cases was May 8, after which the NPC mailed packages containing the form follow-up letter, another copy of the classification form, and a return envelope to delinquent classification addresses.

The follow-up process for nonclassification single-establishment delinquents varied by type of case. Third-quarter births received only one mailing; 115,584 cases nonrespondent as of April 29 were sent packages containing the appropriate questionnaire, a follow-up letter, and a return envelope. ASM single-establishment delinquent cases were sent a letter in the first week of March as part of the follow-up of all delinquent single-establishment cases. Thereafter, they were subject to two more mailings, following close-out dates of April 9 and May 18. Each mailing used the appropriate report form, together with form letters urging response. All other single-establishment

<sup>2</sup>Third-quarter "births" were mailed out on March 18, 1998, shortly after the first mail follow-up.

nonrespondents—except classification cases—were followed up three times after close-out dates of March 4, April 15, and May 22, 1998. Each mailing involved complete census packages containing the appropriate report form, cover letter<sup>3</sup>, and return envelope.

Close-out dates and package counts for the single-establishment mail follow-up are given in more detail in Table 8-2.

Table 8-2.  
**Single-Establishment Follow-Up Mailings**

	Package type	End closeout date	Packages mailed
First follow-up			
ASM cases . . . . .	Letter	02/23/98	12,463
Non-ASM, excluding classification and third-quarter births. . . . .	Questionnaire	03/04/98	861,848
Classification, excluding third-quarter births. . . . .	Questionnaire	02/28/98	315,356
Third-quarter births. . . . .	Questionnaire	04/29/98	5,326
Second follow-up			
Single-establishment, except classification and third-quarter births. . . . .	Questionnaire		548,121
Classification, excluding third-quarter births. . . . .	Questionnaire	04/15/98	175,261
Third follow-up			
Single establishment . . . . .	Questionnaire	05/22/98	415,809
Fourth follow-up*			
Single establishment . . . . .	Questionnaire	07/09/98	109,165

\*This follow-up was mailed only to single establishments with estimated annual payrolls of \$200,000 or more.

**Multiestablishment follow-up.** Follow-up procedures for multiestablishment companies varied (1) by the size of the company (the size designations varied by industry or trade area, based on volume of sales and annual payroll), (2) by whether the firm was totally or only partially delinquent, and (3) by whether request for a time extension for response had been received by the Census Bureau.

The follow-up mailings and listings done were as follows:

- For large and medium size ("L" and "M") companies in each trade area—
  - Totally delinquent firms—those that had made no response whatever by the cut off date following each mailout (see Table 8-3) and with no extension requested were scheduled for up to four letter follow-up mailings. Telephone follow-up listings for these delinquents were generated following the March, May, and June close-out dates.

<sup>3</sup>Cover letters varied by type of establishment; a different version of each follow-up cover letter was used for manufacturing/mineral industries establishments, and for all other single-establishments (excluding ASM, classification, and third-quarter birth cases). The content for all letters was similar.

- Partially delinquent companies—i.e., companies from which at least one questionnaire had been received and with no time extension requested—were followed up by letter up to two times and also were subject to up to two telephone follow-up calls.
- Totally and partially delinquent companies that had requested a time extension for response were followed up as well, with one letter mailing and one telephone follow-up.
- For smaller (“N” and “S”)<sup>4</sup> multiestablishment companies—
  - Totally delinquent “N” and “S” companies with no time extension requested were subject to up to three letter follow-ups in the first three follow-up mailings. If they were still delinquent after the June 26 close-out date, they were sent a complete questionnaire package follow-up. Those that had requested time extensions received one letter follow-up after the May 4 close-out date.
  - Partially delinquent “N” and “S” companies without time extensions requested were sent letter follow-ups in May and June, while those that had requested time extensions for response received only one letter follow-up if they remained partially delinquent after the June close-out date.

The close-out dates and packages mailed in the multiestablishment company mail follow-ups are shown in Table 8-3.

### Telephone Follow-Up

The Census Bureau supplemented its mail follow-up with a telephone follow-up targeting selected delinquent large and medium-size multiestablishment companies. Analysts at the Census Bureau’s headquarters referred to worksheets and listings generated at the NPC to conduct the telephone follow-up in three phases, after the April, May, and June 1998 close-out dates for multiestablishment mail follow-up.

The Suitland headquarters staff contacted the companies referred for telephone follow-up as the workload of incoming calls permitted. The purposes of the telephone contacts were to (1) remind companies to file their census reports, (2) determine when they would be filing, and (3) provide assistance that might be required. Some companies were subject to more than one telephone contact depending on their filing status.

The first telephone follow-up list—compiled after the April 3 mail closeout—comprised 2,565 totally delinquent companies that had not requested a time extension for response. After the May 7 closeout, the NPC produced

<sup>4</sup>It should be mentioned that the designations “L,” “M,” “N,” and “S” companies are not statistical data collection, tabulation, and publication categories. These designations are “in-house” ways that the Census Bureau used to refer to companies according to the level of intensity of the follow-up that they will receive.

worksheets for 2,433 more totally delinquent companies, including 744 companies with unexpired time extensions, plus work sheets and establishment listings for 940 partially delinquent multiestablishments (with no time extensions requested). The last referral was made following the June 11 mail closeout, when 1,687 totally, and 545 partially, delinquent firms were referred for telephone follow-up.

Table 8-3.  
**Multiestablishment Follow-Up Mailings**

	Package type	End closeout date	Packages mailed
First follow-up			
Totally delinquent, no extension .....	Letter	02/2/98	73,333
Second follow-up			
Totally delinquent, no extension .....	Letter	04/01/98	51,669
Third follow-up			
Partially delinquent, no extension .....	Letter	Letter	5,326
Totally delinquent, no extension .....	Letter	Letter	40,772
Totally delinquent, unexpired extension .....	Letter	Letter	1,709
Fourth follow-up			
Partially delinquent, no extension .....	Letter	06/10/98	3,252
Partially delinquent, unexpired extension .....	Letter	06/10/98	282
Large companies, totally delinquent, no extension .....	Letter	06/11/98	950
Small companies, totally delinquent, no extension .....	Questionnaire	06/25/98	31,661
Other, totally delinquent, unexpired extension .....	Letter	06/11/98	846

Census Bureau staff prepared folders for each company referred for telephone follow-up. Each folder contained a company worksheet (and establishment listings for partially delinquent companies) and forms for recording telephone calls. Nonrespondent companies were called in descending payroll order—i.e., larger companies were called first—and the interviewers tried to speak with the contact person shown on the company worksheet. The analysts updated the worksheets with information on each contact and noted any actions requested, such as requests for time extensions. If no contact was listed, the analyst asked for the person responsible for filing government reports.<sup>5</sup>

<sup>5</sup>The Census Bureau carried out a pre-census mailing to 10,000 multiestablishment companies in November 1996 to establish initial contact for the census. The Census Bureau asked companies to give the name of the person who would be responsible for census reporting. Chapter 5, “Promoting Census and Product Awareness,” discusses this subject in detail in the sections on the “Account Managers” and “Company Contact” programs.

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## PROCESSING DATA FROM ADMINISTRATIVE RECORDS

The Census Bureau sampled—at variable rates—each economic sector’s census mail universe of nonemployer and small employer firms to develop estimates of specialized data (e.g., merchandise-line sales for retail trade; revenue-line sales in transportation; sources of revenue for finance, insurance, and real estate). The bulk of the information on nonemployers and small employers, however, was drawn from the Census Bureau’s SSEL and administrative records files. The Census Bureau obtained about 140 million records on computer tape from the IRS between January 1997 and December 1998, and approximately 60,000 SSA birth (new business) records monthly during the same period. (Chapter 7, “Preparations for Census Mailout,” details the Census Bureau’s acquisition of administrative records.)

The Census Bureau identified, accumulated, and edited administrative records of nonemployer firms, and extracted basic data for these operations and for selected small employer companies not included in the mail sample.<sup>6</sup> The agency gathered data on sales or receipts, kind of business, and geographic location for nonemployer and small employer companies in all the major economic sectors covered in the economic census except wholesale trade.<sup>7</sup> Records for businesses not meeting minimum criteria for census coverage, as well as for probable duplicates of employer businesses, were removed from the files. Once the nonemployer files for each trade area had been edited and the information extracted, the resulting data file was transmitted to the appropriate subject division staff for tabulation and analysis.

## PROCESSING THE QUESTIONNAIRES

### The Transmittal Tracking System

The Transmittal Tracking System (TTS) was used by the Census Bureau to control economic census documents moving from one processing unit to another. The paper documents—questionnaires and paper correspondence with attached materials—were transported from unit to unit in wheeled bins. Each processing unit created a computer-generated transmittal document for each bin of

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<sup>6</sup>The definition of “small” employer firms varied slightly among the various sectors. “Small” firms were generally single-establishment companies that met specified minimum annual sales (usually \$1,000) and maximum payroll. The number of employees varied among sectors; in retail trade small-employer firms had 1 to 3 paid employees; in the sectors derived from the SIC services area the “small” companies had 1 to 4 employees; in transportation and utilities, the limit was fewer than 10 employees; and in manufacturing, fewer than 5 employees.

<sup>7</sup>Administrative records could not be used to gather economic data on wholesale trade because the data available for agents and brokers generally reflected commission receipts rather than gross dollar volume of business conducted.

materials just prior to its referral to the next unit. The TTS retained the computerized record of the progress of each bin, while the paper copy accompanied the bin as it moved from unit to unit. The transmittal records and documents showed the count of questionnaires, correspondence cases, etc., in each bin, and the processing actions completed on them to that point.

### Receipt and Check-In

**General information.** The economic census check-in began late in December 1997 at the NPC in Jeffersonville, IN. The check-in system used laser technology to read the barcodes on the questionnaire address labels and sort the receipts. After each mail response close-out date, the check-in file was used to identify nonrespondent establishments and companies for telephone or mail follow-up.

**Preliminary sorting.** The U.S. Postal Service presorted incoming economic census mail packages using different mail box numbers for eight specified categories of returns.<sup>8</sup> The packages were placed in trays by type of receipt and then routed to the preliminary sort clerks who checked to make certain that each tray contained only one type of receipt. The clerks sorted the receipts contained in each tray and referred them to NPC processing units as follows:

- Materials addressed to a specific analyst; forwarded to specified analyst.
- Multiestablishment undeliverable as addressed (UAA), receipts, single-establishment ASM receipts, single-establishment UAA receipts, census follow-up letter UAA cases, and Census Bureau originated correspondence UAA cases, were referred to the Directory Analyst Unit.
- Receipts with no visible barcode, and economic census receipts with visible barcodes, were referred to Register Batch Unit for check-in.
- All other economic census related receipts; referred to the Open and Sort Unit. (Receipts obviously not census related were referred to the appropriate subject area.)

Receipts referred for check-in were grouped into batches of up to 10,000 pieces and assigned batch and check-in codes that enabled the NPC staff to track each batch through processing by using the TTS.

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<sup>8</sup>These categories were (1) wholesale long and short questionnaires; (2) retail, including classification forms; (3) services, including classification forms; (4) construction; utilities; finance, insurance, and real estate; manufacturing and minerals short questionnaires; and forms NC-9923, “General Schedule,” and NC-9926, “Classification Report;” (5) manufacturing and minerals long questionnaires; (6) small and medium multiestablishment packages; (7) Puerto Rico, Guam, Virgin Islands of the United States, and Northern Mariana Islands; and (8) the 1997 Vehicle Inventory and Use Survey.

**Barcode check-in and sorting.** Census questionnaires and other materials began their processing with barcode check-in. Two 56-pocket laser reader/sorters read the barcodes, slit open the return envelopes, and sorted the packages. The sorter operator created a “header” record for each batch by keying the sort number, batch number, and batch status code from the cover sheet attached to each batch. The reader/sorter read the 22-digit barcode, as well as the census file number (CFN—CFNs are discussed further in the “CFN research” section below), questionnaire form number, codes for follow-up letters and correspondence, and then sorted the batch by questionnaire type.

Machine rejects—i.e., receipts with unreadable barcodes—were sorted to “pocket 1” of the machines, removed from the working batch, and rebatched with similar receipts. Clerks used hand laser-wand readers to read barcodes. If the barcode could not be read by wand, or if the barcode label was missing, the clerk keyed the barcode identification number directly to the check-in file. The check-in actions from the laser sorters and the wand and keyboard operators were validated on a data-entry system in the NPC processing office, then were transmitted to the Economic Statistical Methods and Programming Division (ESMPD) at the Census Bureau’s headquarters in order to update the SSEL.

**Disposition of mail receipts.** Following check-in, mail packages and individual questionnaires went to the Remove Contents and Sort Unit. Staff opened the envelopes and sorted the questionnaires and other materials into categories as follows:

- Correspondence sent to the attention of a specific analyst was referred to that analyst.
- Respondent-originated correspondence was referred to the Correspondence Suspense or Reading Units for review.
- Census Bureau-originated correspondence cases were referred to the subject divisions.
- Classification forms were referred to the Screening Unit for review and updating of the SSEL.
- Economic-only single-establishment company “2+” cases (i.e., responses in which two or more single-establishment questionnaires were returned in a single envelope) were held for review by analysts).
- All other single-establishment company cases were batched into work units and sent for microfilming. Company questionnaires with attached correspondence, and multiestablishment company 2+ cases were sent to the Directory Analyst Unit.
- All other multiestablishment company cases were grouped into manila folders, batched into work units, and routed to the Completeness and Coverage Unit. Single establishment company questionnaires were batched and referred for microfilming.

## Correspondence Processing

**Correspondence reading.** Clerks checked each piece of respondent-originated correspondence for a CFN. Next, they referred to lists of problem descriptions and instructions in order to determine what action should be taken. Correspondence with CFNs were read, categorized, and then processed as follows:

- Congressional correspondence (i.e., correspondence from, copies of correspondence to, or letters with notations to, any Federal government official ranking higher than the Director of the Census Bureau). These were referred to supervisors for special handling.
- Freedom of Information Act cases were referred to Census Bureau headquarters for response.
- Correspondence sent to the attention of a specific person, title, office, or department was annotated appropriately and referred to the Directory Analyst Unit.
- Correspondence from multiestablishment company respondents who reported a change of name or address was annotated and referred to the Directory Analyst Unit.
- Correspondence from a multiestablishment company respondent who wanted to combine data for all establishments on one questionnaire was annotated and referred to Central Files after keying.
- Correspondence (1) from single-establishment respondents indicating they had more than one establishment, (2) from respondents requesting help completing the questionnaire, and (3) for other problems that did not fit any of the problem descriptions provided, were annotated and referred to the Directory Analyst Unit.

Clerks annotated correspondence with a five-digit code to indicate actions taken and the unit to which the case was to be referred. Then, using an interactive routine (described below) for each case, they keyed in such information as correspondence category code, CFN, time extension codes, date the respondent’s business was closed or sold (if contained in the correspondence), as well as changes of company name and/or address.

**CFN research.** Each correspondence case needed a valid CFN; clerks had either to identify a CFN for each case or, if none was available, assign one. When a valid CFN was found, the processing clerk wrote the CFN and check digit on the correspondence and continued processing—using the interactive systems. When a CFN was not located, but the correspondence included a nine-digit EIN, the clerk added a zero (“0”) to the front of the EIN and assigned this ten-digit number as the CFN to the file. When no EIN was present, the clerk entered the name and all other identification information, then annotated and referred the correspondence as necessary.

**Correspondence with single-establishment questionnaire processing.** Correspondence Unit clerks read and categorized correspondence that was attached to a single-establishment questionnaire and transcribed the CFN from the questionnaire to the letter or other materials attached. The clerks used problem listings, selected the one that most closely described the subject of the correspondence, and carried out the actions indicated. They annotated the correspondence with the appropriate action codes, circled the CFN and correspondence category codes, and transcribed any information given by the correspondent to the appropriate item.

**Census Bureau-originated correspondence.** Census Bureau-originated correspondence was generated from three—sources (1) interactive applications run against the SSEL file, (2) records referred by the control file match, and (3) records flagged during complex edit (see below) that required contact with the respondent to resolve a problem. Census Bureau-originated correspondence processing was handled by the various processing units generating the requirements. Interactive computer routines were used to identify particular problems with individual records and the kind of correspondence required to contact respondents for corrective or additional information. Clerks keyed the CFN for the specific record, used correspondence reference listings to select a correspondence category that described the problem, and keyed the specified category code to the record. The interactive routine indicated whether (1) the record belonged to a single-establishment or a multiestablishment company, (2) if the latter, whether the master company or a component establishment was involved; and (3) which form letter(s) and/or other materials should be used.

The ESMPD generated correspondence files twice daily during questionnaire processing, and the NPC used the DocuPrint equipment to print the materials for the mailout packages. Through computerized printing, printed materials were sorted into three groups:

- Cases for immediate mailing were routed to the Correspondence Mailing Unit for assembly and mailout.
- Packages requiring annotation went to the subject-area problem solving units.
- Special cases were referred to the subject analysts for the industry.

**Package assembly and mailout operations.** Correspondence Mailout Unit clerks used correspondence category code lists to determine actions needed for each mailout package, then assembled and addressed the packages to those who had originated the correspondence. For example, for a package with a correspondence category code of 102 (time extension granted—accountants), the clerk typed the correspondent's address on the form letter and added the extension date granted to the first line of

the letter. Typically, the correspondence mailing packages contained one or more of the following items: (1) letter; (2) questionnaire(s) as needed; (3) miscellaneous brochures, listings, instructions, flyers, address sheets, or other enclosures; (4) return envelope; and (5) inventory list (showing the contents of multiestablishment mailing packages, if any).

Standard items for correspondence mailout were printed using NPC's DocuPrint equipment. Two computer-generated lists, a Correspondence Reference Listing and a Production Control Listing, were used for controlling each running of the correspondence printing program. The reference listing identified cases for referral to the appropriate problem-solving units for resolution or research. The control listing was used to manage the work and identify printer failures for manual correction.

### **Multiestablishment Completeness and Coverage Processing**

Following check-in, all multiestablishment company questionnaires were batched into work units by company employment size (based on prior year employment size from administrative records), and underwent completeness and coverage keying. Multiestablishment completeness and coverage processing verified coverage of all establishments within a firm, and that additions, mergers, sales of plants or companies and other critical company and establishment data were reported.

Accessing the SSEL file, which was password-protected, terminal operators took the following actions:

- Correcting company affiliation information, such as—
  - Revising address information.
  - Adding new or acquired establishments.
  - Moving establishment sold to the acquiring company.
  - Inserting codes to indicate closed or idle establishments.
  - Adding new multiestablishment companies and their establishments to the file. When a new company address was identified, the clerks updated the SSEL and the appropriate questionnaire package was remailed. If the clerks failed to find a new address, they referred the case to the coverage analysts for resolution.
- Researching undeliverable as addressed (UAA) cases for the latest address for remailing questionnaires.
- Correcting unusual employment or payroll data relationships (as compared to administrative record tax data).
- Correcting establishment reports of the company in which the company combined all the data in one report. (This meant splitting the combined data across the establishment reports based on prior year employment and payroll relationships.)

Problems identified during keying were typically resolved by contacting the company for additional information, or by using the SSEL interactive routines to process affiliation changes or to break out establishment data from combined reports.

Once processed through the completeness and coverage unit, the multiestablishment folders were routed to the Microfilming Unit.

### Microfilming the Questionnaires

The Microfilming Unit filmed all economic single- and multiestablishment questionnaires—except classification forms—just prior to data-entry keying. The equipment imprinted an eight-digit serial number on each questionnaire—the first four digits identified the microfilm reel and the last four the microfilm frame, for each form.

The questionnaires were held in the Microfilming Unit until the film had been processed and checked to assure it was of acceptable quality. Once the film was reviewed and approved, staff made copies of the reels and provided them for referral and research purposes, to analysts in Jeffersonville and to the subject divisions' staffs at headquarters. The Microfile Unit staff then forwarded the paper questionnaires to be rebatched for data keying.<sup>9</sup>

### Data Entry

**Data keying.** Data keying involved transcribing data from the economic census questionnaires to a machine-readable data file for edit and tabulation. The NPC data keying staff used a key-to-disk interactive system that combined basic clerical review of the questionnaires with the keying operation. Each work station had a keyboard and video monitor that enabled the keyer to display and edit keyed data, as well as displaying messages alerting the keyer to unacceptable entries, and corresponding corrective procedures. The systems used 19 programs (one for each of the principal NAICS sectors covered by the economic census). The programs assigned "screens" to specific sections of each type of questionnaire for use in entering data from individual forms. The first several screens were used for keying identification information, while the bulk were used for entering data from the questionnaires. The number of screens varied by trade area; for example, finance, insurance, and real estate questionnaires data keying required 63, while 29 were needed for keying data from the manufacturing questionnaires.

Questionnaires, grouped in batches of 35-50 (for long form manufacturing questionnaires), and 100 (for all other trade areas) were received from the Microfilming Unit.

<sup>9</sup>Economic census microfilm typically is retained at the Census Bureau's headquarters for a period of about 5 years (or until the next census is completed). Thereafter, each economic subject division's staff decides either to keep the microfilm in its own archive, or send it to the Federal Records Center in Suitland, MD, for permanent storage.

Classification forms were batched in quantities of 200. Each batch had a control sheet with the batch number (which included a prefix identifying the questionnaire type) and the number of questionnaires in the batch. The data entry programs were designed for straightforward data entry from the top down for each page and from front to back of the questionnaire. Each keyer began keying by entering the identification information—i.e., the CFN, form number, and the microfilm reel and frame number for the questionnaire—and address information from the address label area and leading sections of the questionnaire. Thereafter, the keyer entered the two-digit section identifier for each section, followed by the first three-digit item keycode<sup>10</sup>, and proceeded through the questionnaire, entering successive codes and data responses.

Keyers had instructions for handling common respondent errors, such as—

- **Illegible entries.** Illegible entries were referred to the keying supervisor, who, if able to interpret the response, entered it for the keyer. If an entry could not be resolved, it was marked "NIL" and the keyer continued keying remaining items on the questionnaire.
- **Bracketed entries.** Keyers entered the data for the first keycode, followed by an "&," then keyed an "&" for each additional keycode included in the bracket. When an entire item, with or without the total line, was bracketed, the response was entered on the "total" line for the item.
- **Altered stub description.** When respondents changed, added to, or crossed out a preprinted description of a data item, the keyer entered the keycode or line code and the corresponding data followed by a "dash" in the first data field containing an entry.
- **Range entries.** Keyers calculated the midpoint of the range reported and entered that number (rounding up to the next whole number in case of a fractional result).

As the keyers entered the data, the computer performed a series of edit checks to ensure that (1) the various codes keyed were valid, (2) entries were numeric, (3) all mandatory fields contained responses, and (4) the data

<sup>10</sup>Keycodes were three-digit numbers preprinted in the data cells of the questionnaires to identify that cell. The data system edits ensured that no keycode was keyed and accepted without corresponding data. Line codes—three-to-nine digit numbers preprinted to identify a row of data cells extending across two or more columns—were keyed, preceding the data for that line. Most items requiring multiple responses, such as merchandise and commodity lines, required this format. The only information from the questionnaires that did not usually require keycodes or line codes was questionnaire identification and coverage information; address changes and new locations; person-to-contact, and telephone number; and basic data for sales, receipts, revenues, employment, payroll; and kind-of-business codes.

were within acceptable ranges. The display screens notified keyers of specific problems detected by the computer edit and displayed suggested corrective action. After successful data entry, the completed batches of questionnaires were sent to the Holding Unit, where they were retained while the data records were processed through control file matching and computer editing.

Individual questionnaires could be rejected from processing for various reasons (i.e., invalid form number, invalid kind-of-business code, invalid or duplicate line codes or keycodes, etc.). Keyers pulled these questionnaires from their batches, placing them on top of each, and entered the number of rejects on the batch cover sheet.

**Quality assurance for data keying.** The Census Bureau carried out quality assurance checks of data keying to ensure that information from questionnaires was accurately recorded in the data file. This was done by selecting a systematic random sample of CFNs from each batch of questionnaires for verification.

The quality assurance staff rekeyed data from questionnaires for selected records from each batch and matched the original keyers' data sets with the verifiers' sets. Differences were displayed for evaluation. The procedures defined errors as either "keyer"<sup>11</sup> or "nonkeyer" errors. Keyer errors typically involved (1) miskeying that caused errors in the data fields, (2) field or document omission or (3) duplication, unnecessarily keyed fields, etc. Nonkeyer errors usually involved mechanical problems, or supervisor or verifier errors. All mistakes identified during the verification process were corrected and reverified before the data were released for computer processing.

**Output files.** Data entry transformed respondent information from a paper questionnaire into an electronic input file. Before these input files could be processed, they needed accurate translation into an output file of variable length records. The input record structure reserved space for every possible input field; the output record structure permitted only fields or repeating groups that contained data.

Using variable length records required moving the input data exactly into sections or fields specified while eliminating the filler required to make all records the same length. A single output record consisted of 11 sections; a "section 1" was always present and contained indicators that described the other 10 sections. Sections 2-4 contained address change, contact and telephone, and

<sup>11</sup>Each keyer in the Data Entry staff underwent a three-stage progression from "training" status keyer, to "prequalification," and finally to "qualified" (Q) status. Keyers had to limit their error rate to 1.5 percent to become qualified and thereafter had to maintain a "reject" rate—the number of errors that would cause a record to require rekeying—of less than three per week to remain in qualified status.

"splitter" information<sup>12</sup>, while sections 5-11 contained the keycodes and data for specific responses. The "repeating group length" in each section contained the applicable keycodes with a specified number of characters for the data. The repeating group could occur a variable number of times, depending on the section and the type of response. The section indicators were used to determine each section's length within the record, while the sum of the sections' lengths determined the length of the full record.

Once reformatted for output, the data files were ready for control file matching.

### Control File Match

**Matching.** After data entry, the data records for the census questionnaires were matched to the SSEL control file. For each company, the control file contained (1) administrative record data, (2) historical census data, and (3) the geocoded census address reference file containing the state, county, place, and census tract numerical codes for each establishment. The Census Bureau carried out the control file match on a flow basis, as the data from batches of questionnaires were entered into the census data file. In this way, the subject division staff could carry out edits as the data for their respective trade areas were keyed.

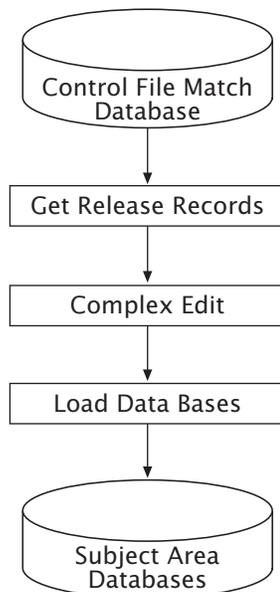
The control file match compared the CFNs of freshly keyed records to the SSEL file, then compared the identification and address information in each file to the SSEL file, as follows:

- Identified company structure and affiliation referrals for review.
- Identified duplicate establishment records and potential new establishments for review.
- Identified address changes for use in geocoding for data processing and tabulation.
- Compiled data from the questionnaires and the SSEL into a single file for analysis.

After the SSEL update was completed, the records were transmitted to the subject divisions for complex data editing. Staff also identified problems in addition to those listed above—e.g., blank records, records that included

<sup>12</sup>A "splitter" was a firm that formerly operated at a single location, under one employer EIN, but opened operations at more locations under the same EIN. Splitter information was the detail the respondent gave the Census Bureau about the new locations, such as name and address, kind-of-business description, receipts, annual payroll, and number of employees. As the splitter was processed, the firm was redesignated a multiestablishment company with multiple locations. A single-establishment company did not become a splitter if it simply acquired another business operating under its own EIN; it did so only if it had activities at more than one location.

Figure 8-1  
**Post-collection Processing:  
 Micro Analytic Processing**



## DECENTRALIZED POST-COLLECTION PROCESSING

### General Information

Post-collection processing consisted of editing, tabulating, and analyzing of the 1997 Economic Census data. This followed the control file match and encompassed all the activities required to prepare the data for publication. Unlike collection activities, which were centralized, post-collection activities were decentralized—each subject area was processed independently.<sup>13</sup> Analysts from the subject divisions (Manufacturing and Construction [MCD], Service Sector Statistics Division [SSSD], and Company Statistics Division [CSD]), with assistance from analytical and clerical staff at the NPC, carried out the work in two phases—micro edit referral and macro analysis. Micro edit referral involved editing and cleaning data at the establishment level—that is, the micro level through complex editing, as well as reject and referral processing. Macro analysis took place during review of tabulated data before publication.

### Micro Edit Referral Processing

**Background information.** Subject analysts within the respective areas of the Economic Directorate conducted micro edit referral processing—the major steps of which are described below and illustrated in Figure 8-1. Before editing began, “good” records from the control file match were acquired. These were establishment records that had passed computer checks for organizational structure, coverage, and completeness.

**Complex editing.** As subject areas received records, they ran processes that edited the data. In the complex editing phase of processing, the Census Bureau used a series of computer programs to subject establishment records to a series of edit modules that had two major purposes—assigning valid kind-of-business or industry codes and evaluating respondent data for consistency and reasonableness.

Assigning a valid kind-of-business or industry classification code depended on computer evaluation of the responses to specific items on the census questionnaires. Examples of such items would be merchandise lines sold by a retail establishment, products manufactured by a plant, entries written in by the respondent explaining the establishment’s activities, and self-designated check-box classifications. If all critical information was available, the edit module assigned the correct classification code. If any

out-of-scope activities—that required correction before a record could be released for further processing, and routed these records for control file match referral.

**Control file match referrals.** Data records that failed the control file match were withdrawn from the data file for their batch. The computer generated a referral listing that identified the record and the problem. Clerks handled referrals for missing data or a blank record either by re-mailing questionnaires, by telephoning the company, or by inserting data derived from other information on the questionnaire. Records with other kinds of industry-related problems were referred for review by analysts in the trade area problem-solving units.

Poorly keyed records, or those with too many corrections or changes required, were recycled. The original microfilm reel and frame numbers were taped over and the questionnaire was sent back, re-microfilmed in a separate recycle batch, and rebatched for data keying.

Questionnaires that belonged in a different trade area batch were referred after the “sending” area analyst entered a “bridge” code to identify the record. In the “receiving” area, the analyst working on the record assigned a correct new code, and the questionnaire was checked in again using a laser wand. These wand actions were processed against the corresponding held records, and the records were released to the appropriate subject division. Cases requiring that the respondent be contacted were sent to the Correspondence Unit for resolution.

<sup>13</sup>For the 1992 Economic Census, each of the subject areas had developed specifications for classification. There were 12 altogether (3 for Manufacturing, 2 for Mineral Industries, 1 for Construction, 5 for Services, and 1 for the Outlying Areas), each area of which had required about 100 pages of specifications. The Generalized KB/Industrial Code edit for the 1997 census reduced the required specialized material to an average of just 3 pages per area.

of this information was missing, the edit module “flagged” the record as a “reject,” and referred it for correction before allowing further processing.

For the 1997 Economic Census, the computer also assigned a “bridge” code that enabled the Census Bureau to tabulate the record on both the old SIC basis and the new NAICS.<sup>14</sup> After classification codes were assigned, the computer edit program verified each record to validate the kind-of-business, industry, geographic, and ZIP Codes.

The complex edit also evaluated response data for reasonableness and consistency. Computer routines checked that employment data reported on the questionnaires were consistent with payroll or sales/receipts data, as well as response data from prior censuses. For the 1997 census, the Census Bureau introduced the use of “generalized” edit modules for these checks. The modules balanced items and conducted ratio checks:<sup>15</sup>

- A balancing module allowed for comparing detail items to totals and nested tests of subtotals to broader levels, and for two-dimensional tests to compare additive rows to corresponding column information.
- The ratio module compared data for individual establishments—using items from the questionnaires, administrative sources, or historically reported information—to industry parameters derived from data correlations in past censuses or through administrative sources. Imputation options were used to estimate non-critical missing data or to replace extreme outlier data.

Subject division staff particularized these complex edit modules to account for industry differences.

**Subject area databases.** After the establishment records underwent complex editing, computer programs loaded them into the appropriate subject-area micro databases, shown in Figure 8-1. Each of these databases contained responses from establishment questionnaires. The databases also contained the edited data and flags (see below), administrative data from the SSEL, questionnaire write-ins, and historic 1992 census data (if available) for each establishment.

**Reject and referral processing.** The complex edit identified, and flagged for referral, establishment records that had responses or other characteristics outside specified tolerances. The edit also rejected records with (1)

critical data missing, (2) obvious errors in classification, or (3) other significant problems that could not be corrected within the parameters of the edit or imputation routines.

Such establishments were handled with either of two procedures—post-edit correspondence or manual problem resolution:

- For post-edit correspondence, the Census Bureau mailed tailored requests to respondents to ask for additional information about the data. For example, respondents reporting broad product lines were mailed letters requesting the detailed product lines.
- Cases referred for manual resolution went to subject analysts or to clerks. These cases typically involved respondent write-in entries for kind-of-business descriptions, merchandise lines, or products. Clerks coded write-ins to the appropriate bridge code, type of operation/construction, or product code.

Both analysts and clerks used video-display terminals to review the rejects and referrals and followed guidelines and procedures for evaluating and correcting problems. The interactive editing systems permitted them to correct errors and reedit the data as required.

## Macro Analytical Processing

**Background information.** The objective of macro analytical processing was both to tabulate data and to review those tabulations to prepare them for data publication. These activities began at the end of the data collection cycle.

Macro analysis (Figure 8-2.) began with the tabulation of establishment records housed in the subject area databases. Micro records were first tabulated as part of the main publication series for the census. Then, they were tabulated a second time for the cross-sector publications that showcase the introduction of NAICS.

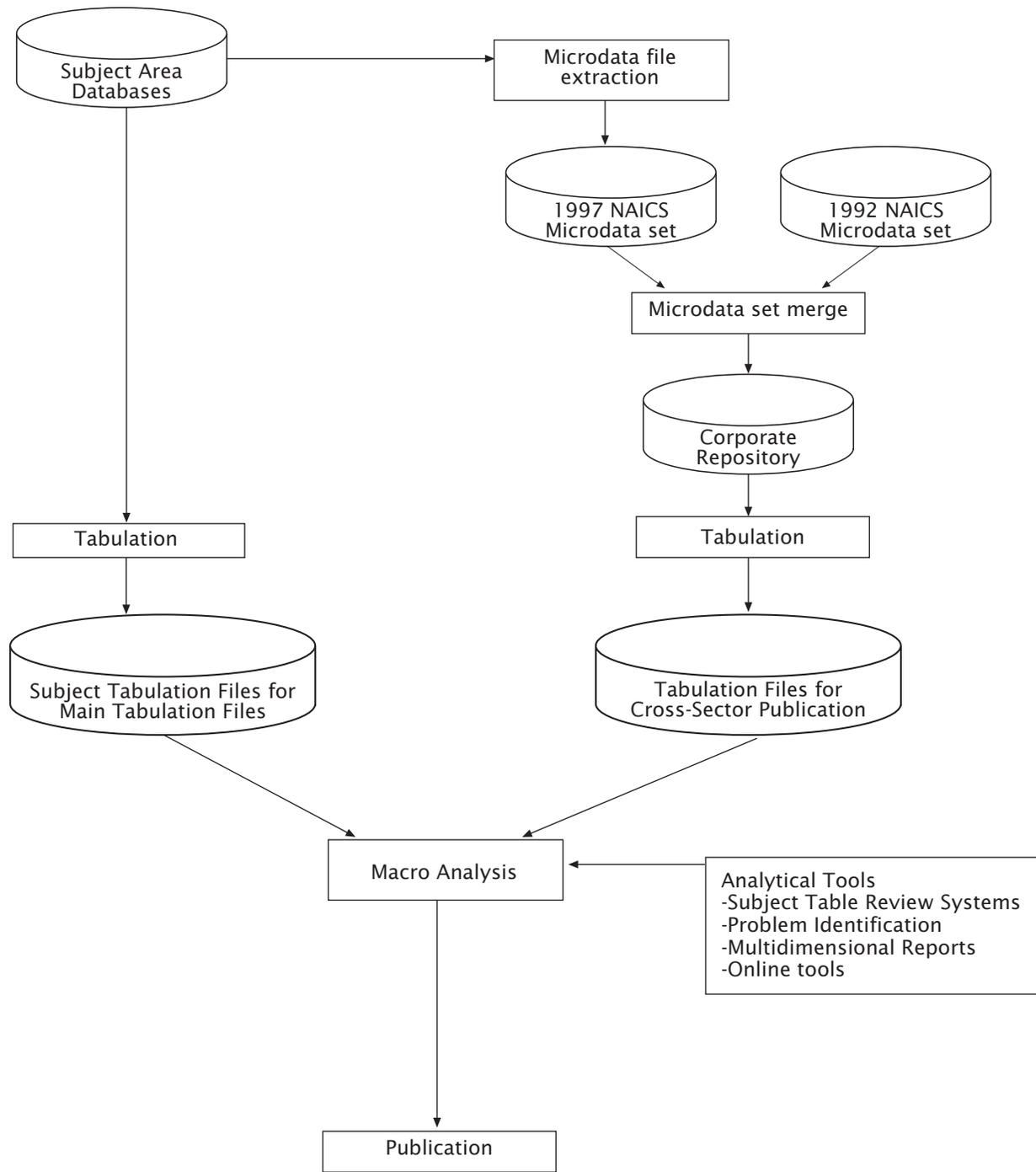
**Data tabulation.** “Tabable” establishment records were those that passed the complex edits and were not rejected or flagged for referral. The object of the reject and referral processing was to resolve problems so that the establishment record would be tabable. It was not unusual, given the scope of this activity, for many establishment records to remain unfinished at the time macro analysis began. Therefore, at the macro analysis stage, corrections were made only for the establishment records that were the most problematic. After the collection cycle was completed the data frequently were retabulated to incorporate corrections to micro records made during the macro review stage.

**Subject tabulation files for main publication series.** After tabulation, the totals were loaded into computer files, which analysts accessed via macro analytical tools. The Census Bureau tabulated the micro establishment records many different ways—based on data product and

<sup>14</sup>The Census Bureau assigned two extra digits to the classification code for each part of the 1987 SIC that had been reclassified to a different NAICS sector or industry. This allowed previous census data, collected and tabulated using the SIC, to be compared with the 1997 census tabulations using NAICS.

<sup>15</sup>See Richard S. Sigman, “Development of a ‘Plain Vanilla’ System for Editing Economic Census Data,” a working paper presented at the October 1997 United Nations Work Session on Statistical Data Editing.

Figure 8-2  
**Post-collection Processing:  
 Macro Analytic Processing**



analytical needs. Each subject area had its own set of tabulation files for its industries. For example, subject tabulation files included summed data by industry, geographic area, firm size, products produced, materials used, and merchandise lines sold.

**Corporate repository.** Since each subject area had its own tabulation files, the Census Bureau introduced the use of a corporate repository to allow sharing of summary data across the areas. Each week, the establishment micro

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records were fed from the subject databases into a corporate repository. This allowed analysts in manufacturing, for example, to have access to view data for establishments in retail industries.

In feeding records from subject areas to the repository, only a subset of data items were compiled for each establishment—e.g., sales/receipts/value of shipments, payroll, employment, operating expenses, and wholesale inventories. The resulting file was called the “1997 NAICS microdata set.” Once this dataset was created, it was combined with the 1992 micro dataset that contained all tabable records from the 1992 Economic Census. The resulting current and historic dataset enabled the Census Bureau to create special cross-sector tabulations and reports that allowed analysts to compare 1997 and 1992 data on a NAICS, as well as on the old SIC basis. The corporate repository was a SAS dataset.

### Analytical Tools

The subject divisions prepared detailed analytical review guidelines to instruct analysts on what to look for and on how to use the available tools. Typical review points covered analyzing large differences; assessing changes to the tabulation cell composition due to organizational changes (establishments bought, sold, or new); nonresponse; and errors in historic 1992 data. Analysts documented their findings for tabulated cells confirmed to be correct. The basic analytical systems used were as follows—

- **Subject table review systems.** As with micro edit referral processing, macro analysis had specially designed interactive systems that permitted analysts to view the subject tabulations in table formats. Analysts for each of the subject matter areas used interactive table review systems to analyze tabulated cells on a NAICS basis. As analysts corrected micro data through the establishment review and correction system, they used the table review systems to determine the overall effect of these corrections on the data.

These review systems also were critical to the disclosure analysis process. Disclosure analysis preserves the confidentiality of reported information so that no individual firm’s operations or identity could be inferred from the published data. To identify possible disclosures, the Census Bureau established consistent rules for application across subject areas. Often when the tabulations resulted in disclosure, it was necessary to suppress not only the primary (originally) disclosed cell, but additional cells so that the original disclosure could not be obtained through subtraction. Suppressing these secondary tabulated cells is called complementary disclosure analysis, and analysts used the table review systems to review and interactively set the complementary suppression symbols.

- **Problem identification tools.** To review thousands of tabulated data cells, analysts needed mechanisms to help pinpoint specific problem cells. There were two main methods of identifying cells whose data appeared questionable—reconciliation and outlier detection. For reconciliation, analysts compared cell totals to non-census data drawn from the Census Bureau’s current programs as well as from other government statistical agencies. For outlier detection, for the 1997 census, analysts used a new automated graphical data review technique. A SAS product called “SAS Insight” enabled analysts to identify suspicious cells by providing visual displays showing cells outside the normal distributions. The graphical analysis was used to identify extreme cell changes for historic (e.g., historic census employment compared to current census employment) as well as current (e.g., current census annual payroll compared to current census employment) ratios. Subject matter area analysts also used manual techniques to identify cell outliers. Generally, analysts used predetermined values for their historic and current ratios. For example, since the manufacturing sector had prior year comparison points with the Annual Survey of Manufactures, analysts searched “census to prior year” totals exceeding five percent for basic statistics items and 10 percent for products.

- **Online tools.** The principal online technique used by analysts in their work with the tabulated cells and micro establishment records was the capability to search the computerized data files. Analysts developed “canned searches”—i.e., programmed searches that could be executed interactively for typical inquiries about the data. The canned searches selected records based on specified size codes, but also could be modified for unexpected situations that surfaced during data review.

Specially designed computer interfaces enabled analysts to do special ad hoc tabulations. For example, using the corporate repository, analysts could select and tabulate establishment records associated with specific companies—even if those establishments crossed subject areas. The analysts also could use the subject micro databases to select and tabulate records by classification code (SIC, NAICS, or bridge), geography, and type of operation in formats that varied from those specified for the publication tables.

- **Multidimensional reports.** Analysts used “multidimensional reports” with the corporate repository to evaluate the new NAICS classification system. The reports showed SIC industries based on their NAICS components and, vice versa, as well as providing analysts with comparative SIC data showing the basic data from 1997 to 1992 at the broader levels.

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# The 1997 Economic Census in the Outlying Areas

## INTRODUCTION

The Census Bureau carried out the 1997 Economic Census in the Outlying Areas under the provisions of Title 13, United States Code, Section 191. This required that the quinquennial economic census cover the Virgin Islands of the United States, Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and the Commonwealth of Puerto Rico. Although there were similarities in the census in these areas, there were sufficient differences in the planning, preparations, and data collection activities for each area to warrant a separate discussion. The Census Bureau's Company Statistics Division (CSD)<sup>1</sup> was responsible for the planning, management, and coordination of the census in the Outlying Areas. Data-processing activities took place at the three locations: the Census Bureau's National Processing Center (NPC) office in Jeffersonville, IN<sup>2</sup>, at Census Bureau headquarters in Suitland, MD, and in each outlying area.

While the 1997 Economic Census for the 50 states was conducted by applying the new North American Industry Classification System (NAICS), the governments of Puerto Rico, Guam, the Virgin Islands, and the CMNI requested and received a postponement of the implementation of the new system until the 2002 Economic Census. The Census Bureau and the respective governments agreed to this measure to ease the impact on local surveys and national accounts of the change to the new classification system. Adopting NAICS in the 2002 census would allow time for the local agencies in the Outlying Areas to consider new approaches to their own surveys and to convert them to NAICS. Therefore, the 1997 Economic Census questionnaires for all the Outlying Areas continued to use the Standard Industrial Classification (SIC) code for data collection.

## COMPANY ORGANIZATION SURVEY

The Company Organization Survey (COS) was conducted in the Outlying Areas to update the Standard Statistical Establishment List (SSEL). The SSEL served as the principal source of business establishment addresses for the economic census mailing list. The last COS prior to the 1997 census was carried out in December 1996.

<sup>1</sup>CSD acquired its name in June 1998, see Chapter 2, "The Players and the Plans" for the history of how CSD was formed.

<sup>2</sup>Until May 1, 1998, the Jeffersonville office was called Data Preparation Division (DPD).

The Census Bureau mailed form NC-9901, "Report of Organization," questionnaires to multiestablishment companies in the Outlying Areas. In Puerto Rico the COS included all multiestablishment companies with 50 or more employees, as well as a sample of those with 50 or fewer employees. The survey covered all multiestablishment companies in Guam, the Virgin Islands, and the Commonwealth of the Northern Mariana Islands.

## PUERTO RICO

### General Information

The Census Bureau and the Puerto Rico Planning Board signed the Memorandum of Agreement to conduct the 1997 Economic Census by mail in Puerto Rico on October 30, 1997. The agreement stipulated that the Census Bureau design and translate the questionnaires into Spanish, plan and conduct the mail and follow-up activities, process and tabulate the data, and prepare the census publications. The Puerto Rico Planning Board was responsible for making questionnaire content recommendations. In addition, the Board accepted responsibility for publicizing the census through newspapers, television, and radio, and for designating February 1998 as "Economic Census Month."

### Preparatory Work

**Printing questionnaires.** The Forms and Mail Management Branch of the Census Bureau's Administrative and Customer Services Division (ACSD) designed questionnaires and letters for the census. The Census Bureau printed draft versions of the multiestablishment questionnaires using the DocuPrint 4890 Highlight Laser Printing System<sup>3</sup> at Census Bureau headquarters. Once reviewed and approved for production, drafts of the multiestablishment questionnaires were electronically transferred to the DocuPrint database at NPC for production printing. At this point, NPC printed the English version of the multiestablishment company questionnaire, OA-9820, and the instruction sheet, OA-9820(I).

For single-establishment companies, the Census Bureau contracted with a private printer on September 27, 1997. The private printer produced the Spanish and English questionnaires and instruction sheet (OA-9819(I)), cover

<sup>3</sup>The Docuprint 4890 system is described in Chapter 7, "Preparations for Census Mailing."

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letters (EC-PR-L1 and EC-PRL1(MU<sup>4</sup>)), follow-up letters for single-establishment companies (EC-PR-L11, EC-PR-L21, ECPR-T13<sup>5</sup>, and EC-PR-L31), and envelopes for the Outlying Areas.

**Scope and coverage.** The 1997 Economic Census in Puerto Rico covered construction industries; manufacturing; wholesale trade; retail trade; selected service industries; and hotel, motel, and lodging industries. The questionnaire for Puerto Rico business establishments asked for basic information, as follows:

- Employer identification number corrections.
- Operational status (months of active operation during 1997, in operation, temporarily or seasonally inactive, ceased operation, sold or leased to another operator, name and address of other operator).
- Legal form of organization (i.e., individual proprietorship, partnership, cooperative association, public or private corporation, government, other).
- Dollar volume of business.
- Payroll.
- Principal type of business activity (i.e., wholesale; retail; services; hotels, motels, and other lodging places; manufactures; and construction).

Wholesale establishments were asked to provide the following additional information—

- Type of operation (merchant, sales branch, broker).
- Employment by principal activity (selling, support, administrative, manufacturing).
- Class of customer (builders, exporters, households, etc.).
- Operating expenses.
- Inventories.
- Storage space.
- Commodity sales.

Retail establishments were asked to provide the following additional information unique to retailing—

- Under-roof floor space.
- Franchise holders.
- Shopping Center.
- Class of customers.

- Merchandise sales.
  - Service establishments, in turn, also were asked for —
- Merchandise sales.
- Shopping Center.
  - Hotels, Motels, and Other Lodging Places were asked to provide—
- Source of receipts (rooms, meals, packaged liquor, merchandise, etc.).
- Number and type of accommodations.
  - Manufacturing establishments were asked to provide—
- Shipments and other receipts.
- Employment and hours worked by quarter.
- Selected costs (electricity, fuels, materials, contract work, etc.).
- Inventories.
- Capital expenditures.
- Value of products made and contract work performed by customer location.
  - Construction establishments were asked to provide—
- Type of construction/activity.
- Dollar value of business (new, maintenance, development, etc.).
- Employment and hours worked, quarterly.
- Construction work subcontracted out.
- Selected costs (electricity, fuels, communication, repairs, materials, etc.).
- Work for other contractors or builders.
- Ownership of construction projects.
- Assets, capital expenditures, and depreciation.

### Data Collection

**The mail enumeration.** The 1997 Economic Census in Puerto Rico was primarily a mailout operation conducted in concert with the census mailing for the 50 states. The Census Bureau did not open an economic census field office, or train a temporary staff to enumerate and conduct follow-up visits to nonrespondent establishments. Instead, the NPC and the Census Bureau's Tucson, AZ, Telephone Operations Center conducted a telephone follow-up operation of nonrespondents. At the request of the Economic Directorate, two establishments that were deemed essential to the accuracy of the census received a follow-up visit from a staff member assigned to the Census Bureau's Census 2000 office in San Juan.

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<sup>4</sup>Multiestablishment companies.  
<sup>5</sup>EC-PR-T13 (Title 13, U.S. Code) stated the legal authorization for the Census Bureau to conduct the economic census in Puerto Rico.

Mailout packages consisted of the appropriate questionnaire or questionnaires, cover letter, instruction sheet, and a return envelope. These packages were printed and assembled by the aforementioned private contractor, and were delivered to the NPC in Jeffersonville during the last 2 weeks of November 1997. The aforementioned DocuPrint system was used for the multiestablishment company mailout.<sup>6</sup>

The initial mailout consisted of 26,112 single-establishment and 4,959 multiestablishment packages. Mailout to both single- and multiestablishment companies was completed by the second week of December 1997. Recipients were asked to return their completed questionnaires to the NPC by February 12, 1998.

**Mail follow-up.** Following the initial mailout, nonrespondent single-establishment companies were mailed follow-up letters on a flow basis:

- 19,663 form EC-PR-L11, mailed February 24, 1998 to March 6, 1998.
- 16,186 form EC-PR-L21 (with EC-PR-T13 attached), mailed March 31, 1998 to April 9, 1998.
- 12,617 form EC-PR-L31 (with EC-PR-T13 attached), mailed May 7, 1998 to May 18, 1998.

Multiestablishment companies in the 50 states and Puerto Rico were mailed the same follow-up letters. These mailouts began in February 1998, and were completed in June 1998.

**Telephone follow-up.** The telephone follow-up targeted nonrespondent establishments with the intention of completing a census questionnaire by phone. Staffs at the NPC and in Tucson, AZ, called approximately 10,000 delinquent establishments.

If the information necessary to complete the questionnaire by phone was unavailable, the interviewer scheduled a call-back to complete enumerating the establishment. If this was not workable, extensions for response in 2-week increments were granted.

If neither follow-up mailings nor phone inquiries elicited a response, the Census Bureau determined whether a personal enumeration would be required. This decision was based on the size of the company (payroll and employees) and the effect that the loss of the company's data would have on accuracy of the economic census.

## THE VIRGIN ISLANDS OF THE UNITED STATES

### General Information

After consultation with the Census Bureau, the Virgin Islands' Department of Labor signed a Memorandum of Agreement to conduct the 1997 Economic Census on

<sup>6</sup>See Chapter 7, "Preparations for Census Mailout," for a more detailed discussion.

November 21, 1997. This agreement would remain in effect until the completion of the 1997 Economic Census or until termination by mutual agreement.

The Census Bureau was responsible for designing and preparing the census questionnaires and for processing, tabulating, and publishing the data.

### Preparatory Work

**Printing questionnaires.** As with the conduct of the census in Puerto Rico, the Census Bureau used the DocuPrint systems at the NPC to print the questionnaires, cover letters, and follow-up letters for multiestablishment companies in the Virgin Islands. A private contractor, whose contract was awarded on September 23, 1997, printed and assembled the questionnaires and other mailout materials for single-establishment companies, and delivered the packages to the NPC in November 1997.

**Scope and coverage.** The 1997 census covered establishments in construction and manufacturing industries, as well as in retail trade, wholesale trade, and selected service industries. Addresses for employer businesses in the Virgin Islands were obtained from the SSEL.

Business establishments located on these islands were asked to provide—

- Physical location.
- Employer identification number.
- Operational status (in operation, temporarily or seasonally inactive).
- Legal form of organization (individual proprietorship, partnership, corporation, government, other).
- Dollar volume of business.
- 1997 payroll before deductions.
- Employment in 1997.
- Kind of business or activity.
- Class of customer.
- Sources of sales or receipts.
- Purchases from other businesses.
- Sources of receipts for hotels, motels, and other lodging places.
- Number and type of accommodations.
- Ownership, control, and locations of operation.

### Data Collection

**Mail enumeration.** As was the case for Puerto Rico, the census mailout for the Virgin Islands was carried out simultaneously with the initial economic census mailing for the 50 states. During the second half of December

1997, 332 multiestablishment company and 1,652 single-establishment company economic census packages were mailed by the NPC. These packages included a cover letter, questionnaire OA-9873, and instruction sheet OA-9853(I). Response was requested by February 12, 1998.

**Mail and telephone follow-up.** After the initial mailout, nonrespondent single- and multiestablishment companies were mailed follow-up letters on a flow basis. Table 9.1 shows the dates and counts of the follow-up mailing.

Table 9-1.  
**Follow-Up Mailings for the Virgin Islands of the United States**

Letter	Date of mailout	Total
EC-VI-L11 .....	02/24/98 to 03/06/98	940
EC-VI-L21 .....	03/31/98 to 04/09/98	866
EC-VI-L31 .....	05/07/98 to 05/18/98	353

After February 12, 1998, telephone operators in Jeffersonville, IN, called approximately 500 delinquent establishments to complete the questionnaires by phone. Personal visits to nonrespondent establishments were not required in the Virgin Islands.

## **GUAM AND THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (CNMI)**

### **General Information**

The Census Bureau and the Guam Department of Commerce signed a Memorandum of Agreement for the 1997 Economic Census on October 10, 1997. The Census Bureau and the Central Statistics Division, CNMI, signed a Memorandum of Agreement on October 19, 1997.

The Census Bureau provided \$16,000 to the government of Guam and \$15,000 to the government of the CNMI to conduct the census in their respective areas.<sup>7</sup> A portion of this funding was earmarked for the training and salaries of locally hired individuals who performed telephone follow-up interviews, and in some instances, personal visits to nonrespondent establishments. If expenditures exceeded the amount agreed upon in the Memoranda of Agreement, the expenditure was renegotiated. In addition to funding, the Census Bureau also was responsible for (1) designing and preparing the questionnaires, (2) conducting the initial mailout, and (3) follow-up of nonrespondents, processing, tabulating, and publishing the data. The governments of Guam and the CNMI were responsible for recruiting, hiring, and training staff members, conducting telephone follow-ups, and publicizing the census.

<sup>7</sup>Prior to the 1997 census, data were collected from establishments in Guam and the Northern Mariana Islands by personal interviews. The 1997 census was primarily conducted by mail.

### **Preparatory Work**

**Printing questionnaires.** The Census Bureau used the DocuPrint systems in Jeffersonville, IN, to print the form OA-9863 questionnaires (Guam), the form OA-9883 questionnaires (CNMI), cover letters, instructions (OA-9853(I)), and follow-up letters for multiestablishment businesses. The following questionnaires and accompanying materials for single-establishment companies were printed by contract printers:

- For Guam, EC-GU-L1, EC-GU-L11, EC-GU-L21, EC-GU-L31.
- For the CNMI, EC-NM-L1, EC-NM-L11, EC-NM-L21, and EC-NM-L31.

The contractor delivered the assembled single-establishment company packages to the NPC at the end of November 1997.

**Scope and coverage.** The 1997 Economic Census in Guam and the CNMI covered construction and manufacturing industries, retail trade, wholesale trade, and service industries. Addresses of employer businesses and industries in Guam and in the CNMI were obtained from the SSEL.

Questionnaires OA-9863 (Guam) and OA-9883 (CNMI) collected information on the following:

- Location of establishment.
- Employer identification number.
- Operational status (in operation, temporarily or seasonally inactive, ceased operation, sold or leased to another operator).
- Legal form of organization (individual proprietorship, partnership, corporation, government).
- Dollar volume of business.
- Payroll before deductions in 1997.
- Employment in 1997.
- Kind of business or activity.
- Class of customer.
- Sources of sales or receipts.
- Ownership, control, and locations of operation.

Businesses in the CNMI were asked the following questions that did not appear on the questionnaires mailed to establishments in Guam:

- Citizenship status (U.S.-Commonwealth of the Northern Mariana Islands born, U.S. Other, Japan, Philippines, Korea, Other).
- Class of business.

Businesses in Guam were asked the following questions that did not appear on the questionnaire mailed to establishments in the CNMI:

- Purchases from other businesses.
- Sources of receipts for hotels, motels, and accommodations.

### Data Collection

**Mail enumeration.** Census participants received a cover letter, the appropriate questionnaire or questionnaires, instruction sheet, and a postage-paid return envelope. Mailout of the questionnaires to single- and multiestablishment companies was completed by the second half of December 1997 (see Table 9-2).

Table 9-2.  
**Initial Mailout in Guam and the Commonwealth of the Northern Mariana Islands**

Geographic area	Multi-establishment companies	Single-establishment companies
Guam .....	292	2,276
Commonwealth of the Northern Mariana Islands .....	178	908

**Mail and telephone follow-up.** After the initial mailout, single- and multiestablishment companies in Guam and the CNMI were mailed follow-up letters on a flow basis between February and May 1998 (see Table 9-3).

Table 9-3.  
**Mailout Follow-Up Guam and the Commonwealth of the Northern Mariana Islands**

Geographic area	Letter	Date of mailout	Total
Guam .....	EC-GU-L11	02/24/98 to 03/06/98	1,412
	EC-GU-L21	03/31/98 to 04/09/98	1,255
	EC-GU-L31	05/07/98 to 05/18/98	692
Commonwealth of the Northern Mariana Islands ..	EC-NM-L11	02/24/98 to 03/06/98	561
	EC-NM-L21	03/031/98 to 04/09/98	505
	EC-NM-L31	05/07/98 to 05/18/98	322

The Census Bureau contracted with the local governments of Guam and the CNMI to conduct telephone follow-ups. Local government employees attempted to complete a questionnaire through a phone interview for approximately 500 nonrespondent establishments in Guam and 300 nonrespondent establishments in the CNMI. Although telephone follow-ups were successful in completing questionnaires for the majority of nonrespondent establishments, a very limited number of personal follow-up visits were conducted by employees of the respective local governments.

## DATA PROCESSING FOR OUTLYING AREAS QUESTIONNAIRES

### Receipt and Check-in

Mail receipts from single-establishment companies were checked in using optical laser scanning equipment that identified each case by the bar code on the mailing label. Multiestablishment company mail receipts were opened and the individual questionnaires placed in company folders, then checked in using hand-held laser wand readers.

Questionnaires from the Outlying Areas were checked in at the NPC. The CNMI questionnaires were separated out at the NPC and returned to the local government office in Saipan, CNMI for data keying.

Questionnaires completed by phone interviews were checked in using assigned identification numbers that were keyed directly into the database. Clerks then opened all questionnaire packages (except “Undeliverable as Addressed” [UAA] cases) and sorted them into the following categories:

- Single-establishment company receipts.
- “2 + packages” (envelopes containing two or more single-establishment company questionnaires).
- Multiestablishment company receipts.
- Correspondence (unattached and attached).

Two bilingual NPC staff interpreted questionnaires from Puerto Rico. After all review work was completed, questionnaires were released for batching, microfilming, and data keying.

### Data Entry

Questionnaires returned by respondents from Puerto Rico were batched for data entry at the NPC. The CNMI questionnaires were keyed at the census field office in Saipan, CNMI. The resulting electronic data file and original questionnaires from CNMI establishments were sent to Census Bureau headquarters for editing and tabulation. Questionnaires from Guam and the Virgin Islands were keyed at Census Bureau headquarters.

### Editing and Tabulation

Economic census data for Puerto Rico were processed using a generalized edit system developed for processing data from stateside establishments within the services sector. (This is described in Chapter 8, “Data Collection and Processing.”) The system consisted of a series of generalized edit modules that could be used individually or in combination for editing data, and also could be customized for more efficient editing of data for specific subject areas. Subject division staffs wrote specifications for the complex generalized edits and tabulations. The Economic

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Statistical Methods and Programming Division (ESMPD) ran production activities on their computer platforms, and staff in the Economic Census Branch of CSD resolved edit problems.

The editing process assigned valid kind-of-business codes to the individual data records, and evaluated the responses contained in the data records for consistency and reasonableness. The Census Bureau's staff applied a version of the generalized kind-of-business/industry code edit. This edit, customized for the Outlying Areas, checked and/or corrected the kind-of-business codes in the individual establishment records. If a relationship was discovered to be outside specified limits, the item was "flagged" by the computer for adjustment or review by subject analysts.

Data from Guam, the Virgin Islands, and the CNMI were edited and tabulated using the Integrated Microcomputer Processing System (IMPS) at Census Bureau headquarters. Although the IMPS tabulated and edited data following the same principles as those used for Puerto Rico, the processing system was more flexible, adjusting for the relatively small number of Outlying Areas questionnaires.

Once editing was complete, the data were ready for tabulation. After subject specialists reviewed the files to ensure respondent confidentiality had been maintained (making it impossible for an establishment to be identified by the data), the statistical tabulations were ready for publication.

## PUBLICATIONS

Publications for the 1997 Economic Census in the Outlying Areas contained data on construction, manufacturing, retail trade, wholesale trade, and service establishments. Data for the Outlying Areas were published in both printed and electronic formats.

Economic data for Puerto Rico were published in four reports:

- *Geographic Area Statistics* (OA97E-1).
- *Subject Statistics* (OA97E-2).
- *Construction* (OA97E-3).
- *Manufacturing* (OA97E-4).

Economic data for the Virgin Islands, Guam, and the CNMI were published in individual printed reports (OA97E-5, OA97E-6, OA97E-7, respectively). The reports presented data by kind-of-business for construction industries, manufacturing, retail trade, wholesale trade, and service industries.

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# Transportation Surveys

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## INTRODUCTION

This chapter presents information on two survey programs conducted during the 1997 Economic Census: (1) the 1997 Vehicle Inventory and Use Survey (VIUS) and (2) the 1997 Commodity Flow Survey (CFS). Title 13, United States Code, Sections 193 and 195, authorizes the Secretary of Commerce to direct the U.S. Census Bureau to collect economic data such as those gathered by the VIUS and CFS. These surveys produced essential transportation data that were not available from other sources.

## 1997 VEHICLE INVENTORY AND USE SURVEY

### Precursor to the Vehicle Inventory and Use Survey (VIUS)

Prior to the 1963 Census of Transportation, little was known about the Nation's trucking fleet. To fill this void, the Census Bureau established the Truck Inventory and Use Survey (TIUS) as part of the quinquennial economic census. The TIUS collected detailed information from a sample of trucks and truck-tractors selected from state motor vehicle registration records for private and commercial vehicles.

Following the 1992 TIUS, the Census Bureau offered public and private data users a chance to recommend new items and changes to the survey. As a result, the Census Bureau made the following changes to the questionnaire:

- Respondents were asked to report air bags.
- The "Other" category was deleted from the list of responses for the vehicle acquisition and disposal items.
- A supplementary sample of approximately 3,000 trucks was selected for the entire U.S., a sample that constituted approximately 1.5 percent of all registered trucks.

### Scope and Content of the 1997 VIUS

**Scope.** In 1997, the Truck Inventory and Use Survey (TIUS) was renamed the Vehicle Inventory and Use Survey (VIUS) to reflect an expanded survey scope. The 1997 VIUS collected data on the physical and operational characteristics of the Nation's trucking fleet, based on a stratified random sample of private and commercial trucks registered (or licensed) in each state and in the District of Columbia in 1997.

While the survey sampled private and commercial trucks, it excluded vehicles owned by Federal, state, and local government agencies, as well as ambulances, buses,

and motor homes. It also excluded some privately or commercially owned vehicles that did not have to be licensed (such as farm equipment). Other vehicles were classified as out of scope for the VIUS after the Census Bureau received the questionnaire responses from the vehicles' owners. Such out-of-scope vehicles included—

- Trucks sold prior to July 1, 1996.
- Farm tractors.
- Unpowered trailer units or converter dollies.
- Trucks reported to have been wrecked prior to the 1997 registration year.

Many states allowed pick-ups, minivans, and sport-utility vehicles to be registered as either cars or trucks. For this reason, a search was conducted of the passenger car files: then, pick-ups, small vans, and sport-utility vehicle records found in these files were moved into the VIUS sample universe.

The annual vehicle registration date varied among states. Although a few states used the calendar year for vehicle registration, most staggered the registration workload across the 12 months. In addition, most states permitted "grace periods" to better distribute the annual processing of vehicle registrations. Regardless of the individual states' respective registration deadlines, vehicle registration data in the survey were to be reported as of July 1, 1997.

**Content.** Characteristics of the Nation's trucking fleet were collected using two questionnaires—Forms TC-9501 and TC-9502. Form TC-9501 was sent to owners of trucks in the pick-up and van strata (about 25 percent of the sample). Form TC-9502 was sent to owners of all other trucks selected in the sample (about 75 percent). The data requested on the questionnaires were of two types:

- Physical characteristics—
  - Vehicle type.
  - Average weight.
  - Type of engine.
  - Type of braking system.
  - Type of equipment.
  - Fuel conservation.
  - Type and size of body.
  - Number of power axles.
  - Axle arrangement of trailer units.
  - Cab type.

- Operational characteristics—
  - Base of operation.
  - Number of trucks.
  - Truck-tractors and trailers operated from the base of operation.
  - Area of operation.
  - Vehicle miles.
  - Weeks operated.
  - Miles per gallon.
  - Use of vehicle.
  - Types of commodities carried, including hazardous cargo.

### Uses of the Data

Federal and state transportation agencies used the data for the following purposes:

- Planning highway cost allocations.
- Planning road improvements.
- Determining truck size and weight regulations.
- Determining energy consumption.
- Determining types of fuels used by commercial and private vehicles.
- Improving transportation services for shippers and carriers.

The private sector also had important uses for the data:

- Planning future vehicle designs and improvements.
- Conducting market studies.
- Assessing the utility and cost of certain types of equipment.
- Determining fuel demands.

### Differences: VIUS vs. Other Economic Data Collection

The VIUS differed from other 1997 Economic Census data collection efforts in four major respects. First was the reporting unit: in the economic census, the reporting unit was the business establishment. In the VIUS, analogous organizational units were the truck owners, either individual or corporate. Coverage was the second major difference: the VIUS survey cut across industrial classifications. The third major difference was in the use of sampling procedures. Most of the other economic census data collection was conducted on a total enumeration basis, and supplementary data often were obtained by sampling. In contrast, the VIUS exclusively used stratified probability sampling. Finally, VIUS data collection did not begin on a single date. For 1997, the data collection interval extended from January 1998 to May 1998, as 1997 vehicle registration files became available from the states.

### Definition of Terms

The Census Bureau employed the following terminology:

- Major use: This was based on answers to the question, “Which of the following best describes your business or the part of your business in which the vehicle was used?” (Question 19, questionnaire TC-9501 and question 27, questionnaire TC-9502.) Each of the 15 specific major-use categories conformed to the generally accepted meaning of the term. If possible, the analysts recoded responses to the “Other” category into one of the other 14 categories. The following list contains frequent responses reported in the “Other” category:

Entry	Recoded to (category)
House moving	For-hire transportation
Trucks used in conjunction with railroads	For-hire transportation
Armored car services	For-hire transportation
Commercial fishing	Agricultural activities
Oil field services	Mining and quarrying
Specialized activities commonly thought to be service (e.g., plumbing, painting, plastering, carpentry, electrical work, etc.)	Contractor activities special trades

The Census Bureau also recoded the following: U.S. mail service on a for-hire, contract basis, antique trucks (when used as exhibits), and yard tractors. These entries were placed in the major-use that was consistent with the company’s name and other responses to the survey.

- Hazardous materials. This term identified those trucks transporting hazardous materials in quantities large enough to require a placard under the Code of Federal Regulations, Title 49, Transportation.
- Products carried. The survey included broad classifications of agricultural, manufacturing, and mineral products, as well as special categories of materials carried by trucks. If possible, the agency recoded responses to the “Other” category to one of the 29 specified categories.
- Range of operation.
  - Local (less than 50 miles from the vehicle’s home base—the farm, terminal, factory, mine, etc.).
  - Short range (between 50 and 100 miles).
  - Short range-medium (between 100 and 200 miles).
  - Long range-medium (between 200 and 500 miles).
  - Long range (trips beyond 500 miles from the vehicle’s home base).
  - No home base (mostly over-the-road truck tractor or consumer one-way rental vehicles that did not operate from one, particular home base location).

- Off-road (minimal use of public roads; usually associated with construction and farming activities).
- Truck fleet size. The Census Bureau based the size of the truck fleet on the number of trucks and trailers operated by a truck owner's entire company. If respondents did not provide an answer in the "Truck Fleet Size" section, the vehicle was estimated in the "not reported" category.
- Operator classification. This term consisted of the following categories:
  - "Business use." A private owner or a company that transported its own materials or merchandise.
  - "Personal transportation." A vehicle operated for pleasure driving, travel to work, school, shopping, entertainment, etc.
  - "For hire." Motor carrier (a vehicle operated by a company whose primary business was to provide transportation services carrying freight belonging to others) and owner/operator (a vehicle operated by an independent trucker who drove the vehicle for himself/herself or on lease to a company).
  - "Daily rental." Vehicles rented or leased under daily or short-term rental or lease agreements (excluded motor carriers).
  - "Mixed." A vehicle used for at least two of the above operator classifications (business, personal, for-hire). If the percentage of mileage the vehicle traveled for each activity was not equal, the response was recoded to the classification with the highest percentage of use.
- Type of carrier. This category was limited to "for hire" interstate operators as follows:
  - Contract. Offered transportation services to certain shippers under contracts.
  - Common. Offered transportation services to the general public over regular and irregular routes.
  - Exempt. Transported commodities or provided types of services that were exempt from Federal regulation, and possibly also operated within exempt commercial zones.
- Body type. This term included the type of body that was either permanently attached to the truck or most frequently used with a truck tractor. Where possible, entries in the "Other" category were recoded to a specific category. Responses in the "Other" category included mobile-home carriers and boat transports.
- Minivans. The minivan universe included minivans manufactured on a truck or passenger car chassis.
- Estimates were requested for the following data regarding vehicle size:

- Empty weight of the vehicle or vehicle trailer combination.
- Average vehicle weight plus cargo weight of the vehicle or vehicle/trailer combination when carrying a typical payload.
- Gross weight (maximum) at which this vehicle or vehicle/trailer combination operated.

The response to the average weight item enabled the Census Bureau to classify trucks and truck/trailer combinations into the following four vehicle size classes:

- Light 10,000 pounds or less.
- Medium 10,001 to 19,500 pounds.
- Light-heavy 19,501-26,000 pounds.
- Heavy-heavy 26,001 pounds or more.

### Sample Design

Using an estimated 75 million motor vehicle registrations supplied by the states, the R.L. Polk & Co., under a Census Bureau contract, selected a stratified probability sample<sup>1</sup> of 130,500 trucks and truck tractors in accordance with the Census Bureau's sample-size criteria. R.L. Polk & Co. stratified the trucks and truck tractors into the following five body-type categories within each state:

- Pickup (consisting only of pickup trucks).
- Van (consisting of panel trucks, vans, minivans, sport-utility vehicles including jeeps, and station wagons on truck chassis).
- Single-unit light (consisting of all other single-unit trucks, excluding those in the pickup and van strata, with a gross vehicle weight of 26,000 pounds or less).
- Single-unit heavy (consisting of the remaining single-unit trucks).
- Truck tractor (consisting of only truck tractors).

Upon receipt of the sample from the contractor, the Census Bureau entered the sample into a master control file that was used to mail the two questionnaires and to determine which vehicles should be included in the follow-up.

### Mailout and Follow-Up

Staff at the National Processing Center (NPC) in Jeffersonville, IN,<sup>2</sup> mailed enumeration packages, by state, to potential respondents from January through May 1998.

<sup>1</sup>The term "probability sample" means; (1) there are distinct samples that can be selected. (2) each sample has a known probability of selection, (3) one of the distinct samples is chosen, and (4) the estimation procedure must lead to a unique estimate of each sample.

<sup>2</sup>Until a reorganization effective May 1, 1998, this unit was called Data Preparation Division (DPD).

Table 10-1.  
Number of Trucks Sampled

Panel state	Number of questionnaires
<b>Panel 1</b> .....	<b>January 16, 1998</b>
Alaska .....	2,336
Delaware .....	2,338
District of Columbia .....	1,777
Florida .....	2,706
Hawaii .....	2,304
Maine .....	2,483
Massachusetts .....	2,640
New Hampshire .....	2,489
New Jersey .....	2,752
New York .....	2,657
North Carolina .....	2,731
Oregon .....	2,668
Utah .....	2,555
Washington .....	2,625
<b>Panel 2</b> .....	<b>February 13, 1998</b>
Arizona .....	2,624
Arkansas .....	1,795
Colorado .....	2,587
Idaho .....	2,456
Indiana .....	2,618
Iowa .....	2,701
Louisiana .....	2,563
Michigan .....	2,653
Minnesota .....	2,685
Mississippi .....	2,459
Missouri .....	2,611
Montana .....	2,549
Nebraska .....	2,593
Nevada .....	2,481
North Dakota .....	2,594
Ohio .....	2,628
Oklahoma .....	3,091
Pennsylvania .....	2,622
Rhode Island .....	2,266
South Carolina .....	2,572
South Dakota .....	2,539
Tennessee .....	2,671
Texas .....	2,787
Vermont .....	2,345
Virginia .....	2,685
West Virginia .....	2,547
Wisconsin .....	2,656
<b>Panel 3</b> .....	<b>April 10, 1998</b>
Alabama .....	2,596
California .....	2,617
Connecticut .....	2,557
Georgia .....	2,669
Illinois .....	2,625
Kansas .....	2,599
Kentucky .....	2,613
Maryland .....	2,588
Wyoming .....	2,492
<b>Panel 4</b> .....	<b>May 27, 1998</b>
New Mexico .....	2,903

The Census Bureau provided customized mailing and reporting arrangements for owners of large fleets of trucks selected in the sample.<sup>3</sup> Based on the owners' preference, questionnaires were boxed by "panel"—each panel composed of truck registrations in selected states—and mailed to the corporate headquarters or other designated location for completion.

Each mailout package consisted of the appropriate questionnaire, cover letter, and a return envelope. The Census Bureau sent questionnaire TC-9501 to owners of trucks in the pickup and van strata, and questionnaire TC-9502 to owners of all other truck types (see Table 10-1). Census Bureau staff identified vehicles on the questionnaire prior to mailing: they included—in the registration information section—the vehicle make, model year, license number, and vehicle identification number. Owners were asked to reply only for the identified truck, regardless of other vehicles they might own or operate. They were to return their questionnaires to the NPC within 30 days of receipt.

Four days prior to each panel's mail follow-up, the file of nonrespondents was sent to the NPC. Then, a second form TC-9501 or TC-9502 questionnaire was printed, with the registration information, and mailed with the proper follow-up letter. Recipients of questionnaires TC-9501 or TC-9502 were mailed letter TC-9500-F during the first follow-up. During the second follow-up, letter TC-9500-CF was mailed with the questionnaire.

The Census Bureau used certified mail for the second follow-up mailing of the questionnaires. Then, staff conducted a telephone follow-up, by strata, within states whose response rate was less than 75 percent. In some cases, the phone call served as a reminder, and resulted in a mail response. If questionnaires were not returned to the NPC, analysts phoned the company's contact person to request a response. This continued until the strata were closed out for each panel. The data collection process was completed in September 1998.

The response rate for certified mail was 38.6 percent. The Census Bureau received responses from 105,054 (or about 80.4 percent) of companies in the sample. The final response rate for customized reports was 88.7 percent.<sup>4</sup>

<sup>3</sup>While the Census Bureau forms typically were mailed to the registered owner of the vehicle, the Census Bureau contacted owners of large fleets and asked if they would prefer another arrangement. Some owners wanted all forms mailed to their corporate headquarters to a particular individual who became the Census Bureau contact for follow-ups. Other owners preferred that the Census Bureau sort the forms by a given characteristic (such as state of registration or subsidiary) and mail each to a particular address or individual.

<sup>4</sup>The response rate for customized reports was higher because the Census Bureau was dealing at the company level for the completion of many forms—in some cases, hundreds. The Census Bureau offered companies options on completing one form to represent others with "like" characteristics.

## Data Processing

**Receipt and check-in.** Clerks at the NPC checked responses in as the questionnaires arrived. The clerks used laser scanners to read the barcoded Census File Numbers (CFNs—Chapters 7, "Preparations for Census Mailout," and 8, "Data Collection and Processing," provide more detail on CFNs) on each mail address label. This procedure checked each report form into the Transportation Automated Control System (TRACS), a system that tracked questionnaires through all stages of data processing. The NPC received two types of survey-related mail—questionnaires and correspondence. Clerks assigned a check-in (source) code for the type of receipt: mail, telephone, fax, undeliverable as addressed, received in Washington DC, delinquent, telephone follow-up, congressional correspondence, and other correspondence. After check-in, clerks entered the appropriate status code for each questionnaire in the TRACS, and referred the questionnaires to the appropriate processing unit. When more than one questionnaire was received in one package, the clerks kept the questionnaires together through all stages of processing so that one contact could be made, if required, for all questions.

**Data screening and entry.** Clerks screened all questionnaires for completeness and to ensure that the information provided by respondents could be keyed. They also (1) looked for "must items" that needed to be completed, (2) converted responses (e.g. pounds to tons), (3) transcribed respondent remarks, (4) clarified illegible responses, and (5) rounded figures. If information for any of the "must items" was missing, the questionnaire was routed to the telephone unit, where Census Bureau staff called the truck owner to obtain complete information. All questionnaire items that could not be completed satisfactorily through screening or by phone were forwarded to a statistical assistant at the NPC for resolution.

Once the questionnaires were screened, and all problems had been resolved, they were forwarded to the microfilming unit. Microfilming equipment scanned the bar-code on each address label as each questionnaire was filmed, and included it in a file sent to Census Bureau headquarters with the accompanying reel and frame number. The original microfilm was stored at the NPC and a copy of each reel was sent to headquarters to be used in data editing and data analysis. After microfilming, the questionnaires were routed for data keying.

The data entry unit keyed (1) corrections made to the registration information, (2) all data responses provided on the questionnaires, and (3) comments written by respondents. The NPC transmitted the information to the Census Bureau's computer center in Bowie, MD, via dedicated telephone lines. Data tapes were retained for possible retransmission until the Census Bureau's computer center notified the NPC that the data had been received.

**Data edits.** At Census Bureau headquarters, each data record underwent a detailed computer edit for inconsistencies and reasonableness. During this stage, the Census Bureau sometimes inserted data—based on administrative information supplied by R.L. Polk & Co. or from other data-item responses—into the data file to complete blank, or obviously incorrect, responses. The computer flagged items that failed edits, and displayed each failed record for review by an analyst. Once the analyst made corrections, the record was re-edited and displayed again if it still failed the edit. In addition to making corrections, analysts also deleted records—determined by pre-set criteria—to be out of scope of the survey.

Census Bureau staff developed procedures to impute annual miles and lifetime miles. Averages were calculated based on responses to the five characteristics most closely correlated with annual and lifetime miles—model year, vehicle type, acquisition, disposal, and weeks operated. Cubic-inch displacement and number of cylinders were derived from administrative records from each state. Length and average weight (if data were missing) were imputed for each truck. These imputations were based upon responses from records with similar characteristics.

Once data records from the 1997 VIUS had been edited and tabulated, the NPC stored the paper questionnaires until January 1, 2000, after which they were destroyed. After data tabulation and publication for the 1997 VIUS, the microfilm of the questionnaires was sent to the Washington Federal Records Center in Suitland, MD, for archiving.

### **Data Tabulation and Release**

For each state, data were tabulated using unweighted and weighted estimates of the number of trucks and their characteristics. Headquarters analysts computed corresponding sampling variability, checked tabulations for consistency and logic, and made comparisons between 1992 and 1997 data. Prior to the preparation of Portable Document Format (pdf) files for release on the Internet, certain data were automatically suppressed. Such data were not published if the estimates did not meet publication standards on either of two bases: the response rate, or the associated or relative standard error.

In addition to the respective printed and Internet releases of the *United States Summary*—as well as Internet releases of state level data—the 1997 VIUS produced microdata information for each truck in the sample. These records were modified to avoid identification of individual trucks or operating establishments, and subsequently were made available on a CD-ROM. The CD-ROM included state level and United States' data tables, tabulating software, and documentation.

## **1997 COMMODITY FLOW SURVEY**

### **Precursors to the 1997 Commodity Flow Survey (CFS)**

From 1963 through 1977, the Census Bureau produced measures on the flows of goods and materials according to mode of transportation. These data were gathered in

the Commodity Transportation Survey (CTS). An evaluation of the 1977 CTS showed that major problems were caused by the methodology used to collect the shipment samples, as well as the small sample size used. In 1983, the Census Bureau conducted an abbreviated CTS that required summary data from those surveyed. Because an evaluation of the 1983 survey found that the summary data were of poor quality, the Census Bureau did not publish 1983 survey results.

In 1990, the Department of Transportation and the Census Bureau began exploring the possibility of restoring a commodity-based survey. The need for this information was recognized in the “Statement of National Transportation Policy” issued by the Secretary of Transportation in 1990. This was reinforced by the Intermodal Surface Transportation Efficiency Act that Congress enacted in 1991. Thus, the Census Bureau designed the Commodity Flow Survey (CFS) to collect and publish statistics that had previously been produced by the CTS. The new survey was first conducted for 1993; the data were collected by the Census Bureau with additional funding and support from the Bureau of Transportation Statistics.

### **Scope of the 1997 CFS**

The 1997 CFS collected data on commodities shipped, their value, weight, and mode of transportation, as well as the destination of shipments. The 1997 survey involved a sample of approximately 100,000 domestic manufacturing, mining, wholesale, and selected retail establishments.

### **Changes Made From Previous Commodity Flow Surveys**

Using the results of the 1993 CFS, the Census Bureau developed a more efficient sample design. Whereas the sample size in 1993 was 200,000 establishments, the 1997 survey sampled only 100,000 establishments. In addition, the sampling period for each questionnaire was reduced from 2 weeks for the 1993 survey to 1 week for 1997.

Other changes for 1997 included—

- Data collection using the four-digit United Nations/North American (UN/NA) code—instead of the “yes/no” indication used previously—to improve the identification of hazardous materials being transported.
- Change in the coding system—for major commodity shipped—from the 1993 survey's Standard Transportation Commodity Classification (STCC)<sup>5</sup> system to the Standard Classification of Transported Goods (SCTG) system in 1997 (see discussion below).

<sup>5</sup>The Standard Transportation Commodity Classification (STCC) is a seven-digit classification developed by railroads and maintained by the Association of American Railroads.

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## Uses of the Data

Data from the CFS were used by various Federal agencies for policy and program purposes, as well as by private companies for research:

- The U.S. Department of Transportation used these data for policy development, assessing infrastructure needs, and in evaluating transportation safety issues.
- State Departments of Transportation used the CFS results in combination with other data sources to evaluate existing uses/needs of their transportation infrastructure.

## Sample Design

The 1997 CFS used an approximate 1-in-8 sample drawn from a universe of 800,000 establishments in the mining, manufacturing, wholesale trade, and selected retail trade industries, including auxiliary establishments of multiestablishment companies. The sample was selected using a stratified three-stage design in which the first-stage sampling units were establishments, the second-stage sampling units were groups of four 1-week periods (reporting weeks) within the survey year, and the third-stage sampling units were shipments.

## Data Collection

Establishments were mailed four questionnaires—one for each of the reporting weeks. Establishments were to provide data on approximately 25 of their outbound shipments for a 1-week period in each of the four calendar quarters of 1997. Establishments with 40 shipments or fewer for the 1-week period were to report all shipments.

## Standard Classification of Transported Goods (SCTG).

For the 1997 CFS, commodities shipped were classified using the SCTG. The SCTG is a four-level hierarchical system, created jointly by agencies of the United States and Canada to produce better measures of transportation activity from the Commodity Flow Survey. The SCTG is based on building blocks provided by the Harmonized Commodity Description and Code System and Canada's Standard Classification of Goods coding system. (The Harmonized Commodity Description and Code System is a six-digit coding system used in the United States to value exports, imports, and customs.)

**Mileage calculations.** The mileage estimate component of the 1997 CFS was produced by the Oak Ridge National Laboratory's (ORNL) Center for Transportation in Oak Ridge, TN. The Center used a series of transportation networks developed and maintained at the ORNL to create estimates of miles traveled by mode(s) of transportation on a shipment by shipment basis.

**Mailout.** Mailout and data collection were conducted by the NPC and took place on a flow basis during each of the four calendar quarters of 1997. Initial mailout began in December 1996, and follow-up concluded in February 1998. During mailout, establishments were sent a questionnaire, an instruction guide, and a Commodity Coding Manual.

The Census Bureau used two versions of the questionnaire—form CFS-1000 and form CFS-2000. Each establishment received form CFS-1000 in each of its first 3 reporting weeks. For the fourth reporting week of each quarter, a subsample (approximately 25,000) received form CFS-2000, while the remaining establishments received form CFS-1000.

The Census Bureau requested that each establishment report the following information:

- Physical location (if different from that on the mailing label).
- Operational status (i.e., in operation, temporarily or seasonally inactive, ceased operation) of the establishment during the 1-week sampling record.
- Total number of shipments made during the 1-week period.

The establishments also were requested to provide the following data for each shipment sampled:

- Shipment document number and date of shipment.
- Shipment weight in pounds.
- Value of shipment.
- Commodity description and the five-digit SCTG.
- The UN/NA code for hazardous material shipments.
- All domestic modes of transportation used.
- Whether the shipment was containerized.
- Domestic-destination city, state, and ZIP Code.
- Whether the shipment was an export and, if so, the mode of export and the city and country of destination.

In addition to the above items, recipients of the form CFS-2000 were asked to furnish additional data on the availability and use of transportation facilities and equipment as follows:

- Were the following on-site facilities available, and were they used: rail siding, waterway docks, airport/landing strips, or pipeline terminals?
- Did you use the following off-site facilities and, if so, what was the distance of the facility from your establishment and mode of transport used to reach it: rail siding, waterway dock, airport/landing strip, and pipeline terminal?

- 
- Did you use rail cars that (1) your company owned or leased, (2) a common carrier owned or leased, or (3) another party owned or leased? Also, what percentage of your total rail shipments were each of these three methods?
  - Did you use trucks (with six or more tires) or truck tractors that your company (1) owned, (2) leased with a driver, or (3) leased without a driver?
  - Did you use the following equipment that your company owned or leased: truck trailers, aircraft, barges, and other equipment (specify)?
  - Who generally decided on the mode of transportation used for your shipments—your company, receiver of the shipment, or other?

### **Data Processing**

Mailout, check-in, screening, and data capture for the 1997 CFS were conducted by the NPC. Additional automated edits were conducted at Census Bureau headquarters. Edit problems were resolved at both the NPC and Census Bureau headquarters. The NPC also was responsible for the follow-up, which consisted of a reminder mailed to nonrespondents. A telephone follow-up was conducted, during which the largest establishments were asked to return their completed questionnaires. Census staff did not attempt to collect data by phone because of the large amount of data requested by the questionnaires. The overall response rate for the 1997 CFS was approximately 75 percent.

**Editing.** The Census Bureau headquarters staff created a flow-processing edit program to identify inconsistencies, range errors, and critical omissions. The edit program was run on a computer system, following the transmission of the data entry files from the NPC to Census Bureau headquarters. The edit program assigned a series of flags for missing or incorrect data.

**Imputation of missing data.** Item nonresponse occurred when a data variable (either value or weight) either was not reported or was determined to be invalid by the edit process. Establishment nonresponse, in turn, took place when an establishment failed to report shipment data for at least one quarter. Under certain conditions, item nonresponse was handled by imputation procedures. Establishment nonresponse was handled primarily by an adjustment of statistical weights.

**Disclosure review.** To make certain that information about individual companies would not be disclosed, the Census Bureau subjected the data to disclosure analysis. In conformance with the Census Bureau's confidentiality rules, a computerized disclosure analysis system identified—and withheld from publication—data that might have revealed the identities of, and information about, individual companies. In those instances, the Census Bureau substituted a reference symbol "D" for the data in the published tabulations.

### **Publication Program**

Data from the 1997 CFS were made available in both printed and electronic formats. Tables provided information on commodities shipped, their value, weight, and mode of transportation, as well as the origin and destination of shipments. The survey also provided selected data on hazardous material shipments and exports. Commodity detail for national tables was at the four-digit SCTG level. Data were at the two-, and where possible, three-digit SCTG level for state reports. Data from the 1997 CFS were released for the following geographic levels: United States, census regions and divisions, states and selected metropolitan areas and remainder of states.

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# Economy-Wide Programs

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## INTRODUCTION

The 1997 Economic Census included an economy-wide survey—the Survey of Business Owners. The U.S. Census Bureau published results of this survey in several volumes, as the Survey of Minority-Owned Business Enterprises (SMOBE) and the Survey of Women-Owned Business Enterprises (SWOBE).

The 1997 SMOBE was the seventh in a series initiated in 1969; the first was a special project, while the 1977, 1982, 1987, 1992 and 1997 surveys were part of the economic census. As in the past, this latest effort provided basic economic data on businesses owned by Blacks, persons of Hispanic origin, Asian and Pacific Islanders, and American Indians and Alaska Natives.<sup>1</sup>

The 1997 SWOBE was the sixth in a series begun in 1972. The first was conducted as a separate program, while the subsequent surveys were part of the economic census and provided economic data on businesses owned by women.

The SMOBE and SWOBE provided data on not only the numbers of minority- and women-owned firms, but also on sales and receipts, annual payroll, and employment. Data aggregates were presented for the United States by two-digit Standard Industrial Classification (SIC) code, employment and receipts size, and legal form of organization; data were provided at the state level by two-digit SIC Code.

The 1997 census also included the 1997 Business Expenditures Survey (BES), which covered establishments in most of the wholesale, retail, and services sectors of the economy. The BES, previously called the Assets and Expenditures Survey (AES), was renamed for 1997 when the assets and capital investments inquiries were dropped from the survey. Data collected in the BES included operating expenses of retailers, merchant wholesalers, and service firms (as classified under SIC). Statistical results were issued with operating expenses compiled in other trade surveys covering communications, transportation, travel, manufacturing, mining, and construction firms.

The SMOBE and SWOBE results were published on a flow basis in a series of seven publications. The BES results were published in a single report, *Business Expenses*. (See the “Publication Program” section below for more details.)

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<sup>1</sup>In addition, the 1997 SMOBE and SWOBE incorporated portions of the Enterprise Statistics Program, last conducted during the 1992 Economic Census, but dropped from the 1997 Economic Census (due to budget restrictions).

## 1997 SURVEYS OF MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES

### Background Information

The 1997 SMOBE and SWOBE surveys represented the Nation’s principal source of data needed to evaluate the extent and growth of business ownership by minorities and women. The data provide a framework for assessing and directing Federal, state, and local government programs designed to promote the activities of disadvantaged groups.

Persons, private firms, and institutions, in both the public and private sectors, use these survey data to evaluate businesses and markets. They are used by the media for news stories, as well as by researchers and academia. The Small Business Administration and the Minority Business Development Agency use the data when allocating resources for their business assistance programs.

### Comparability With the 1997 Economic Census

**Introduction.** The information collected by the SMOBE and SWOBE was not always comparable to the statistics collected in the other economic census programs because of differences in; (1) the industry classification systems used, (2) industrial scope and business reporting units used, and (3) the treatment of corporations and employer identification numbers (EINs). These are explained in more detail below.

**Use of the Standard Industrial Classification (SIC) Code.** SMOBE and SWOBE continued to use the SIC Code for industrial classification while the Census Bureau had adopted the North American Industry Classification System (NAICS) for the bulk of the 1997 Economic Census (Chapter 3, “The Introduction of the North American Industry Classification System (NAICS),” details the history and differences of the two).

**Scope.** The 1997 SMOBE and SWOBE covered most SIC Code industries. Agriculture production (SIC 01, 02), the U.S. Postal Service (43), Membership Organizations (86), Private households (88), and Public Administration (91-97) were excluded.

Several SIC industries were in scope of the SMOBE and SWOBE, but out of scope of the basic economic census. These included Agricultural Services (07), Forestry (08),

and Fishing, Hunting, and Trapping (09). Membership Organizations (86) were within the scope of the census, but out of scope of the SMOBE and SWOBE.

**Business unit.** Most of the economic census was conducted on an establishment or physical location basis, individually enumerating and tabulating each establishment owned by a firm. In the SMOBE and SWOBE, however, the whole firm was the primary unit for enumeration and U.S. level tabulations.

**Treatment of corporations and employer identification numbers (EINs).** For the first time, the 1997 SMOBE and SWOBE included all corporations. Prior to 1997, only limited data were available for corporations.

Treatment of EINs also was new for 1997. The Census Bureau had historically defined a business as an entity that filed a business income tax return. Businesses that had received one or more EINs may have filed tax returns under more than one as well. In past surveys, each EIN was treated as a separate business. For 1997, all operations under the same ownership were defined as one company or business, irrespective of the number of the company's EINs. This definition eliminated the likelihood of surveying the same business owner more than once. This change had no effect on the employment and payroll data for the survey, but slightly reduced the count for the number of businesses and the total receipts.

## EXPLANATION OF TERMS

Definitions of the survey terms for SMOBE and SWOBE, which differed somewhat from those used for the 1997 Economic Census, were as follows—

- **Company.** A company was a business consisting of one or more domestic establishments owned or controlled by the reporting firm at the end of 1997. If a company owned or controlled other companies, all establishments of the subsidiaries were included as part of the owning or controlling company. The five types of entities (legal forms of organization) covered were—
  - **Subchapter S corporation**—Special Internal Revenue Service (IRS) designation for a business that was legally incorporated under state laws, and had 75 or fewer shareholders who, because of tax advantages, elected to be taxed as individual shareholders rather than as corporations.
  - **C corporation**—A legally incorporated business under state laws. Unlike a subchapter S corporation, a C corporation has no restriction.
  - **Individual proprietorship**—Unincorporated business owned by one person or by self-employed individuals with no employees. The economic activity may have been the self-employed activity of a person who held a full-time job working for someone else.

Moreover, the firm might operate one or more places of business, such as a chain of restaurants, or have no fixed business location, such as the firm represented by a self-employed carpenter or salesperson.

- **Partnerships**—Unincorporated business owned by two or more persons.
- **Other**—Included in this group are cooperatives, estates, receiverships, and businesses classified as unknown legal forms of organization.
- **Gross receipts**—These included the gross value of all products sold, services rendered, or other receipts from customers during 1997, less returns and allowances. The published reports presented value of sales and services whether or not payment was actually received during the year and, therefore, the data did not indicate a cash flow. There were no adjustments made for the costs of doing business.
- **Employees.** These were individuals who worked either full or part time. Proprietors, partners, or owners who worked in the business, but were not paid a regular salary subject to withholding for Social Security Administration (SSA) deductions, were excluded. Also excluded were family members or others who worked in the business, but were not subject to withholding taxes.

## Survey Methodology

**Survey of Minority-Owned Business Enterprises (SMOBE).** The SMOBE required determining the minority status of the ownership of each firm in the survey, and then matching to each firm the data collected in the economic census or gathered from administrative records.

The Census Bureau classified a firm as minority-owned based on the race and ethnicity of the person(s) owning majority interest. Businesses were identified as minority-owned through a mail canvass to a sample of corporations, partnerships, sole proprietorships, and self-employed individuals. Any business was eligible to be selected in the sample, but firms whose owners were potentially of Hispanic, Asian, Pacific Islander, or Native American origin had a higher probability of selection. These firms were identified using one of the sources listed below—

- Lists of minority-owned businesses published in syndicated magazines, located on the Internet, or disseminated by trade or special interest groups.
- Previous SMOBE respondents.
- A list of common surnames for these minority groups, based on research using prior SMOBE data.
- The owner(s)' self-designated race classification on an application for a Social Security Number.

- Racial distributions for various ZIP Codes.
- Racial distributions for various state-industry classes (derived from 1992 SMOBE responses).
- Word strings in the company name indicating possible minority-ownership (derived from 1992 SMOBE responses).

The sample was stratified by size (using volume of sales or payroll) and geographically by state. The Census Bureau selected large companies “with certainty”—i.e., they were sure to be selected and represented only themselves (i.e. have a selection probability of one and a sampling weight of one). The certainty cutoffs varied by sampling stratum, and the Census Bureau sampled each stratum at varying rates, depending on the number of firms in a particular industry in a particular state. The sampling rate was lowest in states and industries with the greatest number of firms. A similar methodology was used to select a sample from the remaining universe: the purpose of this was to estimate the number of firms owned by persons of minority ancestry when no indication of minority-ownership was found from any of the sources listed above. The mail sample did not include those sole proprietorships that had reported in the 1992 survey and were still active in 1997; rather, the 1992 responses were used in lieu of responses to a mail sample.

**Survey of Women-Owned Business Enterprises (SWOBE).** With the 1992 SWOBE, the Census Bureau discontinued using administrative record data from the IRS and SSA to identify owners of partnerships and subchapter S corporations. Rather, women-owned corporations and partnerships were identified from sample data.

For 1997, the Census Bureau used administrative data to determine the gender of the owner(s) of businesses filing an IRS form 1040C (sole proprietorship or self-employed person—not a joint return). Businesses filing a joint return, where it could not be determined with certainty whether the husband/wife or both owned the business, were eligible for sampling and were mailed a questionnaire to determine the owner’s gender.

In past surveys, a firm fell within scope of this program if the sole owner was a woman or if one-half or more of the partners or shareholders were women. For 1997, a separate tabulation was made for those businesses whose stock was equally owned by males and females and these were not counted as female-owned. Only businesses in which women owned a 51 percent or greater interest were counted as women-owned firms. Nonprofit and foreign-owned companies, as well as those with publicly held stock whose ownership is indeterminate were tabulated separately.

**Sampling frames.** There were six sampling frames in the SMOBE and SWOBE and every case was assigned to one of the following frames—

- American Indian.
- Asian/Pacific Islander.
- Black.
- Hispanic.
- National (non-Hispanic White male).
- Women.

## Data Collection

**General information.** Phase I of the data collection began in August 1998. The universe included all corporations or partnerships reporting any business activity in 1996. A sample of over 1 million businesses from the American Indian, Asian/Pacific Islander, and Hispanic frames were mailed report forms.

Phase II began the following year, with the mailing of an additional 1.5 million report forms in July 1999 to cases assigned to each of the six sampling frames. This universe included corporation or partnership births and sole proprietorships and self-employed persons reporting any business activity in 1997.

**Questionnaires.** Four questionnaires were used for the 1997 SMOBE and SWOBE—the MB-1 and MB-2, in English, and the MB-1(SP) and MB-2(SP), in Spanish. The Spanish language questionnaires were mailed to respondents upon request. The Census Bureau sent the MB-1 questionnaires to partnerships and corporations, or to sole proprietorships that submitted joint tax returns where, based on the administrative records, it was probable that the husband and wife were of different races. The MB-2 was used for sole proprietors and self-employed individuals who were “single filers” or who filed joint returns where, based on the administrative records, there was a low probability that the husband and wife were of different races.

Businesses were asked questions about the gender, race and ethnicity of the person(s) owning majority interest in the business, the number of owners, and whether any of the businesses’ receipts in 1997 resulted from business conducted with the Federal government.

**Mailout and mail follow-up.** The preparations for the 1997 SMOBE and SWOBE mailout were similar to those for the economic census. The Census Bureau engaged a private contractor to print the 2.6 million MB-1 forms, the 2.9 million MB-2 forms, and approximately 5.5 million each of the cover letters (which included frequently asked questions about the survey and answers). The contractor assembled the survey packages and delivered them to the National Processing Center (NPC). The MB-1 packages were delivered in July, and the MB-2 packages in December, 1998. The Spanish versions of each questionnaire, MB-1(SP) and MB-2(SP), were printed using an in-house DocuPrint high speed color printer. At the NPC, addresses were imprinted directly on the questionnaires using an ink jet printer.

On August 17, 1998, 1,001,426 MB-1 questionnaires were mailed to employer corporations and partnerships active in 1996 (Phase I). The Census Bureau conducted a final mailout (Phase II) of 1,529,396 questionnaires on July 7, 1999, consisting of 208,019 nonemployer and employer corporations or partnerships that were active in 1997, but had not been active in 1996 (Phase I), and 1,321,377 sole proprietorships and self-employed persons reporting any business activity in 1997. Surnames and SSA race codes were available for limited use in sampling these firms. Otherwise, the Census Bureau used methodology similar to that specified above for sole proprietorships.

The Census Bureau asked companies to return their completed questionnaires within 30 days of receipt; non-respondents were included in one or more of the three mail follow-ups. Below are the dates of the follow-ups, and the types and number of questionnaires mailed in each.

Completed questionnaires were received from 813,870 businesses in Phase I, yielding an overall response rate of 81.3 percent. The U.S. Postal Service returned 58,935 cases in Phase I as “Undeliverable As Addressed” (UAAs) and these cases were assumed to be out of business.

Figure 11-1.  
Mailouts and Mail Follow-Ups

Mailout	Date	Questionnaire	Number mailed
<b>PHASE I</b>			
Initial mailout ..	08/17/98	MB-1	1,001,426
1st follow-up ..	10/05/98	MB-1	373,364
UAA remail ...	10/05/98	MB-1	11,282
2nd follow-up ..	10/26/98	MB-1	257,188
3rd follow-up ..	11/25/98	MB-1	160,025
<b>PHASE II</b>			
Initial mailout ..	07/07/99	MB-1 MB-2	293,582 1,235,814
1st follow-up ..	08/12/99 08/20/99	MB-1 MB-2	143,923 544,877
UAA remail ...	09/02/99	MB-1 MB-2	5,326 18,095
2nd follow-up ..	09/13/99 09/20/99	MB-1 MB-2	79,059 300,916
3rd follow-up ..	10/14/99 10/20/99	MB-1 MB-2	46,337 221,287

**Telephone follow-up.** The Census Bureau conducted a telephone follow-up of 50,639 Phase I nonrespondent SMOBE and SWOBE cases, beginning January 11, 1999, and continuing through March 5, 1999. “Certainty” cases comprised approximately half of the of the cases selected from a pool of large-receipts size companies—the other half was randomly selected from the remaining pool of nonrespondents. By the closeout of data collection, responses had been obtained by telephone for 26,095 of

these cases; 14,118 firms had refused to respond, or had not answered after 4 attempts to contact. The Census Bureau was unable to obtain telephone numbers for the remaining 10,426 cases.

A telephone follow-up to 36,000 Phase II nonrespondent SMOBE and SWOBE cases was conducted from September 10 through September 30, 1999 in conjunction with the second follow-up mailing. A total of 26,426 cases with valid phone numbers were selected with certainty and 9,574 cases were randomly selected from the pool of remaining cases for which no phone number existed on the SSEL. By the closeout, 5,999 late mail returns had been received, leaving a net workload of 30,001. Data were obtained from 19,144 (63.8 percent) cases, 507 (1.7 percent) cases refused to respond, and 10,350 (35 percent) were unreachable (i.e. no phone number, voice mail, no knowledgeable contact, etc.).

### Data Processing and Tabulation

**Receipt and check-in.** The 1997 SMOBE and SWOBE questionnaires were returned to the NPC office where they were checked in using automated barcode scanning equipment. The check-in file was used to update the survey mail list and to generate address files for mail follow-up of nonrespondents.

**Data entry.** Company identification information and data from each questionnaire were captured by an electronic imaging system developed by Lockheed Martin for the decennial census using optical character recognition and optical mark recognition software. The SMOBE/SWOBE programs were the first production test of the system and had to work within the time constraints imposed by the 2000 Decennial Census. Forms that were returned too late for processing were keyed by NPC data-entry staff.

**Edit and tabulation.** The data for the 1997 SMOBE and SWOBE were edited and tabulated on a flow basis as responses were received. Between February and April 2000, staff at Census Bureau headquarters used the company record files and interactive computer systems to develop the publication tables for each survey. The Company Statistics Division and Administrative and Customer Services Division staff prepared the accompanying text and worked out the details of the format and design of the printed reports.

**Use of administrative records.** Once the minority- and women-owned businesses had been identified, the Census Bureau retrieved the following information from its database, which contained 1997 Economic Census questionnaire responses and information from administrative records),<sup>2</sup> and matched the information to the proper firm—

<sup>2</sup>The Census Bureau’s principal sources of noncensus administrative records were the IRS, the SSA, and the Bureau of Labor Statistics. For more information on the kinds of records and data used, see Chapter 7, “Preparations for the Census Mailout.”

- Annual payroll (for a company with paid employees).
- Geographic codes.
- Organizational status (sole proprietorship, partnership, or corporation).
- Number of employees reported during the week including March 12, 1997.
- Receipts.
- SIC Code.

## 1997 BUSINESS EXPENDITURE SURVEY

### Introduction

The 1997 Business Expenditures Survey (BES) represents the only reliable source of the Nation's business expenses data covering merchant wholesale trade, retail trade, and service industries. The 1997 BES supplements basic economic statistics produced by the 1997 Economic Census for the wholesale trade, retail trade, and services sector industries with estimates of operating expenses. Further, it provides measures of value produced for merchant wholesale and retail trades. Essential measurement of the Nation's economy requires compilation of comprehensive and reliable data on both economic outputs (e.g., sales) and inputs (e.g., utility and advertising expenses), and the BES is the sole source of national business inputs data for covered industries.

The Federal Government is the primary user of the BES data. In particular, the Bureau of Economic Analysis—the Federal agency that produces gross domestic product estimates and maintains the national economic accounts—uses information from the survey for developing the national income and product accounts, input-output tables, and economic indexes, and to fill previously identified critical gaps in underlying data in these accounts.

### Comparability With the 1997 Economic Census

**Introduction.** The 1997 BES differed from other 1997 Economic Census operations in four major respects—(1) use of the SIC Code for industrial classification, (2) reporting units used, (3) data collection methodology, and (4) the data collection schedule.

**Use of the SIC Code.** As was the case with the SMOBE and SWOBE, the BES continued to use the SIC Code for industrial classification instead of the NAICS used for the bulk of the 1997 Economic Census.

**Reporting units.** The economic census collected data on a total enumeration basis, obtaining supplementary data by sampling. In contrast, the BES used stratified probability sampling exclusively (discussed below under “Sample Design”). While the reporting unit for multiestablishment firms in the census was the individual component establishment, the reporting unit for the BES was a combination

of company-within-trade area, subsidiary/division-within-trade area, or Employee Identification Number (EIN)-operations-within-trade area (EINs are described above). This reporting arrangement was designed primarily to minimize respondent burden.

**Collection methodology.** A third major difference was how the data were collected. Because the BES sample was shared by the annual business surveys, the initial questionnaire mailings were combined with those surveys' 1997 mailings, and shared the respondent cover letter. Mail and telephone follow-ups, however, were conducted independently.

**Schedule.** A fourth difference was the data collection and publication schedule. The response due date for the 1997 Economic Census was February 12, 1998, but mid-March for the BES. Reports from most of the 1997 Economic Census were released on a flow basis from early 1999 through late 2000. The BES results were scheduled for release by late 2000.

### Changes From Predecessor Survey

The 1997 BES was the successor to the 1992 Assets and Expenditures Survey (AES). The new survey questionnaire deleted questions on depreciable assets, capitalized interest, and capital expenditures. Items were added asking for expenditures for contract labor and computer software and services. Coverage of selected service industries was extended to include nonemployer companies (those with no paid employees). The 1992 survey had obtained data for nonemployer companies using a business area sample; for the 1997 BES, the Census Bureau used administrative records for basic data for nonemployers.

### Scope and Content

This Census Bureau conducted the 1997 BES under the authority of the 1997 Economic Census, covering business operations classified in the 1987 SIC manual. As in prior years, the industrial scope included merchant wholesale trade, retail trade, and most service industries. The items covered included various types of operating expenses. Data were tabulated and released for the United States only. Content of the BES report forms included inquires on—

- Annual payroll.
- Supplemental labor costs.
- Cost of contract labor.
- Depreciation and amortization charges.
- Taxes and license fees, excluding sales and income taxes.
- Lease and rental payments.
- Cost of office supplies.

- Cost of materials (wholesale, retail only).
- Cost of contract work (wholesale only).
- Commission expenses (wholesale only).
- Cost of purchased services: communications services; electricity, fuel, and other utilities; cost of computer software and other computer related services; repair and maintenance services; accounting and bookkeeping services; and legal services.

Companies also were asked to include data for auxiliary locations whose primary functions were to manage, administer, service, or support the activities of the main establishments covered.

### Explanation of Terms

**Operating expenses.** A few types of operating expenses requested on the BES report form are self-explanatory; others included—

- **Annual payroll**—All salaries, wages, commissions, bonuses, and allowances for vacation, holiday, and sick leave paid to employees in 1997 before payroll deductions. For corporations, it included amounts paid to officers and executives; for unincorporated businesses, it excluded payments to or withdrawals from profits by owners or partners. (Annual payroll did not include employer contributions to plans required by law and other plans besides vacation, holiday, and sick leave.)
- **Employer costs for programs required by law**—All programs required under Federal and state legislation such as FICA, unemployment tax, workers' compensation, and state disability payments.
- **Employer costs for other fringe benefits**—This included programs not specifically required by Federal or state legislation, such as life and health insurance premiums for employees.
- **Cost of contract labor**—Cost of labor, as supplied by other firms, under the supervision of the reporting firm.
- **Depreciation charges**—All amortization and depreciation charges against depreciable assets owned during 1997. Amounts representing tax-exempt organizations, if not reported, were estimated even though depreciation accounts may not have been maintained.
- **Taxes**—All taxes and license fees paid during 1997, excluding income and payroll taxes. These included tobacco and liquor tax stamps, fines, and property taxes, and excluded direct payments to government tax agencies for sales and other taxes collected directly from customers.
- **Lease and rental payments**—Payments for lease or rental of buildings, office and store space, machinery and equipment. Payments for machinery and equipment included use of production machinery, office equipment, computer systems, passenger cars, trucks, materials handling equipment, and all other types of machinery and equipment.
- **Cost of purchased communication services**—Cost of telephone, data transmission, telegraph, telex, teletype and all other communications services purchased in 1997.
- **Cost of purchased electricity**—Some businesses included this expense as part of building/office lease payments.
- **Cost of purchased fuels**—Cost for fuels used for heating, power, or generation of electricity, also sometimes included in lease payments.
- **Cost of other utilities**—All utilities costs to respondents, except purchased fuels and electricity, such as water treatment, sewage, and refuse removal. These costs were sometimes included in lease payments.
- **Cost of materials**—Purchases of containers, wrapping, packing and selling supplies used in packaging, processing, shipping, and selling of goods. Not collected for service industries.
- **Cost of contract work done for wholesalers by other firms**—This included readying merchandise for sale, such as blending, printing, repacking, and other processing.
- **Commissions paid to other firms**—These were for sales of merchandise made on the account of merchant wholesalers.
- **Computer related services**—All costs for data processing and other computer services purchased from other firms. It included the cost of custom and prepackaged software.
- **Cost of purchased repair and maintenance services**—The total amount paid for noncapitalized repairs and maintenance to buildings, structures, machinery, and equipment, such as motor vehicles and office space. It excluded cost of repairs to leased buildings and equipment covered by regular lease payments.
- **All other operating expenses**—This covered all inventory storage and shipping costs, insurance expense (nonemployee), uninsured casualty losses, and bad debt losses. It excluded interest on loans and sales and excise taxes.

**Measures of value produced.** These items were computed for merchant wholesale and retail trades using data compiled in the BES and business annual surveys.

- **Cost of goods sold** was calculated by adding all purchases of merchandise (net of returns, allowances, and discounts, but including charges from freight, insurance, etc.) during the year to the beginning-of-year

inventory, then deducting the end-of-year inventory from the total. Firms were instructed to exclude the cost of packaging, processing, shipping, and selling of goods from the cost of purchases, but to report these items under “operating expenses.” Purchase of tax stamps and payments of excise taxes, often included by tobacco and liquor wholesalers in their purchases, were, for this survey, excluded from cost of goods sold and included under “operating expenses.”

- **Gross margin** represented sales less cost of goods sold. Gross margin is equivalent to the cost of all materials (as distinguished from goods to be resold) and services provided, whether provided by the reporting firm itself or purchased by it from others. To the extent that it included cost of contract work done by others on materials of merchant wholesale firms, gross margin included an element of value added by manufacturing.
- **Value added** was the gross margin (as defined above) less the cost of supplies, materials, fuel and other energy, and the cost of contract work on materials of merchant wholesalers.
- **Net income produced at market prices** was the value added less lease and rental payments; cost of communication, advertising, repair, legal, accounting, and computer related services; commissions to other firms; and amounts set aside for bad debt losses and other losses not compensated by insurance.
- **Net income produced at factor cost** was income produced at market prices less depreciation, license fees, and taxes other than income taxes. It included payroll, employer contributions to the Federal Insurance Contributions Act (FICA), and unemployment insurance.

### Sample Design

The 1997 BES sample combined probability samples drawn for the 1997 Annual Trade Survey, the 1997 Annual Retail Trade Survey, and the 1997 Service Annual Survey. The sampling frames for the surveys were constructed from the Census Bureau’s SSEL as of December 31, 1994. The sampling frame contained two types of sampling units that represent firms—

- Alpha numbers that represent multiestablishment firms owning or operating two or more establishments.
- EINs assigned by the IRS for Federal Insurance Contributions Act purposes that represent a cluster of one or more establishments.

Firms were stratified by kind-of-business and then by a measure of size based on annual receipts, revenue or sales.

To reduce the estimate variability, sampling units with the largest measures of size were selected “with certainty.” The Census Bureau determined, within each kind

of business, a substratum boundary (or cutoff) that divided the certainty units from the noncertainty units. All multiestablishment firms not selected with certainty and all single-establishment firms were subjected to sampling on an EIN basis.

Census Bureau staff analyzed the data from the 1992 Economic Census to determine the certainty cutoffs and noncertainty stratum boundaries, and to allocate the sample among the size strata and kind-of-business groups. The sampling rates used to select a random sample of EINs from each noncertainty stratum varied from 1-in-3 to 1-in-1,000.

After the initial sample selection was completed, newly identified businesses were represented in the sample through a two-phase sample procedure. Each quarter, new EINs on the IRS mailing lists for FICA taxpayers were identified and stratified by kind of business and size (expected employment or payroll). A relatively large sample was drawn and canvassed for a more reliable measure of size and a more detailed kind-of-business code, if needed. Using this more reliable information, the “births” selected in the first phase were subjected to probability-proportional-to-size sampling with overall probabilities equivalent to those used in drawing the initial sample. EIN births were added to the sample approximately 9 months after beginning operations.

### Data Collection

**Report forms.** Data covering the year 1997 were collected during 1998 using report forms that supplemented the Census Bureau’s Annual Business Surveys. In particular, forms B-151(S), B-151A(S), B-151D(S), B-153(S), and B-153D(S) supplemented the Annual Retail Trade Survey; forms B-450(S) and B-451(S) supplemented the Annual Trade Survey (of merchant wholesalers); and forms B-500(SA) and B-500(SE) supplemented the Service Annual Survey.

**Mailout and follow-up.** In January 1998, the Census Bureau sent 1997 BES questionnaires to approximately 60,000 businesses as a supplement to the Annual Retail Trade Survey, the Annual Trade Survey (of merchant wholesalers), and the Service Annual Survey. The due date for returning the responses—directly to the NPC—was March 12, 1998. On March 24, the Census Bureau mailed the first of three follow-up letters (with another copy of the questionnaire) to nonrespondents. This was succeeded by a second follow-up letter and questionnaire on April 28. The third and last follow-up was sent on May 27, 1998. Telephone follow-up began the last week of June and concluded in early September 1998. At close-out, after all follow-ups, the total response rate was almost 86 percent.

### Data Processing and Tabulation

**Receipt and check-in.** BES questionnaires received by mail were checked in by the NPC. This was done by reading mailing labels using automated barcode scanning

equipment. The resulting files were transferred to the BES main control file. Questionnaires received by FAX or telephone were checked in by clerks with direct access to the BES control file using the Census Bureau's Automated Control System (ACS) software. In addition to handling reports received by mail, fax, and phone, NPC staff handled UAA cases, as well as telephone and mail inquiries and requests. Congressional correspondence was referred to headquarters. Staff entered interactively into the ACS both check-in and associated actions. Problems too difficult or complex to resolve by NPC staff were referred to Census Bureau headquarters.

**Data entry.** After check-in, BES reports were routed to clerks in the screening section of the control unit. NPC clerks screened all questionnaires for completeness and to ensure that the information provided by respondents could be keyed. Questionnaires that were incomplete or inadequate for keying were referred to the on-site analyst for further review and/or for a telephone call to the company. After screening and problem resolution, the clerks batched the questionnaires into work units and forwarded them to the microfilming unit. The microfilming equipment stamped a reel number and frame number onto each questionnaire before filming. The NPC stored the original microfilm and sent a copy of each reel to Census Bureau headquarters to be used in the data-editing and data-analysis operations. After microfilming, the questionnaires were sent for data keying.

The data-entry unit keyed all data responses on the questionnaires, and after verification, transmitted the data files electronically to the Census Bureau's computer center in Bowie, MD, via dedicated telephone lines. The NPC retained backup copies of the data tapes for possible retransmission until notified that the data had been received.

**Edit and tabulation.** As soon as data from the Census Bureau's 1997 annual surveys of merchant wholesale, retail trade, and service industries were pronounced final, business records for selected data fields from the surveys' databases were copied to the new BES database. Once this was completed, records in the BES data entry output files were matched and the keyed data formatted into the BES database. The records in the BES database were subsequently batch edited for balance, consistency, and tolerance. The edit program "flagged" suspicious data for review by subject analysts using customized, interactive, computer systems.

After editing, BES records underwent imputation for missing data. Computer programs calculated imputation factors for all combinations of kind-of-business, legal form of organization, and tax status for selected types of organization. Then, imputation rates were computed during tabulation in order to measure the extent of imputation for analysis and potential use in the suppression system.

Tabulation of the BES database produced simple weighted estimates and adjusted estimates. The simple weighted estimates were obtained by summing the weighted data (reported or imputed), where the weight for a given sampling unit was the inverse of its probability of selection. Adjusted estimates were derived by benchmarking the simple weighted estimates to the SIC-based Business Annual Survey estimates. For merchant wholesale and retail trades, these estimates included sales; inventories; purchases of merchandise for resale; value added; gross margins; cost of goods sold; net income produced at market prices; and net income produced at factor cost. The 1997 BES estimates for retail trade and service industries included coverage for nonemployer firms. Estimates for these nonemployers were derived from information provided by other Federal agencies.

Finally, tabulated data were analyzed for reasonableness and consistency. Data that did not meet publication standards on the basis of this review, sampling error, or nonsampling error, were suppressed in the tables.

### **Tabulation and Sources of Related Data**

The BES tables were combined with previously published data covering other trade areas and released on the Internet and CD-ROM as the *Business Expenses* report, part of the 1997 *Company Statistics Series*. The sources of these related data were the Annual Survey of Communication Services, Annual Survey of Transportation and Warehousing, Arrangement of Passenger Transportation Annual Survey, and the 1997 Economic Census coverage of manufacturing, mineral industries, and construction sectors.

In addition, unpublished data on establishments auxiliary to manufacturing, mining, and construction were compiled: these operating expenses included supplemental labor costs, energy costs, taxes and a variety of purchased services including advertising, legal and accounting services, and repairs.

### **PUBLICATION PROGRAM—ECONOMY-WIDE PROGRAMS**

Data compiled from the 1997 industry-wide programs are released as part of the *Company Statistics Series*. The Census Bureau publishes the following seven reports in the EC97-CS series, in printed volumes—

- EC97CS-1, *Company Summary*.
- EC97CS-2, *Women-Owned Business Enterprises*.
- EC97CS-3, *Black*.
- EC97CS-4, *Hispanic*.
- EC97CS-5, *Asians and Pacific Islanders*.
- EC97CS-6, *American Indians and Alaska Natives*.
- EC97CS-7, *Summary*.

Each of these reports includes data by industrial classification and/or geographic areas (states, metropolitan areas, counties, and places), size of firm (employment and

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receipts), and legal form of organization (individual proprietorships, partnerships, and corporations). All seven of these reports were made available at the Census Bureau's Internet site "www.census.gov/csd/mwb," and also were published on CD-ROM.

The eighth report in the series—EC97CS-8, *Business Expenses*, was issued on CDROM and was available on the Census Bureau's Internet site. This report shows operating

expenses data at the national level for SIC-based merchant wholesale trade, retail trade, service industries, communications industries, transportation and warehousing, and travel industries. In addition, NAICS-based data are presented for manufactures, mineral industries, and construction industries.

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# Publication Program

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## INTRODUCTION

The U.S. Census Bureau published data for all sectors covered by the 1997 Economic Census, as well as data from the 1997 Commodity Flow Survey (CFS), 1997 Vehicle Inventory and Use Survey (VIUS), 1997 Surveys of Women- and Minority-Owned Businesses (SWOBE and SMOBE), 1997 Business Expenditures Survey (BES), and the 1997 Economic Census of Outlying Areas—Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, and the Virgin Islands of the United States. These data were published on the Internet and were made available on CD-ROM. Some, but not all, were published in printed reports.

Given the focus on electronic products for 1997 census data, the standardization of data presentation was critical. This was especially true for data disseminated by Internet or CD-ROM, where there is the potential for instant data comparison. Thus, sector-by-sector conformity was a key feature of the 1997 publication program, in terms of (1) methods of displaying geographic data, (2) units of measure, and (3) allowing the detail of publication to be driven by the data rather than predetermined. By contrast, certain artifacts of printed reports (such as brackets, underlines, or data-driven footnotes) that previously varied by sector were eliminated for 1997. As a result data presentation was greatly enhanced.

## Publication Planning

**The Economic Product Strategy Team.** To prepare for the release of 1997 data, the Census Bureau established several planning teams to study the various aspects of dissemination and product planning. The Economic Products Strategy Team (EPST) was organized to develop plans, strategies, and time frames for publishing the 1997 data in electronic reports.

The EPST recommended that the Census Bureau develop a new Core Business Statistics Series and eliminate printed reports for all but national summaries. Following reports by the subteams cited below, the EPST also recommended that, for the 1997 Economic Census, the Census Bureau—

- Publish 1997 data more quickly than data for 1992.
- Simplify data access, media, and software to appeal to a larger audience.
- Use the Internet as a primary tool for data dissemination.

- Publish CD-ROMs quarterly with new data, as these data become available.
- Provide a print-on-demand (or fax-on-demand) service for those users not prepared to use electronic-only data.

The team also recommended the Census Bureau establish additional working groups to address specific EPST objectives. Accordingly, the agency organized two EPST subgroups—

- **Economic Product Strategy Team-Subgroup 1** developed plans for a well coordinated data dissemination system, processing flow, and data content standards for the 1997 Economic Census.
- **Economic Product Strategy Team-Subgroup 2** developed design concepts for software to access product data on CD-ROMs and on the Internet. In response to findings from the user survey discussed below, the subgroup also developed the concept of “quick reports” to easily address the most basic user inquiries about geographic areas or industries, and specified the creation of an Economy-Wide Key Statistics file to make geography quick reports feasible.

Later, additional teams were organized to develop census products:

- **Economic Product Team (EPT)** prepared tables, text, Portable Document Format (pdf), and electronic file guidelines for the 1997 Economic Census report series; finalized the production flowchart; initiated and monitored the subject divisions’ specification preparations; supervised the incremental development of metadata files; developed a production system; and oversaw the production of 1997 data products.
- **Economic Products Internet and CD-ROM Team** determined the functional requirements for the CD-ROM and Internet access software. It also developed user interfaces and search/query/output routines for CD-ROM products.

**1995 Survey of Economic and Agriculture Data Users.** The EPST recommendations were supported by customer feedback obtained from the 1995 Survey of Economic and Agriculture Data Users, sent to 5,147 data users. (Response statistics are shown in Table 12-1.) The Census Bureau drew the sample for the survey from its own mailing list, as well as from sales records of the Government Printing Office (GPO). The agency’s mailing

list included subscribers to 1992 Economic Census CD-ROMs, other users known to Census Bureau specialists, and various intermediaries including census regional offices, State Data Center lead agencies, and Census Information Centers.

Table 12-1.  
**1995 Survey of Economic and Agriculture Data Users Response**

Total distribution	5,147
Postmaster returns	757
Out-of-scope	7
Mail response	1,031
Response rate	23.5 percent

The National Processing Center (NPC) in Jeffersonville, IN,<sup>1</sup> assembled and mailed the survey packages. Each package included a cover letter, questionnaire, and postage-paid return envelope. A promotional message, “Your Opinion Counts,” was overprinted on the outbound envelope to encourage recipients to respond. Mailout took place on August 4, 1995, with a request for response by August 15.

There was one follow-up mailing. A private contractor reprinted the survey forms and other materials, assembled the packages, and mailed them to nonrespondents on October 10, 1995. Questionnaires received at the NPC by December 1, 1995, were included in the final results.

Written responses supplied by survey participants suggested that the majority of data users wanted the Census Bureau to make more data available, in a more timely manner, regardless of the medium of publication. Respondents indicated that, in 1995, they primarily accessed data using the agency’s printed publications. They also believed that, within 5 years, they expected to access data in an electronic format, and they asserted that electronic dissemination would be most accessible by CD-ROM and the Internet.

## Electronic Dissemination

**Background information.** The Census Bureau traditionally published its major data findings in printed reports. The introduction of computers, and their use by both public and private data users, led the agency to begin publishing data in electronically readable formats. These data were published first on reels of computer tape, and later, as technology developed, on diskettes and CD-ROMs. The Census Bureau also used commercial online vendors, and, finally, the Internet. Although most 1992 Economic Census

reports were published in both printed and electronic formats, 1997 data publication was primarily electronic. Electronic media appeal to data users for three basic reasons:

- Electronic dissemination permits easier manipulation of data. From 1972 to 1992, while data on tape or CD-ROM mostly duplicated those available in print, users chose computerized data for its ability to be manipulated. These users employed tapes and CD-ROMs to rank, compare, analyze, reformat, and extract data. As CD-ROM software became easier to use, novice users began using these platforms for data analysis. CD-ROM’s provided data for all sectors on a single device, whereas a number of separate reports were required to disseminate the same data in print. The 1997 CD-ROM included search engines to further help users find data.
- More data series were available to users in electronic format. While most data from 1972 to 1992 appeared in both print and computerized media, the latter were unique sources for several databases too large to be printed cost-effectively. These included *ZIP-Code Statistics* and sub-national *Merchandise Line Sales*. The increasing cost of printed media, coupled with increasing acceptance of CD-ROMs and the Internet, led to the majority of data being released only in a standardized electronic format. In the 1997 Economic Census, more than 90 percent of the data released were available only in electronic format.
- Electronic dissemination allows faster distribution. The Internet provides immediate access to data as soon as they are released to the public, thus bypassing delays associated with the preparation of printed media, and surpassing even the speed of CD-ROM delivery.

Economic census products were sold either by the GPO or by the Census Bureau’s Customer Service Center. The majority of printed products were sold through the GPO. CD-ROMs, reports printed from PDFs, maps, and those printed reports the GPO elected not to sell were sold through the Census Bureau.

**CD-ROMs.** A single CD-ROM holds up to 680 million bytes of data. Software on each database CD-ROM enabled the user to select, reformat, merge, and rank numbers, and then export data to a spreadsheet or other application for further manipulation. The CD-ROMs were “plug and play” and self-documenting. Use of the access software on the CD-ROM required an IBM compatible,<sup>2</sup> Pentium computer using a Windows 95, Windows 98, or Windows NT operating system, and having 32 megabytes of RAM, as well as 10 megabytes of available hard-drive space.

Software programs in 1987 and 1992 were menu-driven, but lacked a graphic user interface. CD-ROMs for 1992 included four separate programs for simple data

<sup>1</sup>Prior to a reorganization effective May 1, 1998, this unit was called the Data Preparation Division (DPD).

<sup>2</sup>Applications for Macintosh platforms were not produced.

viewing, data extraction, printing of multisector profiles, and documentation. By contrast, the 1997 CD-ROM software integrated all these functions. The addition of a search function assisted users not yet familiar with the new North American Industry Classification System (NAICS) structure. Data files on 1997 CD-ROMs were redesigned to facilitate analysis of the entire economy versus analysis of a single sector. Standard hierarchic industry codes were used, rather than internal codes. Units of measure also were standardized across sectors. Publication criteria were made more flexible to allow presentation of data for more industries, particularly those most important in each locality. "Quick Reports" were added to simplify data retrieval for the novice user.

Data from the 1997 Economic Census were published from the first quarter of 1999 to the second quarter of 2001. The first CD-ROM, issued in September 1999, included only those relatively few industries and states published to that date. This product was reissued once every quarter, with successive CD-ROMs progressively more inclusive. Most CD-ROMs were sold exclusively by subscriptions. These subscriptions were to include roughly 8 quarterly issuances of the NAICS-based CD-ROM package (6 of which included two discs), and 3 SIC-based CD-ROMs. ZIP Code data were sold separately on a single CD-ROM.

**Internet.** Data users were able to access 1997 Economic Census data via the Census Bureau's Internet website at <http://www.census.gov>. Economic Census data were featured at <http://www.census.gov/econ97>. To access data via the Internet, data users needed only possess a computer, and to subscribe to an Internet service provider. Internet data could be viewed, manipulated, and printed using browsers on Windows, Macintosh, UNIX, and other operating systems.

Data users could access, free of charge, the two data formats—

- **Database.** The database access system, known as American Factfinder, had similar functions to those found in the CD-ROM software, including a search system and "quick reports."
- **Viewable.** Viewable formats allowed users to view or print tables similar to the detailed printed reports that were issued after previous economic censuses.

**Print-on-demand service.** To address the needs of users who may not have been prepared to use data in electronic form, the economic census planners worked with the Market Services Office (MSO) to develop a print-on-demand service. The MSO's Customer Services Branch developed the capability to print publications from the PDFs on the Internet, with covers of heavy stock and a rudimentary binding. Demand was relatively low because publications produced this way were relatively expensive

(roughly 10 cents per page plus \$20 for handling and courier delivery), and because most users eventually discovered that electronic access met their needs.

## 1997 ECONOMIC CENSUS PUBLICATIONS

### Core Business Statistics Series

Data collected in the 1997 Economic Census were published in several nationwide, economy-wide reports between 1999 and 2001<sup>3</sup> (see Tables 12-2 and 12-3).

**Advance Report.** The *Advance Report*, issued in March 1999, initiated the publication program with a preliminary look at 1997 census data. Information contained in this report provided data at the national level only, by sector and subsector. This report contained the first data ever published on a NAICS basis. While the NAICS table was limited to 1997 data, a separate SIC-based table showed figures for both 1992 and 1997, thus making possible the calculation of percent change in sales or employment over the 5-year period. The NAICS-based data contained within the *Advance Report* were superseded as more detailed geographic area and industry reports were published. The SIC-based data were superseded with the publication of *Comparative Statistics*.

**Comparative Statistics.** Once basic data were published on a NAICS basis, national and state totals were recast according to the 1987 SIC system. The *Comparative Statistics* report superseded the preliminary two-digit SIC statistics in the *Advance Report*. *Comparative Statistics* contained two-, three-, and four-digit SIC summaries.<sup>4</sup>

**Bridge Between NAICS and SIC.** The *Bridge Between NAICS and SIC* presents 1997 data cross-tabulated by both old and new classification systems identifying the lowest common denominators between the two systems.

Conceptually, the bridge tables reflected the same combinations shown in the correspondence tables of the *1997 NAICS Manual*. However, each line was extended to show the number of establishments, sales or receipts, payroll, and employment associated with a particular NAICS and SIC combination. From the *Bridge Between NAICS and SIC*, data users were able to calculate percentages for allocation strategies to assemble time series before and after 1997. Because the *Bridge Between NAICS and SIC* provided a key to translation between NAICS and SIC, it is published in both printed and electronic formats.

**Nonemployer Statistics.** Nonemployer statistics summarized the number of establishments, and sales or receipts, of companies with no paid employees. These

<sup>3</sup>At this writing, July 2000, what follows was the Census Bureau's projected publication schedule.

<sup>4</sup>No SIC-based data were published for metro areas, counties, or cities, due to the complexity of evaluating the potential for disclosure of confidential company information stemming from the interplay of NAICS and SIC classifications.

nonemployers are typically self-employed individuals or partnerships operating businesses that they have chosen not to incorporate. Although nonemployers account for approximately 3 percent of the Nation's business activity, they represent nearly 75 percent of all businesses. As a result, data from these businesses was crucial for the analysis of the Nation's economy.

Payroll tax records are at the heart of the Census Bureau's system for keeping track of businesses between censuses. However, because nonemployers (firms not covered by payroll tax) do not file such tax records, they are not sent census questionnaires. Therefore, nonemployers are not reflected in other core business statistics or detailed sector-specific reports.

### Sector Report Series

The Census Bureau also published report series for individual sectors (see Table 12-3). Industry-specific data were published in the following reports:

**Industry Series.** Industry statistics, product statistics, and materials consumed reports were issued for six-digit NAICS industries in mining, construction, and manufacturing. While most data were reported in terms of NAICS, these reports show limited data for the SIC Codes, or parts thereof, that corresponded to the subject six-digit NAICS. More complete and definitive data about the relationship between NAICS and SIC Codes were published in the Bridge Between NAICS and SIC.

**Geographic Area Series.** The geographic area series were issued for each sector, most containing 52 reports a U.S. summary report and one report for each state and the

District of Columbia. There was no U.S. summary report issued as part of the geographic area series for mining, construction and manufacturing, and for mining Delaware and the District of Columbia were combined in a single report to avoid disclosing information about a small number of companies in the District.

**Subject Series.** Subject series reports were published for each sector to add further dimension to the analysis of industries. Subject series reports, listed in Table 12-3, included topics such as merchandise line sales, establishment and firm size, and miscellaneous subjects.

**ZIP Code Statistics.** ZIP Code statistics were published for selected sectors. These reports presented counts of establishments, by size, by detailed NAICS classifications, for five-digit ZIP Codes. These statistics included the count of establishments in several employment-size categories (fewer than 5 employees, 5 to 9, 10 to 19, 20 to 49, 50 to 99, and 100 or more employees). For sectors other than manufacturing, establishment counts were also provided by sales- or receipts-size class by NAICS classification, and summary total sales, employment, and payroll without regard to the NAICS. Establishment counts by size class were not considered to be a disclosure of confidential information, and thus could be shown for areas as small as ZIP Codes.

**Summary Series.** After the publication of all industry, area, and subject reports for each sector, a single volume was published in print that summarized the most widely used statistics about that sector from all the previously issued reports.

Table 12-2.  
1997 Economic Census Publication Schedule, by Quarter

	1999				2000				2001	
	1	2	3	4	1	2	3	4	1	2
Quarter of Publication .....	1	2	3	4	1	2	3	4	1	2
Advance Report .....	X									
Industry Series .....		X	X	X						
Geographic Area Series .....		X	X	X	X	X				
Comparative Statistics .....					X					
Bridge Between NAICS and SIC .....					X					
Subject Reports .....						X	X	X	X	
Summary Reports .....									X	X
ZIP Code Statistics .....										
Nonemployer Statistics .....							X			
Outlying Areas .....	X	X	X	X	X				X	
Business Expenses .....								X		
Minority- and Women-Owned Business Enterprises .....							X	X		

Table 12-3  
Publications by Sector

Sector and Title	Geography	Media	Projected release date (as of Mar. 2000)
<b>Economy-Wide</b>			
Core Business Statistics:			
Advance Report .....	U	D,V,P	Mar. 1999
Comparative Statistics .....	U, S, U	D, V	Jun. 2000
Bridge Between NAICS and SIC .....	U, S	D, V, P	Jun. 2000
Nonemployer Statistics .....	U, S	D	3 <sup>rd</sup> qtr. 2000
Auxiliary Establishments .....	U, S	D, V	Feb. 2000
Company Statistics:			
Minority- and Women-Owned Business Enterprises .....	U, S, M, C, P	D, V, P	3 <sup>rd</sup> - 4 <sup>th</sup> qtr. 2000
Business Expenses .....	U	D, V	4 <sup>th</sup> qtr. 2000
<b>Mining</b>			
Industry Series .....	U, S	D, V	Jul. 1999 - Dec. 1999
Geographic Area Series .....	U, S	D, V	Mar. 1999 - Apr. 2000
Subject Series: General Summary .....	U, S	D, V, P	2 <sup>nd</sup> qtr. 2000
Subject Series: Product Summary .....	U	D, V, P	3 <sup>rd</sup> qtr. 2000
Subject Series: Materials and Fuels Consumed .....	U	D, V, P	3 <sup>rd</sup> qtr. 2000
Location of Mining .....	U, S	D	1 <sup>st</sup> qtr. 2000
<b>Utilities</b>			
<b>Geographic Area Series</b> .....	U, S, M	D, V	Jan. 2000
Subject Series: Revenue Lines .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2000
Summary .....	U	D, V, P	2 <sup>nd</sup> qtr. 2000
<b>Construction</b>			
Industry Series .....	U, S	D, V	Jul. 1999 - Jun. 2000
Geographic Area Series .....	U, S	D, V	Mar. 1999 - Apr. 2000
Subject Series: Industry Summary .....	U, S	D, V, P	Jan. 2000
Subject Series: Geographic Area Summary .....	U, S	D, V, P	2 <sup>nd</sup> qtr. 2000
<b>Manufacturing</b>			
Numerical List of Mfg/Mineral Products .....	(NA)	D, V, P	Apr. 1999
Industry Series .....	U, S	D, V	May 1999 - Jan. 2000
Geographic Area Series .....	U, S, M, C, P	D, V	Apr. 2000
Subject Series: General Summary .....	U, S, M	D, V, P	1 <sup>st</sup> qtr. 2001
Subject Series: Product Summary .....	U, S	D, V, P	1 <sup>st</sup> qtr. 2001
Subject Series: Materials Consumed .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
Subject Series: Concentration Ratios .....	U	D, V	1 <sup>st</sup> qtr. 2001
Subject Series: Class of Customer .....	U	D, V	1 <sup>st</sup> qtr. 2001
Location of Manufacturing .....	U, S, M, C, P	D	2 <sup>nd</sup> qtr. 2001
ZIP Code Statistics .....	Z	D	2 <sup>nd</sup> qtr. 2001
<b>Wholesale Trade</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	May 1999 - Jan. 2000
Subject Series: Commodity Line Sales .....	U, S, M	D, V	2 <sup>nd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S, M	D, V	4 <sup>th</sup> qtr. 2000
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
<b>Retail Trade</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	May 1999 - Jan. 2000
Subject Series: Merchandise Line Sales .....	U, S, M	D, V	2 <sup>nd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S, M	D, V	4 <sup>th</sup> qtr. 2000
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP-Code Statistics .....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Transportation and Warehousing</b>			
Geographic Area Series .....	U, S, M	D, V	Feb. 2000
Subject Series: Revenue Lines .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	2 <sup>nd</sup> qtr. 2001
Vehicle Inventory and Use Survey .....	U, S	D, V	Oct. 1998 - Oct. 1999

Table 12-3  
Publications by Sector

Sector and Title	Geography	Media	Projected release date (as of Mar. 2000)
<b>Information</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	Oct. 1999
Subject Series: Sources of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics .....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Finance and Insurance</b>			
Geographic Area Series .....	U, S, M	D, V	Feb. 2000
Subject Series: Revenue Lines .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	2 <sup>nd</sup> qtr. 2001
<b>Real Estate and Rental and Leasing</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	Jun. 1999 - Jan. 2000
Subject Series: Sources of Receipts .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
<b>Professional, Scientific, and Technical Services</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	Jul. 1999 - Dec. 1999
Subject Series: Source of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
Zip Code Statistics .....	Z	D	2 <sup>nd</sup> qtr. 2001
<b>Management of Companies and Enterprises</b>			
Geographic Area Series .....	U, S	D, V	Feb. 2000
Subject Series: Sources of Receipts .....	U	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
<b>Administrative and Support, Waste Management and Remediation Services</b>			
Geographic Area Series .....	U, s, M, C, P	D, V	Aug. 1999 - Jan. 2000
Subject Series: Sources of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics .....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Educational Services</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	Sep. 1999
Subject Series: Sources of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics .....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Health Care and Social Assistance</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	Oct. 1999
Subject Series: Sources of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size .....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics .....	U, S, D	D	2 <sup>nd</sup> qtr. 2001

Table 12-3  
Publications by Sector

Sector and Title	Geography	Media	Projected release date (as of Mar. 2000)
<b>Arts, Entertainment, and Recreation</b>			
Geographic Area Series .....	U, S, M	D, V	Sep. 1999 - Nov. 1999
Subject Series: Sources of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size.....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S, M	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics.....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Accommodation and Foodservices</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	May 1999 - Jan. 2000
Subject Series: Merchandise Line Sales .....	U, S, M	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size.....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S, M	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics.....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Other Services (Except Public Administration)</b>			
Geographic Area Series .....	U, S, M, C, P	D, V	Dec. 1999
Subject Series: Sources of Receipts .....	U, S	D, V	3 <sup>rd</sup> qtr. 2000
Subject Series: Establishment and Firm Size.....	U	D, V	4 <sup>th</sup> qtr. 2000
Subject Series: Miscellaneous Subjects .....	U, S, M	D, V	1 <sup>st</sup> qtr. 2001
Summary .....	U	D, V, P	1 <sup>st</sup> qtr. 2001
ZIP Code Statistics.....	U, S, Z	D	2 <sup>nd</sup> qtr. 2001
<b>Outlying Areas</b>			
Puerto Rico:			
Geographic Area Series .....	PR, C	D, V, P	2 <sup>nd</sup> qtr. 2000
Subject Series.....	PR	D, V, P	2 <sup>nd</sup> qtr. 2000
Construction .....	PR, M, C	D, V, P	2 <sup>nd</sup> qtr. 2000
Manufactures .....	PR, M, C	D, V, P	2 <sup>nd</sup> qtr. 2000
Virgin Islands.....	VI, C, P	D, V, P	Nov. 1999
Guam .....	GU, C	D, V, P	Sep. 1999
Northern Mariana Islands .....	NM, C	D, V, P	Mar. 1999

**Key to Geography:** U = United States, S = States, M = Metropolitan Areas, C = Counties, P = Places Z = ZIP Code area. **Key to Media:** D = Database, V = Viewable, P = Printed

### Company Statistics Series

The Census Bureau publishes eight reports in its Company Statistics Series following the 1997 Economic Census. Six reports publish data on minority-owned and women-owned business enterprises, and the Company Summary provides corresponding information on all businesses:

- EC97CS-1, *Company Summary*.
- EC97CS-2, *Women-Owned Businesses*.
- EC97CS-3, *Black*.
- EC97CS-4, *Hispanic*.
- EC97CS-5, *Asians and Pacific Islanders*.
- EC97CS-6, *American Indians and Alaska Natives*.
- EC97CS-7, *Summary*.

Each of these reports contain national data by SIC-based industry groups, size of firm (employment and receipts), and legal form of organization. Totals were also

shown for states, metropolitan areas, counties and places. Because of their broad popularity, these seven reports were issued in print, as well as in electronic form.

The eighth report in the Company Statistics series EC97CS-8, *Business Expenses*—provided data on operating expenses of retailers, merchant wholesalers, and service firms (as classified under the SIC) and auxiliary establishments of manufacturing, mining, and construction firms (as classified by the NAICS). Operating expenses include supplemental labor costs, energy costs, taxes and a variety of purchased services including advertising, legal and accounting services, and repairs. (Auxiliary establishments provide services to other parts of the same company.)

### 1997 Economic Census of Outlying Areas

#### Puerto Rico—Geographic Area Series (OA97E-1).

This report presented data for the wholesale and retail trade and service industries. It included kind-of-business detail on number of establishments, sales or receipts, payroll, employment, proprietors and partners working, and legal form of organization. Data were presented for Puerto

Rico as a whole, for commercial regions, and for municipalities. Retail trade data included total and selling floor space, franchise holders, and class of customer for selected kinds of business. Wholesale trade data on inventories, operating expenses, class of customer, and employment by principal activity were presented by kind-of-business. Data for hotels and motels by type of receipts and number of rooms were published for service industries.

**Puerto Rico—Subject Series (OA97E-2).** The subject report presented commodity and merchandise line sales data for retail and wholesale trade by kind-of-business for Puerto Rico.

**Puerto Rico—Construction (OA97E-3).** This report presented summary, industry, and geographic area statistics. The industry chapter presented 1997 data for industries on the number of construction establishments; value of construction work; employment; proprietors and partners working; payroll; hours worked; payments to subcontractors; payments for materials, components, and supplies; payments for power, fuels, and lubricants; payments for rental of machinery, equipment, and structures; value added; and capital expenditures during the year. Selected data were shown for selected industries by geographic location of establishments and by legal form of organization. Data also were provided for establishments by employment size.

**Puerto Rico— Manufacturing (OA97E-4).** This report included data on the number of establishments, employment, proprietors and partners working, payroll, value of shipments, value added by manufacturers, class of customer, inventories, costs of materials, capital expenditures, and country of destination. Statistics were shown by industry and geographic area.

**Virgin Islands of the United States (OA97E-5).** This report presented data by kind of business for construction industries, manufactures, retail trade, wholesale trade, and service industries. In addition to data for the Virgin Islands as a whole, data were presented for St. Thomas and St. John (combined to prevent disclosure problems), St. Croix and the towns of Charlotte Amalie, Chistiansted, and Frederiksted.

**Guam (OA97E-6).** This report presented data by kind of business for construction industries, manufacturing, retail trade, wholesale trade, and service industries. Tables presented data for Guam and its election districts.

**Northern Mariana Islands<sup>5</sup> (OA97E-7).** This report presented data by kind of business for construction industries, manufacturing, retail trade, wholesale trade, and service industries. Tables presented data for the Northern Mariana Islands and the four municipalities.

<sup>5</sup>Commonwealth of the Northern Mariana Islands (CMNI). See Chapter 9, "The Economic Census of Outlying Areas."

## Reference Series

In addition to the above reports, the Census Bureau published a number of reference works to help locate data for specific industrial, product, or geographic categories, or for additional information about the economic census programs.

**Preview to the 1997 Economic Census.** This booklet was an overview of the content and dissemination of products containing data collected in the 1997 Economic Census. The booklet contained a number of key reference charts, all organized by NAICS sector: coverage of the economic census, data items (e.g., employment sales/receipts), geographic coverage, and data products. Several special programs (i.e., minority- and women-owned businesses and transportation surveys) were also described.

**Guide to the 1997 Economic Census.** This Internet-only reference described the content and products of the Economic Census in much greater detail than was possible in the Preview to the 1997 Economic Census. Its contents were kept up-to-date as new information became available. The Guide to the 1997 Economic Census included descriptions of related monthly, quarterly, and annual data. The Guide was accessible at [www.census.gov/epcd/www/guide.html](http://www.census.gov/epcd/www/guide.html)

**1997 North American Industry Classification System—United States.** Both printed and CD-ROM versions of the *1997 NAICS Manual* were published under the auspices of the U.S. Office of Management and Budget. In addition, most of the manual's features were included at the NAICS Internet site: <http://www.census.gov/naics>. The manual included—

- Detailed industry definitions.
- Tables showing correspondence between the 1997 NAICS and 1987 SIC Codes.
- An alphabetical list of more than 18,000 types of business activities and their corresponding NAICS code. A section on "Why businesses need NAICS" was included in the printed and PDF versions of the manual.

**Accountant's Guide to the 1997 Economic Census (EC97-PR2).** This guide was created to assist accountants in completing economic census forms for their clients, and to stress the importance of responding to the census. Like other guides, it described products, programs, and uses of data. It answered questions frequently asked by accountants, explained what their clients would receive, and provided sample census questionnaires.

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**Preparing for the 1997 Economic Census, Advance Information You Can Use (EC97-PR1).** This booklet presented information designed to help businesses prepare for the 1997 Economic Census. It contained samples of census questionnaires; Census Bureau telephone numbers and e-mail addresses by industry and trade; and information on how questionnaires could be obtained and answered electronically. The booklet also noted data uses, and identified main topics in the census.

**Numerical List of Manufactured and Mineral Products, Reference Series (EC97M31R-NL).** This publication lists the detailed product classes and products published for the manufacturing and mining sectors in the Industry Series reports.

**The Economic Census—Two Moments of Truth: 1954 and 1997 (EC97X-TMT).** This booklet described the role of the 1953 Watkins Commission Report in reinstating the 1954 Economic Census. Used as a promotional item for the 1997 Economic Census, it drew parallels between events surrounding the 1954 and 1997 censuses.

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# Completing the Census Bureau's Mission Through Data Integration

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## A REVIEW OF OUR JOURNEY

The U.S. Census Bureau's mission statement is quite clear: "Be the pre-eminent collector, and provider, of timely, relevant, and quality data about the people and the economy of the United States." The foregoing chapters of *The History of the 1997 Economic Census* have shown how far the Census Bureau has come in achieving its mission, particularly in collecting and providing economic census data.

Chapter 2, "The Players and The Plans," showed that to plan and carry out the 1997 census with improvements in efficiency over the previous economic censuses there were a series of reorganizations among the divisions under the Economic Directorate.

To better identify, classify, and measure the business activity of our economy, the United States—with the publication of the 1997 Economic Census—was the first of three nations to apply the new North American Industry Classification System (NAICS) (Chapter 3. "The Introduction of the North American Industry Classification System"). The data quality stemming from this census was expected to surpass that of earlier enumerations as a result of the more comprehensive and refined identification of economic sectors and sub-sectors.

Always mindful of both data user needs, as well as potential respondent burden in supplying information on the census questionnaires, Census Bureau staff went through a lengthy process of determining which questions to ask for the 1997 census (Chapter 4, "Questionnaire Design and Development"). This process went to the heart of the agency's mission to collect "relevant and quality data."

Chapter 5, "Promoting Census and Product Awareness," showed how earlier promotional efforts were built upon—and combined with use of the Internet—to produce a state-of-the-art promotional campaign. This was the first economic census promotional effort that explicitly connected census awareness and product promotion.

"Geographic Area Coding," Chapter 6, detailed the excellent system that has evolved across many censuses for linking business activity to legally or administratively established, and statistically defined, geographic entities.

"Preparations for Census Mailout," in Chapter 7, showcased the Census Bureau's advances in data collection techniques. The new DocuPrint 4890 Highlight Laser Printing System was used to print questionnaires, follow-up letters, envelopes, and many other materials essential to collecting information from millions of businesses. The

system eliminated many of the massive clerical assembly line activities at the Census Bureau's National Processing Center and many, though not all, private printing contracts were no longer necessary because of the in-house capacity of the DocuPrint system.

"Data Collection and Processing," Chapter 8, showed that centralized collection activities were followed by decentralized post-collection processing. The chapter discussed the Census Bureau's latest techniques for data check-in, entry, and control file matching, as well as a host of post-collection activities that made the data fit for tabulation and dissemination. New for the 1997 census was the development of a module, aptly named "Plain Vanilla" for its generalized edit function, for post-collection data processing.

Chapter 9, "Collecting the Census in the Outlying Areas," reflected the advances in census-taking discussed in Chapters 7 and 8. The Outlying Areas included Puerto Rico, the Virgin Islands of the United States, Guam, and the Commonwealth of the Northern Marianas Islands.

Chapter 10, "Transportation Surveys," covered the 1997 Vehicle Inventory and Use Survey and the 1997 Commodity Flow Survey, as well as the precursors to those surveys. Improvements were made to both surveys based upon earlier attempts to accurately measure, respectively, the Nation's trucking fleet, and the flow of goods and materials according to mode of transportation.

Chapter 11, "Economy-Wide Programs," discussed the Surveys of Minority- and Women-Owned Businesses, which were economy-wide, as well as the Business Expenditures Survey (BES). The History of the 1997 Economic Census has the distinction of having the most detailed explanation of the BES of any census document ever targeted to a wide audience. The many associated surveys that lead into the BES are referenced in this chapter.

Chapter 12, "Publication Program," described the Census Bureau's expanded electronic data dissemination endeavors, with particular emphasis on the Internet and improved CD-ROM capabilities. The titles of an array of pre-census promotional and informational items, as well as a vast offering of products formed the basis of this chapter.

Without question, it can be said that the Census Bureau's continuing improvements in data collection techniques guaranteed that the 1997 Economic Census surpassed all previous economic censuses in sophistication.

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## THE TWO-FOLD PATH: COLLECTION AND DISSEMINATION

The entire purpose of data collection is data dissemination. The Census Bureau's mission, as mentioned, is two-fold: collection and dissemination. Plans for disseminating 1997 data were equally ambitious, as were the new, improved logistics of data collection. The 1997 dissemination strategies were to serve as the precursor to future Census Bureau data dissemination endeavors.

The Census Bureau has taken pride in its award-winning website at [www.census.gov](http://www.census.gov). *PC Magazine* sited the U.S. Census Bureau as among the "Top 100 Web Sites" in 1998, and *Government Executive Magazine* sited the U.S. Census Bureau as one of "GovExec's Best Feds on the Web" in 1999. But while awards for accomplishments capture a single point in time, a premier data collection and dissemination statistical agency must move with the times in order to retain its celebrity and prestige.

Data users have been challenging statistical agencies for years to make their data easier to obtain, easier to understand, and more relevant to real world issues. Survey results show that data use is on the increase, as are needs for using multiple data sets. Moreover, the burgeoning popularity of the Internet has increased both proficiency and expectations among data users. Among these expectations are the need for both tailored information delivery and dynamic data integration.

## DATA INTEGRATION AS COMPLETION OF THE MISSION

It is in the data integration field that the Census Bureau has the greatest opportunity to add value to the data it collects, to consolidate its mission of being a pre-eminent data provider, and to retain its reputation as a highly respected statistical agency.

"Data integration" simply means the construction of an electronic architecture that permits data users to access data from multiple data sets with minimum "mouse

clicks." Currently, it is necessary for users first to familiarize themselves with how the Federal Government, the Census Bureau, its programs, or its data files are organized. The user then searches, parses, and compiles information into digestible formats across various data sets to arrive at an answer to a research question. The technology exists, however, to free data users from these steps.

At this writing, the Census Bureau is on the threshold of providing a modernized, customer-driven, cross-program, and cross-agency integrated data access and dissemination system. Although many technical issues will need to be addressed and resolved before this system becomes fully operational, the important point, from the standpoint of the history of the 1997 Economic Census, is that the Census Bureau has recognized the need for the creation of such a system. To that end, the Census Bureau will be incorporating data from the 1997 census, as well as from Census 2000, into its new "Integrated Statistical Solutions" system.

This system will provide users with answers to their questions—without the user first having to master the structure of the Census Bureau's, or any other source's, data file organization. It should be mentioned that, as developed, the system will incorporate more and more data sets from within the Census Bureau, as well as data sets from other Federal, state and local sources. Thus, data integration is an important component of the revolution in electronic data dissemination. It will enable data users to realize the full value of data collected and provided by the U.S. Census Bureau.

If the economic data the Census Bureau collects every 5 years shows one fact, it is this: Success of an industry rests upon keeping up with the times—and with the competition. Whoever takes advantage of the technology of the times and taps into public demands becomes the pre-eminent provider of the service. Entering the new millennium, the Census Bureau is well-positioned for such success.

# Appendix A.

## Provisions of Title 13, United States Code, Relating to the 1997 Economic Census

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### CHAPTER 1. ADMINISTRATIVE

#### Subchapter I—General Provisions

##### **5. Questionnaires; number, form, and scope of inquiries**

The Secretary shall prepare questionnaires, and shall determine the inquiries, and the number, form, and subdivisions thereof, for the statistics, surveys, and censuses provided for in this title.

##### **6. Information from other Federal departments and agencies; acquisition of reports from other governmental and private sources**

- (a) The Secretary, whenever he considers it advisable, may call upon any other department, agency, or establishment of the Federal Government, or of the government of the District of Columbia, for information pertinent to the work provided for in this title.
- (b) The Secretary may acquire, by purchase or otherwise, from States, counties, cities, or other units of government, or their instrumentalities, or from private persons and agencies, such copies of records, reports, and other material as may be required for the efficient and economical conduct of the censuses and surveys provided for in this title.
- (c) To the maximum extent possible and consistent with the kind, timeliness, quality and scope of the statistics required, the Secretary shall acquire and use information available from any source referred to in subsection (a) or (b) of this section instead of conducting direct inquiries.

##### **7. Printing; requisitions upon Public Printer; publication of bulletins and reports**

The Secretary may make requisitions upon the Public Printer for miscellaneous printing necessary to carry out the provisions of this title. He may further have printed by the Public Printer, in such editions as he deems necessary, preliminary and other census bulletins, and final reports of the results of the several investigations authorized by this title, and may publish and distribute such bulletins and reports.

##### **8. Authenticated transcripts or copies of certain returns; other data; restriction on use; disposition of fees received**

- (a) The Secretary may, upon written request, furnish to any respondent, or to the heir, successor, or authorized agent of such respondent, authenticated transcripts or copies of reports (or portions thereof) containing information furnished by, or on behalf of, such respondent in connection with the surveys and census provided for in this title, upon payment of the actual or estimated cost of searching the records and furnishing such transcripts or copies.
- (b) Subject to the limitations contained in sections 6(c) and 9 of this title, the Secretary may furnish copies of tabulations and other statistical materials which do not disclose the information reported by, or on behalf of, any particular respondent, and may make special statistical compilations and surveys, for departments, agencies, and establishments of the Federal Government, the government of the District of Columbia, the government of any possession or area (including political subdivisions thereof) referred to in section 191(a) of this title, State or local agencies, or other public and private persons and agencies, upon payment of the actual or estimated cost of such work. In the case of nonprofit agencies or organizations, the Secretary may engage in joint statistical projects, the purpose of which [is] otherwise authorized by law, but only if the cost of such projects [is] shared equitably, as determined by the Secretary.
- (c) In no case shall information furnished under this section be used to the detriment of any respondent or other person to whom such information relates, except in the prosecution of alleged violations of this title.
- (d) All moneys received in payment for work or services enumerated under this section shall be deposited in a separate account which may be used to pay directly the costs of such work or services, to repay appropriations which initially bore all or part of such costs, or to refund excess sums when necessary.

## 9. Information as confidential; exception

- (a) Neither the Secretary, nor any other officer or employee of the Department of Commerce or bureau or agency thereof, may, except as provided in section 8 of this title—
- (1) use the information furnished under the provisions of this title for any purpose other than the statistical purposes for which it is supplied; or
  - (2) make any publication whereby the data furnished by any particular establishment or individual under this title can be identified; or
  - (3) permit anyone other than the sworn officers and employees of the Department or bureau or agency thereof to examine the individual reports.

No department, bureau, agency, officer, or employee of the Government, except the Secretary in carrying out the purposes of this title, shall require, for any reason, copies of census reports which have been retained by any such establishment or individual. Copies of census reports which have been so retained shall be immune from legal process, and shall not, without the consent of the individual or establishment concerned, be admitted as evidence or used for any purpose in any action, suit, or other judicial or administrative proceeding.

## 12. Mechanical and electronic development

The Secretary is authorized to have conducted mechanical and electronic development work as he determines is needed to further the functions and duties of carrying out the purposes of this title and may enter into such developmental contracts as he may determine to be in the best interest of the Government.

## Subchapter II—Officers and Employees

### 23. Additional officers and employees

- (c) The Secretary may utilize temporary staff, including employees of Federal, State, or local agencies or instrumentalities, and employees of private organizations to assist the Bureau in performing the work authorized by this title, but only if such temporary staff is sworn to observe the limitations imposed by section 9 of this title.

### 24. Special employment provisions

- (a) The Secretary may utilize the services of non-temporary employees of the Bureau (by assignment, promotion, appointment, detail, or otherwise) in temporary positions established for any census, for not to exceed the period during

which appropriations are available for that census. Whenever the Secretary determines that the services of an employee which have been utilized under this section are no longer required in such a temporary position, he may, without regard to the provisions of any other law, return the employee to a continuing position, with rank and compensation not less than that which he held in his last permanent position in the Bureau: Provided, That no employee shall, by reason of his service in a temporary position under this subsection, lose the protection of any law or regulation with respect to his separation, suspension, furlough, or reduction in rank or compensation below the level held in his last permanent position in the Bureau. Service by a nontemporary employee in a temporary position under this subsection shall be creditable for step increases (both periodic and longevity) under title VII of the Classification Act of 1949, as amended, as though it were a continuation of service in his last permanent position.

- (b) As used in this title with respect to appointments or positions, “temporary” shall be construed to mean not in excess of one year, or not in excess of the specific period during which appropriations are available for the conduct of a particular census, whichever is longer. No employee of the Bureau who holds only a temporary appointment within the meaning of this section shall be considered as other than strictly temporary for purposes of any other provision of law relating to separations, suspensions, or reductions in rank or compensation.
- (d) The Secretary may fix compensation on a piece-price basis without limitation as to the amount earned per diem, and payments may be made to enumerators for the use of private automobiles on official business without regard to section 4 of the Travel Expense Act of 1949, as amended (5 U.S.C. 837), but at rates not in excess of the rates provided by that Act.
- (e) The Secretary may authorize the expenditure of necessary sums for travel expenses of persons selected for appointment for attendance at training courses held by the Department of Commerce with respect to any of the work provided for by law.

### 25. Duties of supervisors, enumerators, and other employees

- (a) Each supervisor shall perform the duties imposed upon him by the Secretary in the enforcement of chapter 5 of this title in accordance with the Secretary’s orders and instructions.

- (b) Each enumerator or other employee detailed to serve as enumerator shall be charged with the collection in his subdivision of the facts and statistics called for on such schedules as the Secretary determines shall be used by him in connection with any census or survey provided for by chapter 5 of this title.

## CHAPTER 5. CENSUSES

### Subchapter I—Manufactures, Mineral Industries, and Other Businesses

#### 131. Collection and publication; five-year periods

The Secretary shall take, compile, and publish censuses of manufactures, of mineral industries, and of other businesses, including the distributive trades, service establishments, and transportation (exclusive of means of transportation for which statistics are required by law to be filed with, and are compiled and published by, a designated regulatory body), in the year 1964, then in the year 1968, and every fifth year thereafter, and each such census shall relate to the year immediately preceding the taking thereof.

#### 132. Controlling law; effect on other agencies

To the extent that the provisions of this subchapter or subchapter IV of this chapter conflict with any other provision of this title or other law, pertaining to the Secretary or the Department of Commerce, the provisions of this title shall control; but nothing in this title shall be deemed to revoke or impair the authority of any other Federal agency with respect to the collection or release of information.

### Subchapter IV—Interim Current Data

#### 182. Surveys

The Secretary may make surveys deemed necessary to furnish annual and other interim current data on the subjects covered by the censuses provided for in this title.

### Subchapter V—Geographic Scope, Preliminary and Supplemental Statistics, and Use of Sampling

#### 191. Geographic scope of censuses

- (a) Each of the censuses authorized by this chapter shall include each State, the District of Columbia, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and the Commonwealth of Puerto Rico, and as may be determined by the Secretary, such other possessions and areas over which the United States exercises jurisdiction, control, or sovereignty. Inclusion of other areas over

which the United States exercises jurisdiction or control shall be subject to the concurrence of the Secretary of State.

- (b) For censuses taken in the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, or any possession or area not specifically designated in subsection (a) of this section, the Secretary may use census information collected by the Governor or highest ranking Federal official, if such information was obtained in accordance with plans prescribed or approved by the Secretary.
- (c) If, pursuant to a determination by the Secretary under subsection (a) of this section, any census is not taken in a possession or area over which the United States exercises jurisdiction, control, or sovereignty, the Secretary may include data obtained from other Federal agencies or government sources in the census report. Any data obtained from foreign governments shall be obtained through the Secretary of State.

#### 193. Preliminary and supplemental statistics

In advance of, in conjunction with, or after the taking of each census provided for by this chapter, the Secretary may make surveys and collect such preliminary and supplementary statistics related to the main topic of the census as are necessary to the initiation, taking, or completion thereof.

#### 195. Use of sampling

Except for the determination of population for purposes of apportionment of Representatives of Congress among the several States, the Secretary shall, if he considers it feasible, authorize the use of the statistical method known as "sampling" in carrying out the provisions of this title.

## CHAPTER 7. OFFENSES AND PENALTIES

### Subchapter I—Officers and Employees

#### 211. Receiving or securing compensation for appointment of employees

Whoever—

- (1) receives or secures to himself any fee, reward, or compensation as a consideration for the appointment of any person as supervisor, enumerator, clerk, or other officer or employee of the Department of Commerce or bureau or agency thereof, referred to in subchapter II of chapter I of this title; or

- (2) in any way receives or secures to himself any part of the compensation paid to any person so appointed— shall be fined not more than \$3,000 or imprisoned not more than five years, or both.

**212. Refusal or neglect of employees to perform duties**

Whoever, being an employee referred to in subchapter II of chapter I of this title, and having taken and subscribed the oath of office, neglects or refuses, without justifiable cause, to perform the duties enjoined on such employee by this title, shall be fined not more than \$500.

**213. False statements, certificates, and information**

- (a) Whoever, being an officer or employee referred to in subchapter II of chapter I of this title, willfully and knowingly swears or affirms falsely as to the truth of any statement required to be made or subscribed by him under oath by or under authority of this title, shall be guilty of perjury, and shall be fined not more than \$2,000 or imprisoned not more than five years, or both.
- (b) Whoever, being an officer or employee referred to in subchapter II of chapter I of this title—
- (1) willfully and knowingly makes a false certificate or fictitious return; or
  - (2) knowingly or willfully furnishes or causes to be furnished, or, having been such an officer or employee, knowingly or willfully furnished or caused to be furnished, directly or indirectly, to the Secretary or to any other officer or employee of the Department of Commerce or bureau or agency thereof, any false statement or false information with reference to any inquiry for which he was authorized and required to collect information provided for in this title—shall be fined not more than \$2,000 or imprisoned not more than five years, or both.

**214. Wrongful disclosure of information**

Whoever, being or having been an employee or staff member referred to in subchapter II of chapter I of this title, having taken and subscribed the oath of office, or having sworn to observe the limitations imposed by section 9 of this title, publishes or communicates any information, the disclosure of which is prohibited under the provisions of section 9 of this title, and which comes into his possession by reason of his being employed (or otherwise providing services) under the provisions of this title, shall be fined not more than \$5,000 or imprisoned not more than 5 years, or both.

**Subchapter II—Other Persons**

**221. Refusal or neglect to answer questions; false answers**

- (a) Whoever, being over eighteen years of age, refuses or willfully neglects, when requested by the Secretary, or by any other authorized officer or employee of the Department of Commerce or bureau or agency thereof acting under the instructions of the Secretary or authorized officer, to answer, to the best of his knowledge, any of the questions on any schedule submitted to him in connection with any census or survey provided for by subchapters I, II, IV, and V of chapter 5 of this title, applying to himself or to the family to which he belongs or is related, or to the farm or farms of which he or his family is the occupant, shall be fined not more than \$100.
- (b) Whoever, when answering questions described in subsection (a) of this section, and under the conditions or circumstances described in such subsection, willfully gives any answer that is false, shall be fined not more than \$500.

**223. Refusal, by owners, proprietors, etc., to assist census employees**

Whoever, being the owner, proprietor, manager, superintendent, or agent of any hotel, apartment house, boarding or lodging house, tenement, or other building, refuses or willfully neglects, when requested by the Secretary or by any other officer or employee of the Department of Commerce or bureau or agency thereof, acting under the instructions of the Secretary, to furnish the names of the occupants of such premises, or to give free ingress thereto and egress therefrom to any duly accredited representative of such Department or bureau or agency thereof, so as to permit the collection of statistics with respect to any census provided for in subchapters I and II of chapter 5 of this title, or any survey authorized by subchapter IV or V of such chapter insofar as such survey relates to any of the subjects for which censuses are provided by such subchapters I and II, including, when relevant to the census or survey being taken or made, the proper and correct enumeration of all persons having their usual place of abode in such premises, shall be fined not more than \$500.

**224. Failure to answer questions affecting companies, businesses, religious bodies, and other organizations; false answers**

Whoever, being the owner, official, agent, person in charge, or assistant to the person in charge, of any company, business, institution, establishment, religious body, or organization of any

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nature whatsoever, neglects or refuses, when requested by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof, to answer completely and correctly to the best of his knowledge all questions relating to his company, business, institution, establishment, religious body, or other organization, or to records or statistics in his official custody, contained on any census or other schedule or questionnaire prepared and submitted to him under the authority of this title, shall be fined not more than \$500; and if he willfully gives a false answer to any such question, he shall be fined not more than \$10,000.

### **225. Applicability of penal provisions in certain cases**

- (a) In connection with any survey conducted by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof pursuant to subchapter IV of chapter 5 of this title, the provisions of sections 221, 222, 223 and 224 of this title shall apply—
- (1) with respect to the answering of questions and furnishing of information, only to such inquiries as are within the scope of the schedules and questionnaires and of the type and character heretofore used in connection with the taking of complete censuses under subchapters I and II of chapter 5 of this title, or in connection with any censuses hereafter taken pursuant to such subchapters;
  - (2) only after publication of a determination with reasons therefor certified by the Secretary, or by some other authorized officer

or employee of the Department of Commerce or bureau or agency thereof with the approval of the Secretary, that the information called for is needed to aid or permit the efficient performance of essential governmental functions or services, or has significant application to the needs of the public, business, or industry and is not publicly available from nongovernmental or other governmental sources;

- (3) in the case of any new survey, only after public notice, given by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof at least thirty days in advance of requesting a return, that such survey is under consideration.
- (b) The provisions for imprisonment provided by section 222 of this title shall not apply in connection with any survey conducted pursuant to subchapter II of chapter 3 of this title, or to subchapter IV of chapter 5 of this title.

### **Subchapter III—Procedure**

#### **241. Evidence**

When any request for information, made by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof, is made by registered or certified mail or telegram, the return receipt therefor or other written receipt thereof shall be prima facie evidence of an official request in any prosecution under such section.

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# Appendix B.

## Historical Development of the Economic Census of the United States

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### HISTORY OF THE 1997 ECONOMIC CENSUS

Several obstacles were encountered as the Census Bureau began preparations for the 1997 Economic Census. As a result of budget reductions, the overall scope of the 1997 Economic Census was reduced—the principal casualty being the Enterprise Statistics Program. At other times during the census design and planning, other areas for which the Census Bureau had collected data in the past were considered for deletion, including the mineral and construction industries, the Vehicle Inventory and Use Survey, and the Surveys of Minority- and Women-Owned Business Enterprises, and the Outlying Areas (i.e., Puerto Rico, Guam, the Virgin Islands of the United States, and the Commonwealth of the Northern Mariana Islands). Fortunately, the Congress provided the majority of funds needed to continue collecting these vital data.

The increasing obsolescence of the Standard Industrial Classification (SIC) Codes used by the Federal Government, and the passage of the North American Free Trade Agreement (NAFTA) produced tremendous pressure for a complete overhaul of the SIC Code. The decision to replace the SIC Code was evident by the mid-1990s, when the fastest growing industrial sector was “not elsewhere classified.” This situation resulted in the development of the North American Industrial Classification System (NAICS), a cooperative effort between the Census Bureau, the Bureau of Economic Analysis, and the statistical agencies of Canada and Mexico (see Chapter 3). The NAICS, which was a single industrial classification system, replaced the three separate national systems used by the NAFTA signatories. In February 1997, the Office of Management and Budget (OMB) directed the Census Bureau to adopt the NAICS for the 1997 Economic Census.

Contact with census data users indicated that publication of census data in less expensive electronic formats would be more useful than printed-format data and the accompanying expenses required for their publication. The Census Bureau’s decision to use electronic dissemination as the primary form of data required greater degree of product standardization than in previous censuses, as well as user-access software improvements. (Standardization across product lines was critical for cross referencing permitted through the manipulation of electronic data files.)

The increasing popularity of the Internet suggested that reports should be made available to data users visiting the Census Bureau’s Web site. The 1997 Economic Census data were released on CD-ROM and via the Internet. Reports

from the 1992 census were released in portable document format (pdf) and were available either via a CD-ROM or the Internet to ease the transition from printed to electronic reports.

### THE ECONOMIC CENSUSES IN THE NINETEENTH CENTURY

#### The Beginnings of the Economic Censuses

**1810.** The third census of the United States was the first that included inquiries into the economy of the Nation. In an act passed on May 1, 1810, the Congress directed, “That it shall be the duty of the several marshals, secretaries, and their assistants aforesaid, to take, under the direction of the Secretary of the Treasury, and according to such instructions as he shall give, an account of the several manufacturing establishments and manufactures within their several districts, territories, and divisions.” The act did not outline any specific questions or prescribe a schedule, leaving those matters to the Secretary of the Treasury’s discretion. To facilitate the collection of data, the U. S. Department of the Treasury divided manufactured products into 25 broad categories, encompassing more than 220 kinds of goods. As the U.S. marshals and their assistants conducted the decennial census, they also visited the manufacturing establishments in their assigned areas to obtain economic data generally on the quantity and value of products manufactured. This enumeration was conducted from August 1810 to July 1811, at a total cost of \$40,000. However, it was not until March 1812 that Congress authorized \$2,000 for the U. S. Department of the Treasury to prepare a statistical report on the kind, quantity, and value of goods manufactured and the number of manufacturing establishments in each state, territory, district, and county. The report, published in May 1813, noted that there had been serious undercounting and omissions in the enumeration. Although the census valued total manufactures at about \$173 million, the actual figure probably exceeded \$200 million.

**1820.** The manufactures census of 1820 was similar to that of 1810. However, in addition to a question on the location of establishments, 14 additional inquiries collected information on raw materials employed (kind, quantity, and cost), number of employees (men, women, and children), machinery (whole quantity, kind of machinery, and quantity of machinery in operation), expenditures (capital, wages, contingent expenses), and production

(nature and names of articles manufactured, value, demand, and sales). Federal marshals and their assistants collected the data and published a digest of the returns under the auspices of the U.S. Department of State. Statistics appeared for each state, territory, and district, but there was no attempt to compute U.S. totals because the data were again incomplete. The deficiencies were attributed to insufficient funds to pay the marshals and the fact that many establishments apparently neglected (or refused) to provide the required information. Data from 1810 and 1820 were not comparable because household manufactures (goods produced at home) were counted in 1810, but not in 1820.

**1830.** The 1830 decennial census made no attempt to obtain economic data, partly as a result of incompleteness in the 1810 and 1820 censuses and perhaps because of the comparatively slow rate of economic growth in the 1820s.

**1840.** Because of extensive growth in commercial fishing, commerce, and mining, and considerable pressure to resume the collection of economic statistics, the 1840 census included a census of manufactures, as well as series of questions about mining and fisheries. Marshals and their assistants used a single questionnaire, “Schedule of Mines, Agriculture, Commerce, Manufactures, Etc.,” to collect data on these subjects. The census divided manufacturing into 30 categories on the basis of the manufactured product (machinery, paper, furniture, etc.), and included an “all other manufactures” classification.

Census takers collected statistics on the quantity and value of goods produced, amount of capital invested, number of employees, and number of establishments. Mine operators were questioned following the classification of their mining activities (iron, lead, gold, salt, stone, etc.). These inquiries generally covered quantity and value of materials produced, employment, and capital invested in mining operations. Commercial fishermen responded to questions regarding quantity (and sometimes value) of fish products, employment, and capital invested.

Commerce and trade activities accelerated during the early and middle decades of the 19th century. Volume of trade (total imports plus total exports) increased almost twofold, from about \$126 million in 1821 to approximately \$248 million in 1841. A series of questions on the number of business enterprises in various categories (commercial houses in foreign trade, commission houses, lumber yards, grocery stores, etc.), capital invested, and number of employees were added to the decennial census in 1840 to measure the extent of commercial activities.

Federal marshals tabulated the returns for manufacturing, fishing, commerce, and mining and statistical tables were published on the “commerce and industry of the country.” However, the 1840 census results, even though “corrected” in Washington, reflected a considerable under-coverage of the national economy.

## The Expansion of the Censuses

**Measuring the Success of the First Censuses.** The attempts to collect economic data in the censuses of 1810, 1820, and 1840 are considered to be of little value except as indicators of the gross outlines of manufacturing development. The inauspicious beginnings of the economic census were the result of several interrelated factors. In addition to customary handicaps, such as geographic dispersion, poorly defined boundaries, and inadequate transportation, collection of the economic data was hindered by the following:

- The Federal marshals who supervised the field operations had other duties and often could not devote adequate time and attention to the census of economic activity.
- The marshals’ assistants, the actual enumerators, often received sketchy instructions or none at all. Although they might not normally have required detailed training or instructions to obtain answers to straightforward population questions (e.g., age and sex of members of a household), they may have had problems eliciting answers to more complex economic questions (such as the cost of raw materials consumed in manufacturing during the year).
- The marshals supervising the enumeration had to compile and classify the data for their jurisdiction and prepare tables for publication. This decentralization inevitably introduced some irregularities in the reported information, because the marshals, who were not trained statisticians, frequently used divergent procedures in performing these duties.
- Many entrepreneurs, believing the government should have a minimal role in economic affairs, were suspicious and uncooperative when asked to provide information about their business to Federal agents.

To deal with nonresponse, the instructions given the marshals stated that:

  - “...you (the marshals) will perceive the strong necessity for acquainting the people in advance with the nature of the inquiries to be made of them, and to give them time for preparation to answer the questions promptly. . . . If (the inquiries) be made known and generally understood before the enumeration commences, the answers to the interrogatories will be prepared in time for the domiciliary visit of the assistant, and the responses promptly made.”

The instructions went on to say that:

  - “Objections, it has been suggested, may possibly arise on the part of some persons to give the statistical information required by the act, upon the ground

of disinclination to expose their private affairs. Such, however, is not the intent, nor can be the effect, of answering ingenuously the interrogatories. On the statistical tables no name is inserted -the figures stand opposite no man's name; and therefore the objection cannot apply. It is, moreover, inculcated upon the assistant that he consider all communications made to him in the performance of his duty, relative to the business of the people, as strictly confidential."<sup>1</sup>

In other cases, the census takers found that the respondents' records were inadequate or nonexistent, and the owners or operators simply could not provide more than sketchy estimates.

**1850.** As a result of the inaccuracies in the previous censuses and to improve the 1850 census results, Congress passed an act on March 3, 1849, establishing the Census Board. This Board consisted of the Secretary of State, the Attorney General, and the Postmaster General. The act also provided for a full-time secretary who functioned as the director of the census, with responsibility for designing and printing the census schedules, and collecting and publishing data on manufacturing, mining, fishing, and commerce. The Census Board appointed Joseph C. G. Kennedy, a statistician and newspaper editor-owner from Pennsylvania, to serve as secretary of the Board in 1849. The Secretary of the Interior formally appointed Kennedy "superintendent" of the Census Office in 1850. Kennedy was largely responsible for the improved accuracy of the census results.

Resigning in 1853, Kennedy became U.S. representative to the International Statistical Congresses in Brussels, in 1853 and 1854. The Secretary of the Interior rehired Kennedy in June 1858 to supervise the preparation of the report on economic statistics. (Upon completing that assignment, he was appointed superintendent of the 1860 Decennial Census.)

The Census Board consulted with prominent statisticians in Federal Government and the academic and business communities to develop six questionnaires,<sup>2</sup> one of which (schedule 5) was for the collection of economic data. This questionnaire was to be completed for each corporation, company, or individual having annual production valued at \$500 or more for the year ending July 1, 1850.

Enumerators received written instructions and examples of properly completed questionnaires, including Schedule 5. Schedule 5 asked for the following data:

- "Name of business, manufacture, or product."
- Amount of capital invested in real and personal estate in the business.
- Quantities, kinds, and values of raw materials used.
- Kind of motive power (water or steam), machinery, structure, or resource used in the manufacturing process.
- Average number of male and female workers employed.
- Average monthly cost of male and female labor.
- Quantities, kinds, and values of annual production.

Although Federal marshals still supervised field operations, they no longer compiled and assembled statistics for publication. This work was performed by clerks in an office in Washington, DC. General census results were published in June 1853, and partial data was available for manufactures in September 1854.

Complete economic statistics for the 1850 census were not released until December 1859. The total value of manufactures (including fisheries and the products of mines), as reflected in the 1850 census, exceeded \$1 billion. This represented a 500-percent increase since 1810, compared to a growth in population of only 75 percent. Although there was an undercount, the economic and decennial censuses were considerably more accurate than the previous censuses.

**1860-1879.** With the exception of some minor modifications in the questionnaires, the censuses of 1860 were similar to those of 1850. The Census Office published four volumes of census data, including one devoted exclusively to economic statistics. A major innovation was Superintendent Kennedy's analysis of the census statistics. He used the data as a basis for describing "all the great elements of a nation's prosperity as they existed in the year 1860." In his section on "products of industry," included in the *Preliminary Report on the Eighth Census*, published in 1862, Kennedy described the increasing impact of manufacturing and commerce in the United States, estimating that one-third of the entire population in 1860 was supported, directly or indirectly, by manufacturing. He compared various industries, and interpreted the data to show how and why sections of the economy expanded, stabilized, or decreased, and illustrated interrelationships among the production and socioeconomic factors.

As industrial specialization increased, it became more difficult to develop general questions applicable to all establishments. Unique questionnaires, tailored to the characteristics of each industry, had to be designed to obtain meaningful statistics. At the same time, the concentration of economic power brought a growing public demand for Federal Government regulation of business.

<sup>1</sup>The 1840 census marked the first evidence of official concern with the need to regard economic census data as confidential. Subsequent censuses had similar instructions.

<sup>2</sup>For a time the government used the words "schedule" and "questionnaire" interchangeably to refer to the report form completed either by a respondent or a census enumerator. In more recent years, the Census Bureau has generally used the term "questionnaire."

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As the Government exercised increasing power over economic affairs, it required more and better data upon which to base its far-reaching decisions.

During 1869 and 1870, Congress attempted to draft new census legislation to supersede the 1850 law under which the 1850 and 1860 censuses had been taken. No new law was approved, however, and the 1870 Decennial Census was conducted following the 1850 law. Congress agreed to direct that the 1870 schedule for “products of industry” be modified to collect additional information on machinery and machine power sources, cost of labor, and number of months the establishment was in operation. The inquiry concerning motive power and machinery was subdivided so as to show specifically the kind of motive power, horsepower (if steam or water), and the number of machines used. The inquiry concerning the average number of hands employed was revised to cover males (older than 16 years), females (older than 15 years), and children. Despite these changes, statistics on industry and wealth contained basic tabulations closely resembling those of 1850 and 1860. Other innovations for the 1870 censuses included the use of tally machines (for the population schedules) and the introduction of maps and charts to portray census results in a statistical atlas.

**1880.** In March 1879, the Congress passed a new census law that implemented major changes in economic data collection for the censuses of 1880. This law provided for—

- Tailoring schedules to specialized businesses.
- Expanding the scope of the censuses.
- Using census supervisors and “experts,” appointed by the President and confirmed by the Senate, to conduct the censuses (instead of Federal marshals, who had been responsible for the enumeration since 1790). For the economic census, “experts” and “special agents” (college professors, engineers, economic statisticians, and others with training and experience in the appropriate subject-matter areas) were authorized to collect, classify, and analyze statistics on manufacturing, mineral industries, or commercial fisheries in 279 large cities and towns.
- Implementing of a schedule of fines and/or imprisonment for census workers who breached respondent confidentiality, falsified census records, or participated in other forms of misconduct.

For the 1880 census, the Census Office expanded the number of general economic questions to 29, and designed 49 special schedules, containing more than 2,000 inquiries, for particular industries in the manufacturing area. Although there was considerable overlap of questions (i.e., the same item appearing on several special schedules, or on the general schedules and also on one or more special schedules), more than 700 of the inquiries were unique to an individual economic sector.

Whereas questions on mining and mineral industries had been included on the “products of industry” schedules in the 1850, 1860, and 1870 censuses, the Census Office used 42 special schedules to collect data on this subject in 1880. These special schedules contained almost 3,000 inquiries, including over 1,600 unique items. Those for copper mines contained more than 120 questions, but the median number of items on the special schedule for minerals was 53.

There were five special schedules for commercial fisheries. The 87 questions asked for information on the amount and kind of fish taken, type of equipment used, employment, and finances. There was a basic schedule for all commercial fishermen and more detailed schedules for dealers in fresh and salt fish, as well as two schedules for river fishing activities.

Although some data on telegraph facilities was collected in 1850, the 1880 censuses marked the first major effort to compile detailed statistics on transportation and communications. Congress directed the Superintendent of the Census to collect and publish data on steam railroads, steamboat companies, incorporated express companies, and telegraph companies. Several special questionnaires were used for this purpose. Most of the 375 questions were designed to compile statistics on the railroads’ financial and physical characteristics.<sup>3</sup>

The rise of organized labor and trade associations prompted the Government, for the first and only time in the economic censuses, to include a series of inquiries on labor unions and trade societies (number, objectives and methods, membership, receipts, and expenditures) and on the number, location, causes, and results of strikes and lockouts. The census used 4 special schedules containing a total of 101 questions to collect this information.

The 1880 census also contained a special survey on wages and prices. Three schedules, with a total of 167 questions, collected statistics on wages in the manufacturing industries and building trades, and on average retail prices of the “necessaries of life.”

A few questions on the insurance industry (primarily on life insurance) were included in the 1860 census. In 1880, the economic census covered life, fire, and marine insurance companies, using 15 special schedules to compile

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<sup>3</sup>Financial characteristics included income, expenses, and analysis of earnings, while physical characteristics encompassed track mileage, amount and kind of rolling stock (locomotive cars), and fuel used to power locomotives, etc. The Census Bureau requested a detailed report from each railroad on virtually every facet of its operations, including timber conservation practices and data on employees and others killed or injured in accidents.

In addition to questions about railroads’ current characteristics, there was a special inquiry on the history of their construction, from which the Census Office tabulated statistics on mileage built and existent, by groups of states, for individual companies, annually from 1830 to 1880. The special schedules asked fewer and less detailed questions of steamboat companies (21), express companies (30), telegraph companies (24), and telephone/telegraph companies (16).

statistics on their organization, finances, and insurance in force. Census staff encountered considerable difficulty in collecting and tabulating the data and, except for a preliminary statement in the statistical compendium, no report was issued on this subject.

The economic statistics compiled in the 1880 census were more comprehensive than in any previous census. The use of experts and special agents generally resulted in more complete and consistent returns, which led to more accurate data on the Nation's economy. The Census Office published the compendium summarizing census data in early 1883, the basic census volumes reporting manufacturing statistics and transportation-communications data in October 1883, and the mineral industries volume in July 1886. Several special monographs (e.g., on water power used in manufacturing; precious metals; and petroleum, coke, and building stone) appeared in the mid-1880's. The statistical atlas was printed by a commercial publisher, once the Census Office resumed producing atlases following the 1890 census.

**1890.** The 1890 Censuses of Manufactures and Mineral Industries followed the basic procedures established for the 1880 censuses; e.g., specialists and agents visited establishments in 1,042 manufacturing and commercial centers, bulletins announced preliminary census results, and in many instances, the same schedule formats were used. The 1890 censuses saw the first use of administrative records (those kept by governmental or private organizations) to compile economic census data. Congress directed that statistics be collected on the recorded indebtedness (i.e., real estate mortgages) of private corporations and individuals. Special census agents went to real estate recorders' offices to collect information about mortgages made during the period 1880 to 1890, which included a description of the property, provisions of the mortgage, and the addresses of the mortgagor and mortgagee. Then, the Census Office mailed schedules (and postage-paid return envelopes) to the mortgagors (or the mortgagees if the mortgagors did not respond), that asked them to supply additional information about their mortgages (whether or not they had been fully paid and, if not, how much was owed) and return the completed schedules to the Census Office.

The census of manufactures covered Alaska for the first time in 1890.<sup>4</sup> The census considerably expanded the number of inquiries on transportation (first asked in

<sup>4</sup>In the early 1880's, Ivan Petroff, a special Census Office agent, traveled to Alaska (in accordance with instructions from the Superintendent of the Census Bureau) to report on the number of inhabitants. As a result of his work, he (1) produced a brief statistical review of Alaska in geographic divisions, with tables of population, (2) provided a review of the fur trade, fisheries, mineral, and agricultural resources, (3) described the geography and topography of Alaska, (4) furnished a historical sketch of Alaska from its discovery to the year 1880, and (5) wrote notes on Alaskan ethnology. However, this effort did not constitute an economic census of that territory.

1880), with coverage extended to sailing vessels and rapid-transit facilities in cities (which later included cable railways, railways operated by animal power, and electric street railroads).

**1900.** The census of 1900,<sup>5</sup> which was limited by law to duplicate that of the 1890 census, included coverage of manufactures, mines and quarries, street and electric railroads, and, for the first time, central electric light and power stations. The census compiled manufacturing information on the number of establishments, capital invested, number of wage earners and total wages paid, cost of materials, and value of products. Most manufacturing establishments (about 530,000 of the 644,000 total returns were from manufacturers) reported information on the general questionnaire, but there was still some criticism from respondents that the 32 special questionnaires required too much detailed information.

Manufacturing data in 1,340 cities and towns were compiled by 1,891 specialists (supervised by 20 "expert special agents"). To disseminate the results, the Census Office prepared 59 unique bulletins on various special subjects in manufacturing, including shipbuilding, slaughtering and packing, and lumbering. The Census Office also released bulletins on manufacturing for each of the states and territories except Alaska and Hawaii.<sup>6</sup> Manufacturing data were published in four volumes and summarized in the statistical abstract and atlas.

Statistics on mines and quarries, street and electric railroads, and central electric light and power stations were initially published in bulletins and later in final reports that were somewhat less detailed than the bound volumes on manufactures. Data on mining covered the same general topics as before (number of mines and mine operators, wage earners and total wages, cost of supplies, other operating expenses, and quantity and value of minerals extracted), by geographic area and by type of mineral.

For street and electric railroads, Census Office employees assembled statistics on such topics as number of companies, length of rail lines, cost of construction and equipment, employees, and passengers. Data compiled for central electric light and power companies included number of stations, cost of construction and equipment, earnings, expenses, and power generated.

## THE TWENTIETH CENTURY

### The Census Bureau and the Growth of the Economic Census

**The Permanent Census Act.** In March 1902, the Congress enacted the Permanent Census Act that established

<sup>5</sup>Statistics for manufacturing were for the year 1900. Data for mining, street and electric railroads, and electric light and power stations were for 1902, but the Census Office released these results as part of the 12th decennial census publication series.

<sup>6</sup>Data for Alaska and Hawaii appeared in the regular Census Bureau reports.

the Census Office as a permanent agency.<sup>7</sup> The act included a provision directing “That in the year 1905, and every 10 years thereafter, there shall be a collection of statistics of manufacturing establishments....” This was in addition to the coverage of manufactures in the decennial census, which meant that the new Census Bureau would conduct censuses of manufactures every 5 years (quinquennially). The legislation also mandated several specialized interdecennial censuses subsequently taken between 1902 and 1937 that included street railways and telephone and telegraph companies. In 1922, the Census Bureau expanded the “street railways” category to include motor buses and, in 1932, trolley buses. The “telegraph” classification included only land telegraph and ocean cable systems in 1902, but the Census Bureau enlarged the definition for 1907 to include wireless systems. Censuses of water transportation were conducted in 1906, 1916, and 1926. Other special enumerations included a census of express businesses in 1907 and a census of commercial fisheries was taken in 1908 and again in 1963 and 1967.<sup>8</sup>

**1905.** To conduct the 1905 census, the Census Bureau constructed a card index containing names and addresses of manufacturing establishments on the basis of 1900 census results, city directories, trade publications, state and local government lists, and similar sources. In October 1904, the agency sent preliminary circulars to these establishments, asking them to provide their establishments data (name and address, period of operation, and kind of business). Based on the results of this prec canvass, the Census Bureau updated the card index and mailed questionnaires to establishments in early December 1904. Beginning in January 1905, 835 canvassers (Census Bureau employees and temporary employees hired for the duration of the operations) visited nonrespondent companies.

The schedules used in the 1905 census were the same as those used in 1900. The agency redefined the scope of the census to cover only manufacturing establishments under the “factory system,” excluding the neighborhood and household industries and trades<sup>9</sup> that had been previously included. To provide comparability between censuses, the Census Bureau retabulated the 1900 manufactures census results using the new definition. With neighborhood and household industries and hand trades excluded from the 1900 results (for 1899), the number of manufacturing establishments shrank from about 509,000

to approximately 205,000, and value added by manufacture was reduced from \$5.5 billion to \$4.6 billion.

**The 1909 Economic Census of Puerto Rico.** The Census Bureau conducted the first economic census of Puerto Rico (for manufactures) for the year 1909. With the exception of 1929, a census was conducted in Puerto Rico at 10-year intervals through 1949. Censuses of manufactures then were taken concurrently with censuses of retail and wholesale trade and selected service industries, for the years 1954 and 1958. . In 1952 and 1956, the Commonwealth Government of Puerto Rico conducted censuses of manufactures with more limited coverage than the stateside census. Since 1963, the census in Puerto Rico has been part of the stateside economic census program

**The 1910 Census Act and Confidentiality.** The 1910 census act strengthened confidentiality protections, particularly as they related to economic data. As a matter of administrative policy, responses on schedules for earlier economic censuses had been considered confidential, but the 1910 law specified that information furnished by business, manufacturing, and mining establishments:

- “...shall be used only for the statistical purposes for which it is supplied. No publication shall be made by the Census Office whereby the data furnished by any particular establishment can be identified, nor shall the Director of the Census permit anyone other than the sworn employees of the Census Office to examine the individual reports.”

The Census Bureau acknowledged the importance of confidentiality by noting in the volume containing 1910 manufactures census results that:

- “It is essential to the success of the manufactures census that every concern should be assured explicitly by law that its business will not be disclosed to competitors, to the general public, to state and local officials, or even to officials of the Federal Government outside of the Census Bureau. Only with such pledge of confidential treatment can the Census Bureau expect manufacturers to furnish data promptly and accurately.”

**1910.** For the 1910 census of manufacturing establishments, the Census Bureau used 1 general and 60 special questionnaires. The general schedule was materially simpler than that employed for the censuses of 1900 and 1905, and the same was even more true of most of the special questionnaires. Establishments completed and returned their questionnaires to the Census Bureau. Special agents conducted a nonresponse follow-up. For mines and quarries, one schedule collected data for use by the Census Bureau and the U.S. Geological Survey. (This was done to decrease respondent burden, since both agencies collected similar data). The Census Bureau assigned 1,227

<sup>7</sup>The name changed to the “Bureau of the Census” in 1903, when it became part of the new Department of Commerce and Labor. Legislation continued to refer to “the Census Office,” however.

<sup>8</sup>The census of commercial fisheries was discontinued after 1967, due to a lack of interest by data users.

<sup>9</sup>Examples of these industries include custom tailoring, carpentering, taxidermy, and, in general, contract work done for individual customers. The census also excluded establishments that produced products with an annual value of less than \$500.

special agents and 76 Census Bureau employees to enumerate factories, mines, and quarries. In sparsely settled areas, decennial census enumerators visited the manufacturing and mining establishments.

For the first time, the 1910 Economic Census collected data from custom sawmills and gristmills and steam laundries. Under the definitions used for the time of the two previous censuses of manufactures, mills that did not produce for sale, but only sawed lumber or ground grain for toll, did not fall under the factory system. The census covered steam laundries because they had become an important industry. As a result of consolidating some categories, the number of separate industry tabulations published was reduced.

An amendment to the 1902 census act, passed February 25, 1910, required the Census Bureau to enumerate the number of animals slaughtered for food purposes and the number of hides produced during the year. This necessitated a canvass of all butchering establishments, many of which would not have been included under the general rules defining the factory system.

**1915.** The 1915 Census of Manufactures sought the assistance of prominent manufacturers and of representative commercial and trade groups to conduct the census. Additionally, the Census Bureau enlisted the Congress, the Department of Agriculture, the Bureau of Corporations, and state statistical organizations. The director of the Census Bureau and the Chief Statistician for Manufactures visited cities (Philadelphia, New York, Boston, St. Louis, etc.) to obtain suggestions on the form and content of the schedules from economic census participants. Census Bureau employees tabulated 1914 data for 344 industries and 271 industry subgroups. Plans called for the prompt publication of bulletins containing preliminary results, but the United States' entrance into World War I in April 1917, delayed the preparation of the printed statistics until late 1918.

**Special Censuses in 1917 and 1918.** Because of the urgent need for industrial data during World War I, there were a number of special economic censuses something not done previously. For example, the agency compiled statistics of New York's daily landings of fresh catches from U.S. fishing boats and receipts by rail and steamer during the last 4 months of 1917. In late 1917 and early 1918, the Census Bureau took a number of mail censuses for the War Trade, War Industries, Shipping, Federal Reserve, and Commercial Economy Boards, the Food Administration, and the Council of National Defense. These emergency censuses covered such commodities as iron and steel; wool machinery and woolen manufactures; kapok fiber, jute and silk; leather stocks and manufactured leather goods; antimony and graphite crucibles; commercial greenhouses; materials used in the manufacture of explosives; and dental gold production.

**1920-1929.** The growing need for detailed economic statistics prompted the Congress to direct the Census Bureau (in the act providing for the decennial census of 1920) to conduct censuses of manufactures on a biennial basis, to collect and publish economic statistics for the years 1921, 1923, 1925, 1927 and for every tenth year thereafter. Data were collected that would be of economic and sociological importance, such as (1) the size of establishments and hours of labor, (2) the absolute and relative magnitude of the various branches of industry and their growth and decline, and (3) the industrial importance (with increase or decrease) of individual states and large cities.

In planning the 1921 census of manufactures, Census Bureau officials consulted the National Association of Manufacturers, the Census Bureau Advisory Committee (which included representatives of the American Economic Association), civic associations (such as chambers of commerce), trade associations, and government and private-sector statisticians. The recommendations made by these organizations and individuals helped the Census Bureau design questionnaires, publicize the census, and generally encouraged industry's acceptance of the project.

To reduce the expense of the census and expedite the processing and publication of results, the Census Bureau omitted certain items that had been included in previous censuses of manufactures (capital invested, age and sex distribution of employees, rent and taxes, primary horsepower used, and kind and quantity of fuel used in manufacturing). Additionally, only limited statistics were collected on number of wage earners and value of production from manufacturing establishments reporting products valued at less than \$5,000 for 1921.<sup>10</sup> In 1921, about 22 percent of manufacturers had products valued at less than \$5,000; however, these plants accounted for less than 1 percent of all wage earners and total production.

The Census Bureau conducted a mailout/mailback census in 1921 to collect economic data on 358 separate industries (98 of which were subdivided to show greater detail) on such things as the number of proprietors or firm members, number of salaried employees, number of wage earners, amounts paid in salaries and wages, amount paid for contract work, and cost of materials. To tabulate the data from manufacturers, mines, and quarries, the Census Bureau, for the first time in an economic census, used a punchcard tabulating system similar to the one introduced during the 1890 decennial census for tabulating population data.

The Census Bureau issued preliminary summary reports of census results as press releases, each relating to a particular industry or group of industries. A summary bulletin presented statistics for the United States by industries, and for all industries combined by state. Mining data were

<sup>10</sup>Previously, data had been obtained from establishments with annual production valued at \$500 or more.

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published to reflect geographic distribution of operations, land controlled by mining operators, characteristics of organization, scale of operations, and amount and kind of power used. The general report of economic data included analytical tables and tabulations, selected by mineral industry and state, so as to facilitate comparisons with the mining statistics published annually by the U.S. Geological Survey.

The procedures and coverage of the 1923 census were virtually the same as those of 1921, but the mail operation was more successful than in 1921, due in part to the expanded cooperation of chambers of commerce. In many large cities, chamber representatives were sworn in as census agents and supervised the census in their area. Approximately 65 percent of the returns were received by mail and, by June 1924, almost 95 percent of establishments had been canvassed by mail or by personal enumeration. The Census Bureau collected and tabulated data for 333 industries, of which 87 were subdivided to provide greater detail. Preliminary statistics first appeared in press releases and final data were published in industry bulletins. A one-volume compendium report was published in January 1926.

The 1925 census covered 324 industries. The Census Bureau again sought the cooperation of local chambers of commerce and professional groups to encourage response to the census. Respondents returned about 75 percent of the schedules by mail. Census staff prepared press releases of preliminary results, plus the usual industry bulletins, and released the one-volume final report in December 1927.

For the 1927 census, manufacturers of confectioneries, ice cream, and sheet iron completed questionnaires only if their annual production was valued at \$20,000 or more. (This was in recognition of the fact that many of the smaller firms were primarily engaged in retail trade, not manufacturing.) Over all, the census encompassed 335 industries, and approximately 65 percent of the respondents returned their schedules by mail. The previous press-release, industry-bulletin, and final-volume publication sequence was followed, with the one-volume final report published in April 1930.

**1930.** The economic component of the 1930 Decennial Census was broader in scope than any previous census, encompassing censuses of manufactures and mineral industries, construction industries, distribution (which included retail and wholesale trades and special topics), and hotels. These censuses covered activities for the year 1929.

The construction census was a response to the post-World War I boom in this sector of the economy. In 1920, less than 850,000 workers were employed in contract construction, and total private construction for that year was valued at \$5.4 billion. By 1928 (the last full year before the start of the Depression), more than 1.6 million

workers were employed in this field, and total private construction was valued at \$9.2 billion.

When planning the first census of construction industries, the Census Bureau consulted an advisory committee composed of representatives of national contractors' associations and individual construction companies. This cooperative effort produced one basic questionnaire designed to collect information on the following:

- Organization of the establishment.
- Number of salaried employees and total salaries paid.
- Number of skilled and unskilled workmen employed.
- Total annual wages.
- Length of working day and week.
- Expense for equipment, operation, and overhead.
- Total value of materials and building equipment installed.

The construction census was a mailout/mailback operation. The Census Bureau prepared a directory of construction establishments from lists of names and addresses provided by contractors' associations, private statistical agencies, builders' exchanges, chambers of commerce, city officials and postmasters (who were asked to submit the names and addresses of known construction establishments in their jurisdictions). Census Bureau clerks obtained additional names and addresses from telephone directories, city directories, and other sources. Ultimately, the census list included about 144,000 names and addresses. The questionnaire was to be completed by establishments engaged in construction business of any kind (except industrial concerns, public utilities, municipalities, or common carriers that maintained construction crews to repair or maintain their own property). The Census Bureau followed up nonrespondents with two mailings of reminder letters. In cities with populations of at least 100,000, enumerators employed by the decennial census contacted nonrespondent establishments.

Detailed statistics were compiled only for establishments that reported gross receipts of at least \$25,000 during the 1929 calendar year. A punchcard system mechanically tabulated construction census results (and, in fact, virtually all 1930 census data), but a series of clerical cross-checks and reviews by experienced statisticians ensured maximum accuracy and consistency. The results were published in a single bound volume in December 1932.

The 1930 census of distribution consisted only of a field canvass. The retail trade census covered operations of establishments involved in some manner of retail trade, including restaurants and some service businesses (such as garages that sold merchandise in addition to their services). The agency classified retail establishments on the basis of the following types of operation:

- Single-store establishments.
- Two- and three-store independents.
- Local branch systems.
- Local, sectional, and national chains.
- Miscellaneous types of operations.

Enumerators personally visited each of approximately 1.5 million stores included in the census to complete one of the six questionnaires designed for this operation. In cities with populations of at least 10,000, special enumerators took the census of distribution. In smaller cities and rural areas, the decennial census enumerators visited retail outlets. The census of retail trade compiled data on the number of stores, personnel, payroll, stocks, sales, operating expenses, seasonal employment characteristics, credit business, receipts from sales of meals and automotive services, value of returned goods and allowances, and type of organization. The Census Bureau published preliminary results as press releases. A one-volume final report that included a summary of data by states, counties, and incorporated places, and separate tables for each state was released in February 1933.

The census of wholesale establishments used the same field enumeration procedures to complete one of four questionnaires for each of approximately 168,000 establishments. The wholesale trade classification included all establishments engaged in the purchase, sale, or distribution of goods on a conventional wholesale basis, plus other special categories, such as cash-and-carry wholesalers, drop shippers (middlemen who secured orders from buyers and had merchandise shipped directly from the manufacturer to the buyer), manufacturers' sales branches, and cooperative marketing associations. Virtually all merchandising establishments not in the retail group were covered by the census of wholesale trade.

The census of wholesale trade compiled data on the following:

- Number of establishments.
- Number of employees.
- Salaries and wages.
- Stocks.
- Net sales, credit sales, sales to ultimate consumers, and sales to industrial consumers.

Clerks tabulated the census data statistics by kind of business (chemical products wholesaler, drug wholesaler, etc.), by geographic area (division and state), and by type of organization (proprietorship, partnership, etc.). Special tabulations yielded wholesale statistics for cities with populations of at least 100,000 (where almost half of the establishments were located). The Census Bureau published preliminary results as press bulletins and released the final bound volume in December 1933.

The census of hotels, which included only establishments with at least 25 guestrooms, was originally planned as a mailout/mailback operation. The Census Bureau compiled a directory of names and addresses of about 27,000 hotels, and mailed questionnaires in February 1930. Because of changes in ownership, duplications, and classification problems, a field canvass was necessary, using decennial census enumerators. Ultimately, clerks compiled data for approximately 15,500 hotels (70 percent of which returned questionnaires by mail, while enumerators contacted the remainder). The agency published tabulations on the number of hotels, number of rooms, seating capacity of dining rooms, receipts, employment, salaries and wages, and number of proprietors and firm members. These data were classified by plan of operation (American, European, and mixed), type of occupancy (transient, permanent, or mixed), and geographic division and state.

The procedures, coverage, and publication program for the 1930 manufactures census closely resembled those of the biennial censuses for 1921 through 1927. There were 165 questionnaires used to collect data for 238 industry categories. One major difference in coverage was that whereas the first four biennial censuses of manufactures included only firms reporting annual production valued of at least \$5,000, the Census Bureau returned this cutoff to \$500 for the 1930 census.

The scope of the 1930 census of mines and quarries, differed considerably from the 1920 census of mineral industries. The 1930 census excluded the petroleum and natural gas industries, and did not collect data for capital, land holdings, rents, royalties, taxes, or detailed breakdowns by kind of employees. The census covered the sand and gravel, glass-sand, and molding-sand industries, and the quarrying of limestone carried on in connection with the manufacture of lime and cement. The 1930 questionnaires included new inquiries as to distribution of sales, equipment purchased, and mobile power equipment; and consolidated and reclassified a number of industries. The data-collection methods and the publication program remained unchanged from previous censuses.

The 1930 census publication program included several special reports on economic topics, including distribution of sales of manufacturing plants; products of manufacturing industries; materials used in manufacturing; and location of industrial plants. With the addition of the censuses of distribution, construction industries, and hotels, the continuation of the manufactures and mineral industries censuses, and the coverage of special topics, the 1930 census was broader in scope than any of the previous economic censuses.

**1931-1933.** The Congress reduced the Census Bureau's funding and personnel authorizations for the 1931 and 1933 censuses of manufactures in an effort to reduce Federal expenditures and balance the budget. The 1931

census covered 310 industries, but discontinued some inquiries (e.g., on salaried employees, power equipment, and coal consumption). The Census Bureau mailed questionnaires in January 1932, and approximately 60 percent were returned by mail. Officials of local chambers of commerce and, in large industrial centers, census employees, conducted a telephone follow-up of nonrespondents. Because of decreased funding there were few field follow-ups. Budget restrictions also delayed the publication of census results. The individual industry bulletins were released over a 2-year period (1933-1934), while the final one-volume report was published in 1935.

The agency reduced the number of special questionnaires for 1933, making greater use of the general questionnaire and of a short-form questionnaire for smaller establishments. The census used the mailout/mailback enumeration, with telephone follow-ups. About 75 percent of the questionnaires were returned by mail. The published volume containing final census results warned data users that fewer personal follow-ups had resulted in incomplete coverage in some areas.

President Franklin D. Roosevelt's "New Deal" policies, and their economic data requirements, triggered several special economic census projects, such as the 1933 business census. The census included retail distribution, wholesale distribution, and a new category, "Services, Amusements, and Hotels." The services classification consisted of personal services (including barber shops and beauty parlors), mechanical repair services (such as radio shops), and miscellaneous services (such as parking lots). The agency collected data exclusively in a field enumeration funded by the Civil Works Administration so as to provide temporary employment for 4 million people during the winter of 1933-1934.

**1935.** The 1935 Census of Manufactures provided about the same level of detail as in the 1930 census. Although the Census Bureau developed a mailing list and mailed questionnaires in January 1936, companies in all cities and towns were instructed to hold their questionnaires until enumerators visited their establishments. Enumerators collected data from every establishment, including those that had not received questionnaires by mail.

The 1935 Census of Business covered retail trade, wholesale trade, the construction industries, and service establishments (personal, business, repair, custom, and miscellaneous services) in an extensive field operation funded by the Works Progress Administration. Additionally, the census included a miscellaneous business category encompassing many types of establishments not canvassed in any previous census. This miscellaneous category included—

- Advertising agencies (mailed questionnaires and received a follow-up visit).
- Radio broadcasting stations (mailed questionnaires, one follow-up letter, and received a follow-up visit).

- Banks (data collected by mail by the Federal Reserve Board, Comptroller of the Currency, and Federal Deposit Insurance Corporation. Follow-up visits were supervised by the Census Bureau).
- Insurance companies (mailed questionnaires and received a follow-up visit).

Data from real estate agencies, financial institutions other than banks (e.g., stock brokerages and finance companies), hotels, places of amusement, transportation (e.g., buses, trucks for hire, and warehousing), nonprofit organizations, property management firms, and miscellaneous business were collected in a field enumeration.

The goal of the 1935 census was to canvass every recognizable place of business and provide an appraisal of the effects of the economic depression. Some of the data were tabulated at a special Census Bureau branch that was opened to provide work in Philadelphia, where the unemployment rate was higher than in Washington, DC.

The Census Bureau published the final business census results in 14 volumes (3 each for retail trade, wholesale trade, selected service industries, and construction; 1 for transportation and warehousing; and 1 for the miscellaneous topics), plus a series of special reports. The agency also published a one-volume census of manufactures report. The sheer scope and complexity of the operation, the limited time available for planning, and the difficulty in supervising the large contingent of field workers and clerks resulted in misclassifications, undercounting, tabulation difficulties, and other problems.

**1937.** In 1937, The Census Bureau conducted only the census of manufactures. The Congress funded the operation through regular census appropriations rather than as an emergency public works project. Although the number of special questionnaires was reduced, the amount of detail concerning products was greater than in any previous census. For example, there were questions added concerning finished-product and work-in-progress inventories. Enumerators canvassed 351 industries, using 1 general, 1 administrative, and 143 special questionnaires.

The Census Bureau derived a mailing list from 1935 census files, trade directories, license lists, and other sources. It mailed questionnaires in January 1938, and dispatched two follow-up letters to nonrespondents in February and March. Enumerators visited establishments between April and June 1938, after which the agency made a final attempt to obtain outstanding questionnaires by mail.

The results of the 1937 Census of Manufactures appeared first as press releases with preliminary data, then as pamphlets with final results, and finally, as a volume, which was released in December 1939.

**1940.** The 1940 Decennial Census included the censuses of business (retail and wholesale trades; selected service establishments, places of amusement, hotels, and

tourist camps; and construction), manufactures, and mineral industries and collected data for the year 1939. The business census was exclusively a field enumeration. In 1940, the Census Bureau did not canvass the majority of the establishments classified in the 1935 miscellaneous business category (e.g., banks, advertising agencies, and radio stations). The agency shifted coverage of places of amusement and hotels to the selected service industry group. The 1935 retail classifications were modified for 1940, and a special table on “reconciliation of classifications” was published to facilitate comparisons of 1935 and 1940 tabulations. The Census Bureau changed the scope of the census of selected service establishments by adding the miscellaneous business classifications (as noted above) and by internal adjustments.<sup>11</sup> For the construction industries, the Census Bureau eliminated the size cutoff for tabulating detailed statistics used in previous censuses (annual business of at least \$25,000), and the scope of the wholesale trade category remained essentially the same as in previous censuses. The agency also extended the censuses of retail and wholesale trades and selected service industries to Puerto Rico in 1940 (and for the subsequent economic census years, except for 1948).

Coverage of the census of manufactures was similar to that of 1937, but the enumeration shifted from a mailout/mailback operation with follow-up visits to a field enumeration. There was a new inquiry on capital expenditures for plants and equipment, and the question on personnel requested data on the gender and detailed breakdowns for various categories of nonmanufacturing employees.

The census of mineral industries used a mail enumeration. The Census Bureau enumerated the bituminous coal industry by mail with the close cooperation of the Bituminous Coal Division of the Bureau of Mines, U.S. Department of the Interior. The Bureau of Mines field offices distributed and collected the questionnaires from coal industry establishments.

In addition to the usual press releases and pamphlets, Census Bureau employees compiled data in 10 volumes (5 for the census of business, 3 for the census of manufactures, and 2 for the census of mineral industries). The country’s entry into World War II interrupted the final tabulation and preparation of planned special reports. Some of these (e.g., subject reports in the retail area) were abandoned. The Census Bureau did not publish the last volume until June 1943.

During World War II, the Government discontinued the periodic economic censuses in favor of war-related surveys that provided statistics for the Office of Price Administration, the War Manpower Commission, the Office of Defense Transportation, and other agencies in charge of

<sup>11</sup>The agency recommended that data users should not compare the 1935 and 1940 aggregates, because of the numerous additions and deletions.

defense efforts. Title 14 of the Second War Powers Act, passed March 27, 1942, allowed the Secretary of Commerce to dispense with or curtail any regular census of the U.S. Department of Commerce in order to undertake more urgent statistical work deemed vital to the war effort. Executive Order 9152 of April 29, 1942, specifically canceled the 1941 Census of Manufactures. The 1943 Census of Manufactures was similarly dispensed with. The census in 1945 was suspended because the Congress did not to appropriate the necessary funds.

### Post-War Economic Censuses

**1947.** The first economic census taken after World War II was the 1947 Census of Manufactures. This was a mailout/mailback operation<sup>12</sup> taken in accordance with the prewar law authorizing biennial economic censuses. Title 14 of the Second War Powers Act (but not the entire act) expired on March 31, 1947, so the 1947 Census of Manufactures was carried out in 1948, and censuses in 1950 covered 1949.

There were a number of new features in the 1947 Census of Manufactures:

- The agency based the classification of industries on the *1945 Standard Industrial Classification (SIC) Manual*. (Prior to World War II, the Census Bureau had developed its own classifications).
- The Census Bureau used the Old Age and Survivors Insurance (OASI) records of the Social Security Administration (SSA) to ensure more complete coverage in the census. Staff reconciled the OASI establishment and industry classifications and those of the census. This improved coverage was an important initial step in further integrating Census Bureau and other Federal agencies’ statistics.
- The Census Bureau sent prec canvass cards to about 525,000 possible manufacturing firms before mailing the questionnaires. The address listing operation contained inquiries on company name and address, corporation affiliation, manufacturing process used, types of products, and number of employees. The response to these questions enabled the Census Bureau to eliminate addresses that should not have been listed as manufacturing establishments, and to determine in advance which of the 212 types of industry questionnaires should be sent to each establishment. The Post Office assisted with the Census Bureau’s address listing operation by verifying the presence or absence of an establishment at specified addresses.
- A simplified questionnaire for small establishments was used to reduce reporting burden and processing cost. (Simplified questionnaires were previously used in 1933).

<sup>12</sup>Field enumerators canvassed approximately 15,000 sawmills that had highly mobile and sporadic operations.

- The Census Bureau collected statistics on work hours from all industries, and gave more prominence to the total number of employees rather than to production workers. Size distributions in presenting data were in terms of the total number of employees rather than the number of production workers.
- The census collected questionnaires from firms manufacturing products valued at \$5,000 or more during the census year. This provided coverage more comparable to other Federal programs.
- In addition to statistics for individual products ordinarily published in the census of manufactures, the Census Bureau grouped value figures into approximately 1,000 product classes. These classes were used when the number of reporting establishments was too small to permit showing data for individual products.
- The Census Bureau discontinued the publication of data on cost of materials and value of products for the United States, major industry groups, and all geographic areas, because of the unknown amount of duplication contained in these data. The Census Bureau did publish these data for most individual industries, and released data on value added by manufacture and number of employees for industry groups and individual industries.
- The agency carried out a field canvass of selected areas below the state level to establish the completeness of the census, the nature of problems involved in coverage, and types of establishments missed or misclassified.
- The agency tabulated and published data for 147 standard metropolitan areas.<sup>13</sup>

From January to March 1948, the Census Bureau used about 325,000 census questionnaires to collect data from 435 manufacturing industry categories. Census Bureau employees telephoned nonrespondents and companies who returned incomplete questionnaires. After the staff removed duplicate questionnaires and out-of-scope firms from the file, approximately 141,000 manufacturing establishments were tabulated.

As in the past, the 1947 census results appeared first as preliminary reports, then as final reports, and finally were assembled in three volumes including a general summary, statistics by industry, and statistics by state.

**1948.** On June 19, 1948, Congress passed Public Law 80-671 (incorporated into Title 13, United States Code, when the Census Bureau's censuses and surveys were

<sup>13</sup>These were the forerunners of the present Office of Management and Budget-designated statistical areas. These are one or more counties around a central city or urbanized area with 50,000 or more inhabitants. Contiguous counties were included, if they had close social and economic ties with the area's population nucleus.

codified in 1954). This law authorized the Census Bureau to conduct economic censuses for 1948 and every fifth year thereafter.

The first application of the new law came with the 1948 business census, which included retail trade, wholesale trade, and selected service industries.<sup>14</sup> Significant changes in the scope of the 1948 business census included—

- The exclusion of the contract construction industry; the limitation of the census to those areas where coverage was mandatory under the new law (the 48 States, the District of Columbia, Alaska, and Hawaii, but not Puerto Rico).
- A reduced emphasis on employment and payroll information.
- The compilation of data on the number of trucks operated by business establishments.

The census collected only a limited amount of information from most small single-establishment firms, but obtained more detailed data from a sample consisting of every 10th small independent retailer, large retailers (those independent retailers with 1948 sales volume in excess of \$100,000), and multiestablishments.

The Census Bureau established 308 temporary field offices for the 1948 census and carried out an address listing operation (which excluded medical, dental, and law offices; government offices; and farms). Between May and November 1949, enumerators left 1 of the 12 available questionnaires (5 for selected service establishments, 5 for wholesalers, and 2 for retail stores) at most single-establishment firms with instructions that it be completed and returned to the Census Bureau by mail. For multiestablishments, enumerators completed the questionnaires for all establishments by interview, unless the establishments' management specifically requested other arrangements.

The second phase of the 1948 business census consisted of data collection, coding, and editing. Clerks recorded the receipt of questionnaires from each establishment in listing books for each enumeration district. Nonrespondents received a reminder card and then a follow-up visit. If questionnaires contained incomplete or incorrect data, enumerators visited the establishments to complete or correct the questionnaire. For the first time, preliminary editing of questionnaires took place in the Census Bureau's field offices and enumerators were paid on a per diem rather than a piece-rate basis.

After the field canvass, the Census Bureau reenumerated 2,500 representative small (substate) areas. This survey revealed an undercoverage of 8.2 percent of service

<sup>14</sup>The law authorized censuses of mineral industries and transportation in 1949, but congress did not appropriate funds for them and they were not taken until 1954 (minerals) and 1963 (transportation; see discussion under 1963.)

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establishments and 3.6 percent of retail establishments. In general, the undercoverage reflected a failure to list and canvass small businesses, particularly those with no employees.

Before the temporary offices closed, there were several coverage checks, including matching operations with Social Security Administration (SSA) lists and comparisons of county totals with those of neighboring counties or counties with similar economic characteristics.

As usual, the Census Bureau published preliminary results and final reports, the latter in bound volumes (three for retail trade, two for wholesale trade, and two for service industries). In addition to the usual tabulations (receipts, sales, payroll, number of establishments, etc.), special tabulations were published on retail store sales by merchandise line and wholesale sales by commodity line. The publications presented statistics for 147 standard metropolitan areas (MSAs), in addition to states, counties, and cities.

**The Advent of the Electronic Computer in 1951.** In 1951, the Census Bureau acquired the first large nonmilitary computer, UNIVAC I, in time to tabulate part of the 1950 Decennial Census. Data from punchcards were loaded onto magnetic tape. Once the data had been digitally stored, UNIVAC I was used extensively for calculating, editing, imputation, and for operating high-speed printers that prepared offset copy.

The availability of computers and the centralization of census operations for multiestablishments at Census Bureau headquarters enabled the agency to launch the enterprise statistics program. This program grouped data from establishments under common ownership or control into tabulations showing various economic characteristics based on the classification of the owning or controlling company.

**The Watkins Commission: 1953-1954.** Although the Congress appropriated funds for planning and preparatory operations in fiscal years 1952 and 1953, it disallowed the fiscal year 1954 budget request for the actual census-taking. Money was allocated only for special surveys of manufactures and business. As a result, the Census Bureau terminated work on the economic censuses in May 1953. This action provoked considerable alarm in many Government departments and agencies, as well as in the business and academic communities. In response to complaints about the cancellation of the census, the Secretary of Commerce appointed a number of professors, business executives, economists, and other specialists not affiliated with the Census Bureau to a committee known as the Watkins Commission in October 1953. This Committee, chaired by Dr. Ralph J. Watkins, Director of Research for Dun and Bradstreet, Inc., was charged with conducting an intensive review of the economic census. In March 1954, the Watkins Commission recommended that the economic censuses be resumed. Congress enacted Public Law

83-467 in June 1954, providing for censuses of manufacturing, mineral industries, and other business (including the distributive trades and service establishments) in the year 1955 relating to the year 1954 instead of a censuses in 1954 relating to the year 1953. The economic censuses became an integrated economic statistical program in which data for retail trade, wholesale trade, manufacturing establishments, and construction, mineral, and service industries were collected for the same benchmark years.

**1954-1955.** The 1954 Census of Business (retail and wholesale trades and selected service industries) marked the Census Bureau's first attempt since 1890 to compile census statistics from administrative records. While employers were enumerated via the mailout/mailback procedure, the Census Bureau used 1954 income tax records supplied by the U.S. Internal Revenue Service (IRS) to derive selected data items (such as employment, payroll, and sales) for retail nonemployers with 1954 sales of a least \$2,500 and for service nonemployers.

Since the income tax records did not contain the kind-of-business classifications necessary to determine which questionnaire should be mailed to a particular establishment, the Census Bureau had to match the IRS list with other lists containing kind-of-business classifications (e.g., the SSA's employer master file). The names on these lists could usually be linked through the use of the employer identification number (EIN) assigned to each case by the SSA, and matched mechanically on punchcard collating equipment.

For mining companies, the Census Bureau supplemented the mailing list with information provided by such agencies as the Bureau of Mines and the Federal Power Commission. Approximately 280,000 manufacturing, 1.8 million business (retail and wholesale trade and selected services), and 32,000 mining establishments completed questionnaires. The Census Bureau derived data for more than 1 million retail and selected service companies from tax returns, saving and estimated savings of \$3 million in data-collection costs.

To secure accurate and up-to-date information for multi-establishment companies and to correct and consolidate the IRS list, the Census Bureau conducted a mailout/mailback prec canvass in the fall of 1954. It asked multiestablishment companies for data about names and addresses, employment, types of activities, etc.

The Census Bureau excluded wholesale firms without employees and retail and service nonemployers with sales and receipts below the cutoff points from the census. Nonemployers, although large in number, accounted for only a small percentage of retail sales volume and service receipts for 1954. Past experience demonstrated that these small firms were most likely to be missed in an enumeration, since many were operated from the owner's home and/or on an intermittent basis.

Prior to the mailout of the economic census questionnaires, the Census Bureau prepared a mailing list using

administrative records and, for large companies, the mailing list compiled for the 1953 Annual Survey of Manufactures (ASM).<sup>15</sup> Mailout of the economic census questions occurred in early 1955. The mailout and follow-up operations involving large companies (generally those with at least six employees) were supervised by Census Bureau headquarters' staff. Field offices controlled mailout and follow-up operations for smaller companies. Respondents returned the questionnaires by mail, and nonrespondents received follow-up letters. Census Bureau employees telephoned or conducted follow-up visits to those establishments that had not responded to the follow-up letters. Coverage-control procedures ensured that all establishments on the mailing list were accounted for.

As in past censuses, the Census Bureau published 1954 census results in preliminary bulletins, final reports, and bound volumes. In addition to the usual summary, industry, subject, and area reports, there were special tabulations for central business districts.<sup>16</sup> Using the 1954 definition of a central business district, the agency also published retroactive retail trade and selected service data for 1948.

**1958.** The scope, coverage, questionnaires, procedures, and tabulations for the 1958 censuses closely resembled those of 1954. The Census Bureau mailed questionnaires from January to May 1959. Innovations for the 1958 censuses included—

- The use of more sophisticated computers. Processing operations performed by computer expanded to include mailing list controls, more extensive editing, certain kinds of coding, and other functions that had been previously performed manually or with punchcard equipment.
- Establishment of a census operations office in Jeffersonville, IN, responsible for preparatory operations, preparation of mailing packages, mailout, receipt, check-in, clerical editing and coding, and card punching.
- A new statistical geographic area for the business census was introduced—the “major retail center” (MRC)—which was an outlying business area, such as a shopping center. The Census Bureau published data for the MRCs in a series of 97 reports, each covering a standard metropolitan statistical area (SMSA) and including information for central cities and their central business districts.

<sup>15</sup>The ASM was first conducted in 1949 to provide data for intercensal years. The survey covered all large establishments (those having 100 employees or more from 1954 through 1967 and, from 1972, those with 250 employees or more) and a representative sample of smaller establishments. Large establishments remained in the ASM; however, the Census Bureau replaced smaller establishments every 5 years. During census years, the ASM questionnaire became the first two pages of the questionnaire used for the economic census.

<sup>16</sup>Central business districts were newly defined geographic entities encompassing the downtown business areas of large cities.

- The economic censuses included Guam and the Virgin Islands of the United States for the first time.

**1963.** Because of inadequate transportation data, Public Law 80-671 authorized a census of transportation in 1949. However, because the Congress did not appropriate funds for the census and plans for a similar census in 1953 were canceled, the 1963 Economic Census was the first to feature a census of transportation.<sup>17</sup> Following Congressional hearings in July 1961, funds were appropriated to collect detailed transportation data on a nationwide basis.

The Census Bureau's primary objective in conducting the census of transportation was to collect data on the Nation's transportation without duplicating data already available from other government or private sources. To achieve this objective, four surveys, each aimed at a specific gap in knowledge, were designed—

- **The Passenger Transportation Survey.** This survey produced statistics showing national and regional passenger patterns for 1963 and their relationship to socioeconomic and geographic factors. The Census Bureau collected data in four quarterly personal interviews from a probability sample of about 6,000 households.
- **The Truck Inventory and Use Survey (TIUS).** This survey collected data on the Nation's truck resources, such as the number of trucks classified by physical characteristics, occupational use, intensity of vehicle utilization, and geographic distribution of vehicles. The Census Bureau mailed questionnaires to a sample of about 100,000 truck and truck-tractor owners selected from state motor vehicle registration records.
- **The Commodity Transportation Survey (CTS).** This survey collected data concerning the geographic distribution of tons and ton-miles of commodities, by type, shipped by the manufacturing sector. The survey obtained basic information from a probability sample of bills of lading or other shipping records maintained in company files.
- **The Motor Carrier Survey.** This survey produced statistics concerning “for-hire” carriers not subject to economic regulation by the Interstate Commerce Commission. The Census Bureau conducted a complete mailout/mailback enumeration of bus companies and public warehouses that also provided trucking services, plus a mailout/mailback enumeration of a probability sample of trucking firms.

<sup>17</sup>Earlier economic censuses had collected data on transportation, but these had covered only specific areas of transportation, such as water transportation (periodic censuses between 1880 and 1926) and street and electric railways, together with affiliated motorbus lines (included in the censuses of electrical industries taken at 5-year intervals between 1902 and 1926).

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At the request of the U. S. Department of the Interior's Bureau of Commercial Fisheries, the 1963 Economic Census resumed the collection of data from commercial fisheries following a 55-year hiatus. The census included a mailout/mailback enumeration of commercial fisheries that had supplied employment data to the Social Security Administration (SSA). The questionnaires contained inquiries on employment, payroll, receipts, characteristics of vessels, and landed catch. The Census Bureau used a sample of administrative records to compile limited statistics for part- and fulltime fishermen, without paid employees.<sup>18</sup>

The 1963 censuses of retail and wholesale trades, selected service industries, manufactures, and mineral industries closely resembled those conducted in 1958. The Census Bureau used newer computer systems and expanded the use of electronic equipment to—

- Computerize geographic coding of establishment addresses.
- Substitute magnetic tape for punchcards in developing the census mailing lists from IRS lists.
- Automate procedures to control mailout and follow-up operations.
- Expedite mass transfer of data from Jeffersonville, IN, to the computer facility at Census Bureau headquarters using a high-speed telephone-transmission system.
- Computerize a system for work and progress reporting of census operations.
- Produce computer-programmed news stories for releasing census results and to automatically mail these to news media outlets.

The Census Bureau obtained selected information, such as value of receipts and sales, from nonemployers' tax returns. The agency also used administrative records to assemble mailing lists and obtain preliminary industry classifications for employer firms to be included in the mailout/mailback enumeration. In total, the Census Bureau asked about 3 million establishments to complete questionnaires (which were mailed between November 1963 and March 1964). The agency derived statistics for approximately 1.5 million nonemployer establishments selected from administrative records. (For a detailed account of the 1963 Economic Censuses, see 1963 Economic Censuses: Procedural History.)

**1967.** In 1967, Congress modified Title 13 of the U.S. Code Census, changing the reference years for the economic censuses to those ending in "2" and "7." This was done to distribute more evenly the staff and computer workload generated by the economic and demographic censuses.

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<sup>18</sup>Because the mailing list used to collect data from commercial fisheries was later found to be incomplete, a supplemental vessel survey was conducted in 1964.

The 1967 Economic Censuses thus included censuses of retail and wholesale trades, selected services, construction and mineral industries, manufactures, commercial fisheries, transportation, and the enterprise statistics program.

The Census Bureau expanded the scope of the 1967 Economic Census, to include—

- A census of construction industries (the first since 1939), which, for the first time, included Puerto Rico.
- Adding architects and engineers, law firms, and arrangement of passenger transportation (travel agents and tour operators) to the census of selected service industries.
- Adding the National Travel Survey (NTS),<sup>19</sup> TIUS, and the CTS to the census of transportation.
- Doubling the CTS sample size in the major population centers to improve the quality of the point-of-origin to point-of-destination commodity flow data, and extending the survey's scope to include printing and publishing establishments (except newspaper and periodical publishers).

Data for all nonemployers (establishments without paid employees) in retail trade and selected service and construction industries were obtained from IRS income tax records. In addition, the Census Bureau expanded the use of these records to compile statistics for selected single-establishment small employers (firms with few employees during 1967), as follows:

- For retail trade and selected service industries, different payroll cutoffs for various kinds of businesses determined which firms would be excused from completing questionnaires.
- The number-of-employees equivalent to the payroll cutoff was 10 employees for manufacturing firms and 5 for mineral industries establishments.
- For construction industries with employees, the Census Bureau used administrative records only to select the mail sample. Data for more than 1 million small-employer establishments, canvassed by mail in previous censuses, were compiled from tax returns.

In total, the Census Bureau used administrative records for 2.9 million establishments and asked 1.9 million establishments to complete questionnaires.

The census of commercial fisheries was expanded to collect statistics on the number of vessel operators, catch, fishing gear, and various vessel characteristics. The Census Bureau obtained some basic information (gross receipts and industry classification) from the IRS and SSA

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<sup>19</sup>Called the Passenger Transportation Survey, in 1963.

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for part- and full-time fishermen without paid employees. The Census Bureau did not publish the 1967 data from administrative records because of classification problems.

New techniques, computers, and auxiliary electronic equipment were used to handle data from the 1967 Economic Census. Other significant changes in processing methods included—

- Expansion of the geographic coding file to facilitate computer coding of establishments located in small cities.
- Development of specifications and computer programs to perform complementary disclosure analysis (to ensure that data for individual establishments remained confidential).
- Increased use of computer editing.

(For a detailed account of the 1967 Economic Censuses, see 1967 Economic Censuses: Procedural History.)

**1972.** For the 1972 Economic Census, the Census Bureau mailed 2.9 million questionnaires between December 1972, and February 1973. Additional information was collected from administrative records for approximately 2.6 million establishments. The 1972 Economic Census incorporated several changes. These included—

- Collecting construction industries data in Guam and the Virgin Islands of the United States.
- Precanvassing all out-of-scope activities of companies that reported on an establishment basis in previous economic censuses.
- Increasing the sample size for the National Transportation Survey (from 18,000 in 1967 to 24,000 households in 1972).
- Classifying the 1972 data according to the new 1972 Standard Industrial Classification (SIC) Manual. (For selected data items, bridge tables showed the 1972 data classified under both the 1967 and the 1972 SIC systems).<sup>20</sup>
- Inaugurating a survey of minority-owned business enterprises (SMOBE). The SMOBE presented tabulations by major SIC industry or industry group by race (Black, Asian American, American Indian, and “Other”) and Hispanic origin for MSAs. After 1972, these data were collected along with data for counties and places with

specified numbers of minority-owned firms. The published data from the SMOBE were usually limited to legal form of organization and receipt- and employment-size of firm.

The first reports in key publication series from each of the censuses appeared within 1 year of the period covered by the 1972 censuses (6 months earlier compared to the release of the 1967 census data). Publication of the major series was completed 9 to 12 months earlier than for 1967. Recognizing the increasing need for digital data, the Census Bureau introduced a program to issue public-use computer tape files of economic census statistics.

(For a further description, see 1972 Economic Censuses: Procedural History.)

**1977.** The 1977 Economic Censuses covered retail trade; wholesale trade; service, construction, and mineral industries; manufactures; and transportation; the SMOBE; the enterprise statistics program; and a survey of women-owned business enterprises (SWOBE). The Census Bureau mailed more than 3 million questionnaires between December 1977 and April 1978, and obtained data for about 4 million small firms from administrative records. The SWOBE collected more specific information about the demographic and economic characteristics of women-owned businesses and their owners.

For the 1977 censuses, the 1976 Recordkeeping Practices Survey obtained information on the ability of respondents to provide data not previously requested in the Census Bureau’s economic censuses and surveys. As a result, the Census Bureau decided to—

- Collect additional data needed to improve the gross national product accounts.
- Expand the coverage of the service industries census.
- Develop a common set of commodity lines for all types of operations in the wholesale trade census.
- Develop a better geographic coding system to improve the classification of data by areas.
- Improve the quality of the national travel survey.
- Carry out evaluation programs.

The Census Bureau gave priority to expanding product line detail for the 1977 censuses of manufactures and used mineral industries to meet the growing need for more data to compare domestic output to imports and exports. Section 608, “Uniform Statistical Data on Imports, Exports, and Production,” of the 1974 Trade Act mandated that a comparability study be made of the commodity classification systems used for imports, exports, and domestic production. This 1975-1976 study was a joint effort of the Census Bureau and the International Trade Commission, and resulted in proposed modifications that would make data collected for individual products or

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<sup>20</sup>The revisions to the SIC system added several industries, eliminated statistically insignificant industries, and contained modified definitions of other industries within the scope of the economic censuses by shifting products and services from one industry to another within each SIC division.

groups of products more compatible with each other. Some of the product-line classifications for the 1977 censuses were developed or revised as a result of the study. The censuses incorporated new product-line classifications, identified during the trade act review, for which questionnaires had not already cleared the Office of Management and Budget (OMB). Those changes identified after clearance were not used for the 1977 Economic Census, but were included in the 1982 censuses.

Unlike the 1967 and 1972 Censuses of Transportation, the 1977 coverage included nonregulated motor carriers and public warehousing, as well as the NTS, TIUS, and CTS. While the Census Bureau based the last three surveys on probability samples, data for nonregulated motor carriers and public warehousing firms with employees were obtained in an enumeration of establishments in the same manner as the other economic censuses. The Census Bureau made a number of changes and improvements in the probability surveys (described in Chapter 10 of the History of the 1977 Economic Censuses).

**The Creation of the Standard Statistical Establishment List (SSEL).** In 1977, changes were made in the practice (begun in 1954) of having a prec canvass of all known multiestablishment companies. This prec canvass was done once every 5 years, so the company and establishment address records soon became obsolete. Following the 1972 Economic Census, the Census Bureau created the Standard Statistical Establishment List (SSEL), and began an annual Company Organization Survey (COS) designed to update the address files in the SSEL. The SSEL is a central, multipurpose computerized name and address file of all known single- and multiestablishment employers (and nonemployer agricultural establishments) in the Nation. Through the combined use of the SSEL file number and the employer identification number, the Census Bureau could link and identify the affiliation of parent companies, subsidiary firms, and their establishments throughout all phases of economic activity.

**1982.** The 1982 program consisted of censuses of retail trade; wholesale trade; service, construction, and mineral industries; manufactures; and transportation; the survey of minority-owned businesses; the survey of women-owned businesses; the survey of characteristics of business owners (an expanded version of the 1977 special survey of women-owned businesses); and the enterprise statistics program.

Prior to the census mailout, the Census Bureau carried out several inventory test surveys for use in revising the inventory question in the 1982 censuses of wholesale trade, construction and mineral industries, manufactures, and the 1982 Enterprise Statistics Program. The surveys' objectives were to measure response rates and accuracy for several plausible and controlled data-collection methodologies. Based on the response evaluations, the agency

adopted a revised inventory inquiry for the 1982 Economic Censuses (and its annual surveys). This meant that only the term "last in/first out reserve" was used and that it was related to a standard definition. The question also asked for the value of inventories not subject to last in/first out costing.

Between June 1 and July 31, 1981, the Census Bureau tested proposed revisions to the 1982 TIUS. The test demonstrated that although the use of two different questionnaires increased the Census Bureau's processing burden, it provided the respondent with a questionnaire more closely related to the characteristics of the sampled vehicle. Other results led to the revision of the sequence and wording of many of the questions in the 1982 survey questionnaire to improve clarity and reduce reporting errors.

The 1981 Recordkeeping Practices Survey sought to determine if establishments maintained alternative document systems that were better suited to gather commodity-flow data requested by the CTS. The results of the survey prompted the following changes in the CTS:

- Instructions to respondents emphasized using the sales-invoice document system versus the traditional bills of lading. (Bills of lading would be accepted if respondents decided not to use sales invoices.)
- Respondents received stronger worded instructions for using the serial number sequence.
- The Census Bureau planned to make special provisions for establishments that wanted to use automated data-processing systems in responding; however, this were not implemented.

Other changes to the 1982 Economic Census included—

- The 1982 census did not include a NTS or collect data on nonregulated motor carriers as was the case in the 1977 census. Data on public warehousing and arrangement of passenger transportation appeared in the census of service industries reports.
- The 1982 census excluded some of the service industries that had been covered for the first time in the 1977 census (e.g., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions; and political organizations) because the information for these service industries was available from other sources, such as the U. S. Department of Education and the Bureau of Labor Statistics. The need to reduce census cost also was a factor.
- For the first time, the Census Bureau obtained data on retail trade, wholesale trade, manufacturing, and construction and service industries for the Commonwealth of the Northern Mariana Islands.

The Census Bureau mailed more than 3 million economic census questionnaires and classification forms between mid-December 1982 and March 1983. The agency began the mailout of questionnaires for the 1982 TIUS in October 1982 and completed the operation in June 1983. The CTS was conducted in 1984, which collected 1983 data. In addition, data for about 3 million small firms (which were not sent questionnaires) were derived from administrative records.

The 1982 CTS did not take place in 1983 (for 1982), but in 1984. This allowed the Census Bureau to test and consider alternative data-collection methods. The agency divided establishments into three groups to test one of three techniques: (1) The systematic method, (2) the “first-15” method, and (3) the summary method. (For a description of these three methods, see Chapter 2 of the 1982 history.) The 1983 test did not identify a workable methodology for shipment sampling. As a result, the Census Bureau decided on a less detailed survey for 1983; however, because the quality of the resulting information was unacceptable, the agency did not publish any statistics.

Despite known inadequacies that would prevent complete publication processing, the Census Bureau adopted an experimental computer program Table Image Processor System (TIPS) for the 1977 Economic Censuses publication program. The Census Bureau designed this system to photo-compose (in conjunction with its own computer-output-to-microfilm device and the Government Printing Office’s video computer-output-to-microfilm system) large volumes of tables for the census reports. Prior to the 1982 censuses, the agency examined the experimental TIPS and identified 34 improvements. Three of the most important refinements were: The ability to (1) place any kind of table anywhere on a page, (2) produce multiple tables on a page, and (3) produce multibanked tables (those with the boxhead repeated horizontally or the stub repeated vertically within the same table and on the same page). Since only about one-third of the required refinements could be realized by modifying the TIPS, the system was not capable of meeting the 1982 Economic Censuses’ publication requirements. The Census Bureau undertook a major redesign of the photo-composition system in 1981, developing the Table Image Processor Systems II (TIPS II), which remedied most of the original system’s deficiencies.

(For a detailed account of the 1982 censuses, see History of the 1982 Economic Censuses.)

**1987.** The general plan for the 1987 Economic Census program was identical to that of 1982. The censuses encompassed approximately 12.4 million establishments, and collected data from 3.7 million establishments using mail questionnaires and approximately 8.7 million small firms using administrative records from Government agencies.

The 1987 Economic Census featured several changes to data collections, including—

- The addition of several record-keeping inquiries to questionnaires for industries where partial fabrication was common, e.g., the apparel; motor vehicle; footwear; electronics (computers and semiconductors); motor and generator; toy; and sporting goods industries.
- Special inquiries on metalworking operations from the census questionnaires were dropped.
- The Census Bureau published concentration data at the four-digit industry level but not at the five-digit product class level because of budgetary constraints.

There were a number of significant changes in specific censuses. For retail trade, there was a 20-percent increase in the number of merchandise-line questions. This provided data users with more detailed information on the kinds of merchandise sold by different kinds of retail establishments. The 1982 major retail center (MRC) series of reports marked the sixth and last in a series that, since 1958, had traced the movement of retail businesses from the central business districts (CBD’s) to outlying shopping centers. Since the migration of retail business to the suburbs appeared to be complete, it was decided that CBD data would no longer be published separately. Conversely, the substantial increase in the number of suburban shopping centers changed both the nature and the cost of the program. Costs rose significantly because of the increase in the number of centers and because the boundaries of each center had to be delineated on site, with each store listed by name and type of business. Each store had to be clerically matched to census listings for the geographic area in which the center was located. Even the changes made for the 1977 censuses (which revised the size criteria and delegated the delineation and enumeration process to local Census Statistical Areas Committees or other local organizations) failed to keep enumeration costs at a manageable level. Consequently, the agency decided to discontinue the MRC program after the 1982 censuses.

There were several changes and additions made to the 1987 census of retail trade’s publication program, as follows:

- Retail trade data for employer establishments was provided for each five-digit ZIP Code. These data were classified by employment-size groups and sales-size ranges, and published in *ZIP-Code Statistics Series* reports via electronic media only (i.e., CD-ROM, diskettes, and computer tape).
- Nonemployer establishment data were published in a new *Nonemployer Statistics Series* rather than in the *Geographic Area Series* reports. The *Nonemployer Statistics Series* included a separate report for each of four geographic regions on the number of establishments

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with and without payroll and sales for each type of retail classification, for each state, MSAs, counties, and places with 2,500 or more inhabitants.

- A new *Special Reports Series* presented the Selected Statistics report. This new series contained selected aggregate data by kind of business, including ranks and ratios, not provided in the other final reports. Data were reported for the United States, states, and MSAs.

The census of service industries collected data on health services, as well as educational services; social services; museums, art galleries, and botanical and zoological gardens; membership organizations (except religious organizations); rooming and boarding houses; etc. The Census Bureau obtained data on privately owned and operated hospitals and,<sup>21</sup> for the first time, on government-owned and -operated hospitals.

The census collected additional information on international service transactions. In 1982, there were tabulations of exported service receipts for architects, engineers, and surveying services; management, consulting, and public relations services; equipment rental and leasing services; and computer and data processing services. Four additional industries reported data on exported services advertising agencies; accounting, auditing, and bookkeeping services; research, development and testing services; and legal services.

The service industries data were published for individual ZIP Codes (for employer establishments only) and included data for nonemployer businesses.

The census of transportation was similar to that conducted in 1982 except that the CTS was not conducted. The CTS was canceled in January 1988 as a result of the deficit-reduction guidelines mandated by the 1986 Gramm-Rudman-Hollings Deficit Reduction Act.

Several changes were made to the census of construction industries for 1987. These included—

- Collecting data on the value of construction work done.<sup>22</sup> Prior to 1987, the Census Bureau collected data on receipts as the primary measure of construction activity.
- Increasing the number of construction questions from 8 to 24. Questions were tailored to particular industries to reduce respondent burden and collect more detailed data, especially for the type of construction work performed.

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<sup>21</sup>These data were collected for 1997, but not for 1982.

<sup>22</sup>Receipts could be different from the value of work done, since work can occur in one year and receipts in the prior or succeeding year. In practice, receipts for most contractors approximated “value.” For key industries, such as operative builders and developers, receipts, and work done might be different. In addition, receipts did not include work a contractor performed for its own account and use, which could be substantial.

- Expanding efforts to capture construction activities of establishments not classified as construction establishments by the SIC system.
- Adding force-account construction<sup>23</sup> questions to the census of manufactures questionnaires for the chemical, petroleum, and steel industries.
- Adding questions to the census of manufactures questionnaires covering steel industries and installation of metal and wood buildings, and to the census of retail trade questionnaires covering hardware and building supply stores, to obtain information on secondary construction activity.

The census of manufactures collected aggregate data on the foreign content of domestically-produced products for the first time. Industry and government agencies consulted about the manufacturing questionnaires asked that the Census Bureau measure the cost of foreign-made materials consumed by domestic manufacturing plants. Many data users asked for information on the foreign content of each material input consumed in an establishment, but the agency found that this information was not easily reportable and, in many cases, not available. The 1987 ASM asked approximately 55,000 establishments for information on the aggregate amount of materials, parts, and supplies purchased from foreign countries.

The Census Bureau also published more comprehensive data in 1987 on exporting manufacturers and improved production statistics to be more comparable with foreign trade statistics. This was done not only because of the revision of the SIC system for 1987, but also because in January 1989 the United States adopted the Harmonized Coding system as the official classification for import and export statistics.

The 1987 censuses witnessed the following significant data-processing changes—

- Use of minicomputers gave analysts interactive access to micro-records and summary data, reduced the amount of paper listings, and improved data quality.
- The Census Bureau upgraded its automated photo-composition system the TIPS II. Laser printers in each of the subject-matter divisions (Business, Construction, and Industry) significantly reduced the time required to produce photo-composed proof copies of data tables which contributed to the release of the final publications several months earlier they had been in 1982.
- The Economic Programming Division was established in January 1987 to better utilize computer programming personnel. The staff and programming activities for the

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<sup>23</sup>Force-account construction is construction work performed by an establishment primarily engaged in some business other than construction, by its own employees for its own account and use.

census or census-related surveys were consolidated into one division to allow computer staff to move among projects as required.

Effective June 1983, the OMB established a new set of MSAs, consolidated metropolitan statistical areas (CMSAs), and primary metropolitan statistical areas (PMSAs). These replaced the two former types of metropolitan areas (standard metropolitan statistical areas and standard consolidated statistical areas). The Census Bureau used the 2-level system to report data for 21 metropolitan areas in 1987.

For the census of manufactures, the Census Bureau discontinued the preliminary geographic series. It consolidated the 443 industry preliminary reports (published in 1982) into 83 bulletins covering related manufacturing industries. The preliminary *U.S. Summary Report* included data at the four-digit SIC level, while the state reports contained information only at the two-digit SIC level. The final industry series was also available in 83 bulletins, followed by the final geographic area and subject series.

The census of construction industries continued to published preliminary industry, final industry, and final geographic area reports.

No preliminary industry reports were published for the censuses of retail trade, wholesale trade, and service industries; instead, two-page press releases appeared for each state. These press releases highlighted data published in the 584 reports 125 preliminary reports and 459 final publications. The press releases were published approximately 6 weeks before the final state reports were released.

(For a detailed account, see *History of the 1987 Economic Censuses*.)

**1992.** The 1992 Economic Census covered retail trade; wholesale trade; service industries; transportation, communications, and utilities; finance, insurance, and real estate; construction industries, manufactures, and mineral industries; and the TIUS.<sup>24</sup> The program also included the 1992 Survey of Minority-Owned Business Enterprises, the 1992 Survey of Women-Owned Businesses, the 1992 Survey of Characteristics of Business Owners, and the 1992 Enterprise Statistics Program. The census and surveys were conducted in the 50 states and the District of Columbia. The 1992 Economic Census of Outlying Areas collected data on retail and wholesale trades, service industries, manufactures, and construction industries in Puerto Rico, the Virgin Islands of the United States, Guam, and the Commonwealth of the Northern Mariana Islands.

<sup>24</sup>The Census Bureau used the term “economic censuses” to cover all of its economic data-collection activities between 1954 and 1987. For 1992, on the advice of the Advertising Council, the agency used the term “economic census” primarily to assist its promotional activities and because data users frequently did not understand what “economic censuses” meant.

The 1992 census marked the most significant expansion of the census in half a century, including coverage of financial, insurance, real estate industries, communications, and utilities. In addition, the following transportation industry groups were added—

- Railroad Transportation. Data for railroads collected by other agencies were included in the Census Bureau’s publications, but excluded from the 1992 Economic Census data collection operation.
- Local and Suburban Transit and Interurban Highway Passenger.
- Transportation.
- Transportation by Air.
- Pipelines, Except Natural Gas.

Altogether, the 1992 Economic Census covered approximately 95 new industries, expanding coverage to approximately 98 percent of the Nation’s economic activity.<sup>25</sup>

The Census Bureau introduced various industry-specific output measures for some of the newly covered industries. For most industries, the basic output measures varied from sales (for retail establishments) to operating receipts (for taxable service establishments), revenue (for tax-exempt establishments), value of shipments (for manufacturers), or value of construction (for construction industries). Several of the newly covered industries had, as operating revenue, items that were nonoperating for most industries, such as rents, interest, investment income, grants, contributions, and gifts. This required adjustment in the data to be collected. For the finance, insurance, and real estate industries, the Census Bureau asked for total revenue, and used a supplemental question on the major sources of revenue to separate the components to allow users to tailor output measures for their own use. The item on “sources of revenue” also provided important information that could be used by the agency to identify secondary activity. Similarly, the 1992 Economic Census questionnaire for transportation, communications, and utilities asked for operating revenues basis data. The questionnaire for broadcasting and cable industries included a supplementary question on nonoperating revenue.

In the past, the IRS supplied the Census Bureau with gross receipts or sales (less returns and allowances). In 1992, the Census Bureau also asked the IRS to supply administrative gross rents and interest income for partnerships and corporations from its administrative records. These data did not comprise total revenue (e.g., dividend and royalty income and net capital gains were not included), but did include additional major sources of revenue for the newly covered industries.

<sup>25</sup>Coverage of the 1987 Economic Census was approximately 75 percent of the Nation’s economic activity.

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In general, census data were published for the Nation, states, metropolitan areas, counties, and places. Some retail trade and service industry data were available only at the ZIP-Code level. For the newly covered industries in 1992, data were made available for the Nation and for states. Selected metropolitan area data also were provided for some new industries in the transportation, communications, and utilities and financial, insurance, and real estate industries group.

Because there had been a lack of data on the contribution of services to the volume of exports in past censuses, the Census Bureau asked respondents to report information on exported services for additional service industries as well as for selected financial services, including depository banking, business credit and other nondepository institutions, securities, brokers and dealers, and electric utilities.

In the census of manufactures, the number of purchased services was expanded from three to eight, and the Census Bureau collected additional information on an auxiliary questionnaire. The receipts inquiry for the census of construction industries was completely restructured to improve data quality and response. Inquiries on manufacturing output and materials consumed were streamlined to reduce reporting burden and improve response rates. As a result of the 1988 Women-Owned Business Act (P.L.100-533), the Census Bureau collected information on women-owned corporations for the first time for 1992.

In an effort to improve and accelerate response, the Census Bureau—

- Used more effective direct-mail techniques.
  - Standardization of the size of most economic questionnaires. The majority were 8 x 14 inches; however, a few questionnaires remained at 8 x 11 inches.
  - Improved instructions and streamlined transmittal letters.
- Increased the emphasis on mandatory reporting in 1992. Outgoing envelopes were overprinted with a message indicating that a Census Bureau questionnaire was enclosed and that response was required by law.
  - Implemented more effective follow-up strategies, e.g., using questionnaire follow-ups for single-establishment companies and multiestablishment companies.
  - A toll-free telephone number was added to all questionnaire mailings should respondents have questions.

For the 1992 Economic Census, a proactive company contact program was implemented to encourage the Nation's largest establishments to respond. In December 1991, the agency mailed an information booklet to the 10,000 largest establishments, informing them of the 1992 Economic Census. "Special handling" was offered to the 1,000 largest establishments, which included access to a single Census Bureau employee to whom any questions could be directed. Companies requesting a contact person were asked to reciprocate by identifying a contact within their respective organizations.

In November 1992 (about 1 month before census mail-out), analysts called each company contact person at the 1,000 largest companies to alert them that the questionnaires would soon be mailed. A second call was placed in January 1993, to ensure that the firms had received the census packages. Firms that did not respond by April 1993 were contacted again by telephone. Census Bureau analysts encouraged reporting and/or collected data by telephone from those companies that had not reported by late June 1993.

Finally, the Census Bureau developed and used for the first time an electronic data interchange standard for use only in the census of retail trade. The agency met with some of the largest retailers that had extensive electronic data interchange experience to encourage them to participate.

# Appendix C.

## Principal Advisory Committees on the 1997 Economic Census

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### **PUBLIC ADVISORY COMMITTEES**

A public advisory committee is any group of persons—not composed wholly of officers or employees of the Federal Government—organized under Federal Governmental authority for the purpose of obtaining advice, recommendations, or other types of assistance. From April 1, 1994 to March 31, 2001 (the period in which the majority of the 1997 Economic Census operations took place), the U.S. Census Bureau had five public advisory committees that were responsible to the Director, the membership of which was made up entirely of non-Census Bureau persons. One of these committees, the Advisory Committee of Professional Associations, was concerned with one or more aspects of the economic census. The Committees' members were professional experts drawn from the business and academic associations that had earlier participated in four separate advisory committees. They made recommendations concerning the scope, content, and methodology, and proposed tabulations and publications for the censuses. They also made other recommendations to help the agency ensure that the censuses would provide accurate, meaningful data. Representation on these bodies changed during the census period.<sup>1</sup>

The Advisory Committee of Professional Associations operated under provisions of the Federal Advisory Committee Act, which went into effect on January 5, 1973. This act stipulated that the Director of the Office of Management and Budget (OMB) would prescribe administrative guidelines and management controls. In addition the Committees were governed by Executive Order 11769 (February 21, 1974) and by OMB Circular A-63, revised (March 27, 1974). All these public advisory committees proposals or formal recommendations were reported to the Secretary of Commerce, together with appropriate responses by the Census Bureau indicating what actions, if any, would be taken as a result of these proposals.

The advisory committees were established on the presumption that they could make significant contributions to the Census Bureau's program and objectives. Only the Secretary of Commerce could establish a public advisory committee within the Department, and no such body could be

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<sup>1</sup>Presidential Executive Order 12838 (signed in February 1993) was implemented in 1994 transforming the American Statistical Association, American Economic Association, American Marketing Association, and Population Statistics Advisory Committees into one group called the Census Advisory Committee of Professional Associations. This single Advisory Committee is composed of the memberships from these professional associations and was organized into four individual subgroups.

formed or used unless the Secretary formally determined that the establishment of such a committee was in the public interest and was connected with the performance of the Department's duties specified by law. Except where otherwise fixed by law, a public advisory committee terminated 2 years after its formation unless the Department of Commerce determined, in writing, not more than 60 days prior to the termination date that its continued existence was in the public interest. Until 1972, the Secretary was empowered to renew committee members' appointments as often as the Census Bureau might request; after that time, members of Census Bureau committees were generally limited to a maximum of 6 years of continuous service. None of the committee members received compensation, other than per diem and travel expenses, for attending meetings.

The Committee, composed of the three subgroups described below usually met every 6 months.<sup>2</sup> Their membership is shown for the period April 1, 1995 to March 31, 2001.

### **THE AMERICAN STATISTICAL ASSOCIATION**

In November 1918, Secretary of Commerce William C. Redfield invited the presidents of the American Statistical Association (ASA) and the American Economic Association (AEA) to appoint a joint public advisory committee to assist the Census Bureau in organizing and taking the 1920 Decennial Census. The joint committee met for the first time in February 1919. This so-called General Advisory Committee functioned until 1937 on a permanent basis, with its members drawn from the two associations. At that time, it was reconstituted, with all its members appointed by the ASA for 3-year terms.

This oldest standing advisory committee of the Census Bureau was designed to be representative of all statistical fields in which the Census Bureau operated. The committee's functions were defined in 1964 as "(a) critically observing and appraising the Census Bureau program as a whole, and the progress of its various segments, (b) considering priority issues that arise between and within fields, (c) examining formulations of guiding principles, (d) advising on questions of policy and procedure, especially alternative sources of data, and (e) responding to the Census Bureau's requests for opinions and judgements in the whole area of its operations."

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<sup>2</sup>A fourth subgroup of the committee, the Population Statistics Association, was not as directly concerned with the economic census as the other three subgroups.

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Members who served during the planning and conduct of the 1997 Economic Census were as follows:

- Robert Bell, to 2000 (Chairperson 1997)
- David Binder, to 2000
- G. David Faulkenberry, to 1997
- Joseph Garrett, 1996 - 2000
- Malay Ghosh, 1996 - 2000
- F. Thomas Juster, 1997 - 2000
- Richard Kulka, 1990 - 1995
- Nancy A. Mathiowetz, 2000 -
- William O'Hare, 1996 -
- Judith Rowe, to 1995
- Elizabeth Stasny, 1994 - 2000
- Lynne Stokes, to 2000
- Roger E. Tourangeau, to 1999
- Joseph Waksberg, 1991 - 1996 (Chairperson, 1995)

### **THE AMERICAN ECONOMIC ASSOCIATION**

Various members of the American Economic Association (AEA), together with representatives of the ASA, served on a single Census Bureau advisory committee from 1919 to 1937. In 1960, when the Census Bureau was entering new areas of interest to economists and it appeared desirable to have a direct channel of contact with the principal professional organizations representing economists, a separate committee of AEA members was established. (From 1937 to 1960, the AEA was not represented by any particular committee).

The president of the AEA appointed all members who served for 3-year (4-year prior to 1972) terms. While most of the committee's attention was given to the economic censuses, it also reviewed and commented on plans for other censuses, evaluation studies, and program planning with the larger framework of the Census Bureau's functions.

Committee members who served during the planning and conduct of the 1997 Economic Census were as follows:

- Ernst Berndt, 1996 - 2001
- Roger R. Betancourt, 1997 -
- Lynn E. Browne, 1998 - 2000
- David Card, to 1996 (Chairperson, 1995)
- Ellen R. Dulberger, 1992 - 1997 (Co-chairperson 1997)
- William C. Dunkelberg, 1992 - 1997 (Co-chairperson 1997)
- Gail Fosler, 1990 - 1995

- Michael Gort, to 2000
- Bronwyn Hall, 1990 - 1995
- Lee Lillard, to 2000
- Rebecca A. Maynard, 1998 - 2000
- Walter Oi, to 1996 (Chairperson 1993)
- Ariel Pakes, 1996 - 2001
- Frederic M. Scherer, 1997 - 1999
- Daniel T. Slesnick, 2000 -
- Philip L. Swann, 2000 -
- Robert Willis, to 2000

### **THE AMERICAN MARKETING ASSOCIATION**

In 1945, the American Marketing Association (AMA) passed a resolution emphasizing the need for marketing information to promote the Nation's economy and outlining a suggested statistical program for the Census Bureau. The agency felt that a regular advisory committee provided the most efficient way to learn the needs for marketing statistics and to determine whether these needs could be met. Accordingly, in 1946, the Census Bureau requested that a committee be established for this purpose, and the president of the AMA appointed its members for 3-year terms.

Committee members who served during the planning and conduct of the 1997 Economic Census were as follows:

- Tony Adams, 1996 - (Chairperson 1997)
- Laurie Ashcraft, 1992-1998
- Kenneth Bernhardt, 1992-1997
- Dorothy Clark 1989-1995
- Keith Cox 1991-1996
- Michael Etzel, 1997 - 2000
- Beth Fischer 1993-1998
- Catherine Bock-Jocz 1995 - 2001
- James Myers 1993-1995
- Connie Pechmann, 1998 - 2001
- Robert Peterson, 1998 - 2000
- Arthur Redmond, 1997 - 2000
- Mary Lou Roberts 1992-1997
- Debra Semans 1993 - 1999
- Carol Shea, 1998 - 2000
- Rosann Spiro 2000 -
- Sybil Stershic, 1999 -
- David Stewart 1993 - 1998 (Chairperson, 1996)
- Doris Walsh 1995 - 1997

# Appendix D.

## Consultation on the Census Questionnaires

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More than a thousand agencies, trade associations, trade journals, and other organizations, including companies reporting in the censuses, were requested to recommend questionnaire content for the 1997 Economic Census. The list below shows by major North American Industry Classification System (NAICS) economic sector those organizations that responded. To protect confidentiality, companies in the censuses are not listed.

### **UTILITIES (SECTOR 22)**

#### **Other Organizations**

American Public Power Association  
American Water Works Association  
Associated Gas Distributors  
Association of Oil Pipelines  
Edison Electric Institute  
National Association of Water Companies

### **WHOLESALE TRADE (SECTOR 42)**

#### **Federal Agencies**

U. S. Department of Commerce  
    Bureau of Economic Analysis  
United States Department of Labor  
    Bureau of Labor Statistics

#### **Other Organizations**

American Home Sewing and Craft Association  
American Petroleum Institute  
American Supply and Machinery Manufacturers' Association  
Automotive Service Industry Association  
Beauty and Barber Supply Institute  
Business Technology Association  
Cleaning Equipment Trade Association  
Dental Dealers of America  
Fresh Produce Council  
International Association of Plastic Distributors  
International Sanitary Supply Association  
Material Handling Equipment Dealers Association  
National Association of Electrical Distributors, Inc.  
National Beer Wholesalers Association  
National Decorating Association  
National Electronic Distributors Association  
National Fisheries Institute  
National Food Distributors Association  
National Marine Manufacturers Association  
National Paint and Coatings Association  
National Wholesale Druggists' Association  
North American Equipment Dealers Association  
North American Wholesale Lumber Association  
Petroleum Marketers Association of America

### **WHOLESALE TRADE (Sector 42)–Con.**

#### **Other Organizations–Con.**

Quality Bakers of America Cooperative  
Steel Manufacturers Association  
Steel Service Center Institute  
Tobacco Merchants Association of the United States  
United Fresh Fruit and Vegetable Association

### **RETAIL TRADE (SECTOR 44-45)**

#### **Federal Agencies**

U. S. Department of Commerce  
    Bureau of Economic Analysis  
U. S. Department of Labor  
    Bureau of Labor Statistics  
U. S. Department of Agriculture  
    Economic Research Service

#### **Other Organizations**

American Booksellers Association  
American Furniture Manufacturers Association  
American Home Sewing and Craft Association  
American Petroleum Institute  
American Pharmaceutical Association  
American Professional Needlework Retailers  
American Professional Pet Distributors  
American Specialty Toy Retail Association  
Art Business News  
Automotive Parts and Accessories Association  
Automotive Service Industry Association  
BMT Publications  
Book Industry Study Group  
Cahners Economics  
Dairy Management Incorporated  
Direct Selling Association  
Electronic Industries Association  
Flower News  
Footwear Industries of America  
Gift Association of America  
Greater Blouse, Skirt, and Undergarment Association, Incorporated  
Hardware Age

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**RETAIL TRADE (Sector 44-45)–Con.****Other Organizations–Con.**

Hearth Products Association Hobby Industry Association of America  
Home Improvement Research Institute  
International Sewing Machine Association  
International Sleep Products Association  
Jewelers Circular  
Jewelers of America  
Manufactured Housing Institute  
Market Statistics, Incorporated  
Motor Age Magazine  
National Association of Music Merchants  
National Association of Resale and Thrift Shops  
National Automatic Merchandising Association  
National Automotive Dealers Association  
National Coal Association  
National Decorating Products Association  
National Glass Association  
National Home Center News  
National Home Furnishings Association  
National Marine Manufacturers Association  
National Retail Federation  
National Retail Hardware Association  
National Sporting Goods Association  
NonPrescription Drug Manufacturers Association  
Opticians Association of America  
Painting and Decorating Contractors of America  
Photo Marketing Association International  
Progressive Grocer  
Recreational Vehicle Dealers Association  
Society of Independent Gasoline Marketers  
Sporting Goods Manufacturers Association  
The American Institute of Food Distributors  
United Dairy Industry Association  
United Fresh Fruit and Vegetable Association  
World Floor Covering Association

**TRANSPORTATION AND WAREHOUSING (SECTOR 48-49)****Other Organizations**

American Bus Association  
American Public Transit Association  
American Trucking Association  
American Warehouse Association  
Household Goods Forwarders Association  
International Association of Refrigerated Warehouses  
International Marina Institute  
National Customs Brokers and Forwarders Association of America  
National Marine Manufacturers Association  
National School Transportation Association  
National Waterways Conference, Inc.  
Regional Airline Association

**TRANSPORTATION AND WAREHOUSING (Sector 48-49)–Con.****Other Organizations–Con.**

Transportation Brokers Conference of America  
United Bus Owners of America  
United States Tour Operators Association

**INFORMATION (SECTOR 51)****Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

Association of Telemessaging Services International, Inc.  
Interactive Multimedia Association  
National Association of Broadcasters  
National Telephone Cooperative Association

**FINANCE AND INSURANCE (SECTOR 52)****Federal Agencies**

Securities and Exchange Commission

**Other Organizations**

Alliance of American Insurers  
America's Community Bankers  
American Bankers Association  
American Council of Life Insurance  
Commercial Finance Association  
Financial Institutions of Marketing Associations  
Health Insurance Association of America  
Independent Bankers Association of America  
Investment Company Institute  
Life Insurance Marketing and Research Association  
Mortgage Bankers Association of America  
National Association of Credit Union Service Organizations  
National Association of Health Underwriters  
National Association of Insurance Brokers  
National Association of Life Underwriters  
National Association of Securities Dealers, Inc.  
National Association of State Credit Union Supervisors  
National Council of Real Estate Investment Fiduciary  
National Credit Union Administration  
National Futures Association  
National Society for Real Estate and Finance  
New York Stock Exchange  
Risk and Insurance Management Society  
Securities Industry Association  
Securities Transfer Association  
Security Traders Association  
Society of Chartered Property and Casualty Underwriters

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**FINANCE AND INSURANCE (Sector 52)—Con.****Other Organizations—Con.**

Society of Professional Benefit Administrators  
Surety Association of America  
Sheshunoff Information Services

**REAL ESTATE AND RENTAL AND LEASING  
(SECTOR 53)****Other Organizations**

Building Owners and Managers Association International  
Manufactured Housing Institute  
National Council of Real Estate Investment Fiduciary  
National Society for Real Estate and Finance  
National Truck Leasing System  
Truck Renting and Leasing Association

**PROFESSIONAL, SCIENTIFIC AND  
TECHNICAL SERVICES (SECTOR 54)****Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

American Congress on Surveying and Mapping  
American Consulting Engineers Council  
American Institute of Certified Public Accountants  
American Society of Interior Designers  
Industrial Design Services Association  
International Interior Design Association  
Marketing Research Association  
National Technical Services Association  
Photo Marketing Association International  
Professional Photographers of America, Inc.

**ADMINISTRATIVE AND SUPPORT, WASTE  
MANAGEMENT AND REMEDIATION SERVICES  
(SECTOR 56)****Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

American Society of Travel Agents  
American Telemarketing Association, Inc.  
Associated Credit Bureaus  
Travel Industry Association of America

History—1997 Economic Census

U.S. Census Bureau, 1997 Economic Census

**HEALTH CARE AND SOCIAL ASSISTANCE  
(SECTOR 62)****Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

American Academy of Pediatrics  
American Association of Homes and Services for the Aging  
American Association of Tissue Banks  
American Chiropractic Association  
The American College of Obstetricians and Gynecologists  
American Dental Association  
International Society for Clinical Laboratory Technology  
National Association of Meal Programs

**ARTS, ENTERTAINMENT AND RECREATION  
(SECTOR 71)****Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

American Association of Botanical Gardens and Arboreta  
American Association of Museums  
American Symphony Orchestra League  
International Association of Amusement Parks and  
Attractions  
National Association of Theatre Owners  
National Bowling Council  
National Sporting Goods Association

**ACCOMMODATION AND FOODSERVICES  
(SECTOR 72)****Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

American Hotel and Motel Association  
International Foodservice Manufacturers Association  
National Association of RV Parks and Campgrounds  
National Restaurant Association  
Professional Association of Innkeepers, International

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**OTHER SERVICES (EXCEPT PUBLIC  
ADMINISTRATION) (SECTOR 81)**

**Federal Agencies**

U. S. Department of Commerce  
Bureau of Economic Analysis  
U. S. Department of Labor  
Bureau of Labor Statistics

**Other Organizations**

Automotive Oil Change Association  
National Funeral Directors Association  
Textile Care Allied Trades Association

