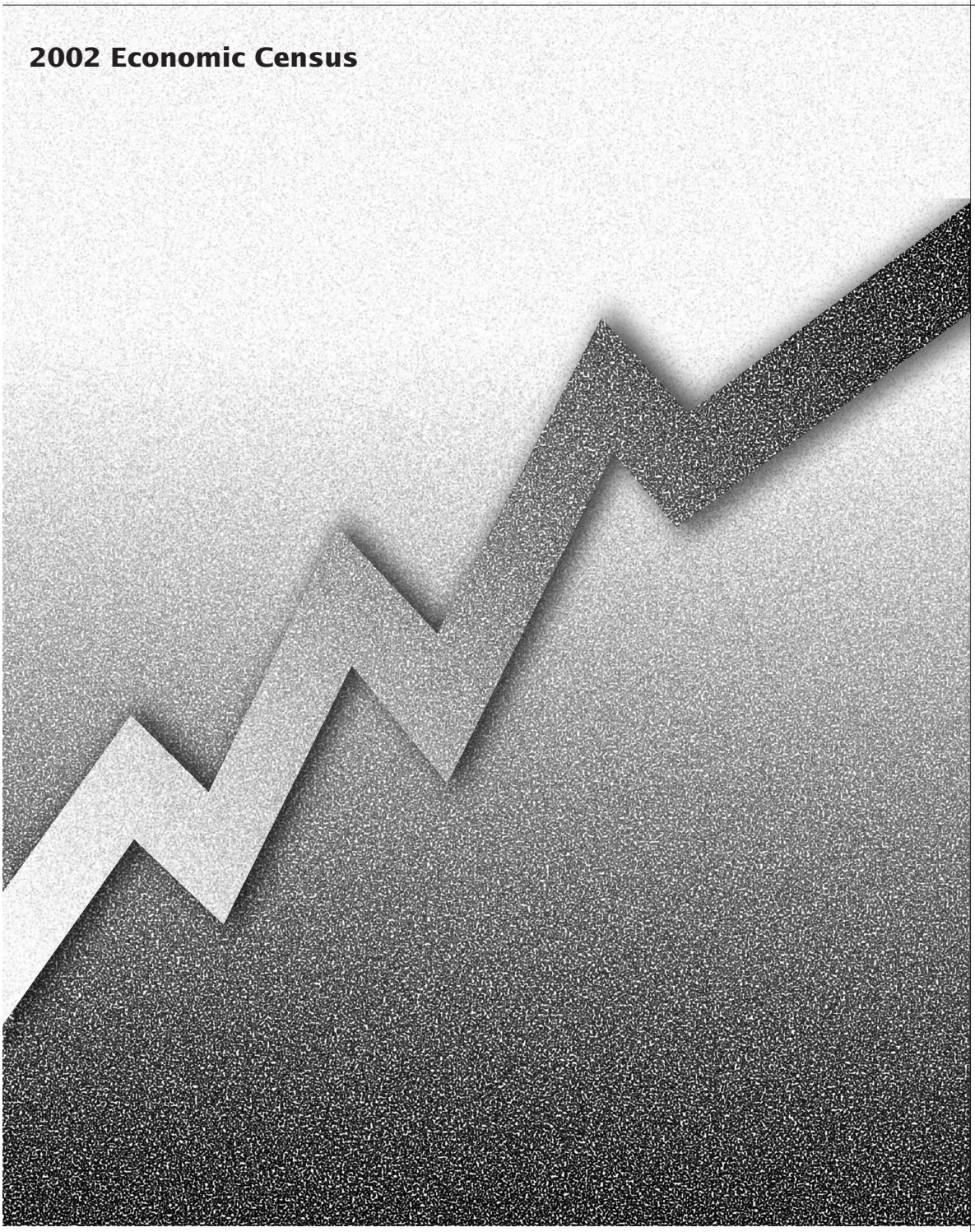
Procedural History of the 2002 Economic Census

Issued September 2006

EC02-00R-HIST

2002 Economic Census



U S C E N S U S B U R E A U

Helping You Make Informed Decisions

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

ECONOMIC CENSUS 2002

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BACKGROUND INFORMATION

What Is the Economic Census?

The economic census is a systematic attempt to measure almost all economic activity in the United States. The 2002 Economic Census covered approximately 23 million individual business establishments, encompassing about 97 percent of the Gross Domestic Product (GDP) of the United States. The economic census is the primary economic statistical program of the United States government and is the chief source of data on the structure and functioning of the national economy. As such, it provides the supporting foundation and framework for a host of other statistical efforts by both the public and private sectors.

Legal Authority

The U.S. Census Bureau, an agency of the U.S. Department of Commerce, carried out the 2002 Economic Census under authority granted by Title 13, U.S. Code. Title 13 governs the Census Bureau's operations, establishes what censuses shall be taken and the intervals between them, specifies certain administrative procedures, and describes the duties of senior Census Bureau officials.

Chapter 1 (Administration) of the title covers collecting and handling census and survey data and the qualifications and duties of census supervisors and other employees. Section 5 of the chapter assigns to the Secretary of Commerce the responsibility for preparing census report forms and determining the number and type of inquiries included (the Secretary typically delegates this

authority to the Director of the Census Bureau). Section 9 sets confidentiality requirements for census data and forbids the "use of information furnished . . . for any purpose other than the statistical purposes for which it was supplied." The section also restricts access to census questionnaires to persons sworn to uphold the confidentiality provisions of Title 13 and forbids publication of any information from the census or any survey that could be used to identify a specific person or business establishment.

Chapter 5 (Censuses), section 131, directs the Census Bureau to carry out an economic census every 5 years, for years ending in "2" and "7." Section 191 of the chapter establishes the geographic scope of the censuses, and authorizes the Secretary of Commerce to use census data collected by the Governor or highest federal official (if the data are collected in accordance with plans approved by the Secretary) for the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and "any possession or area not specifically designated in subsection (a) of this section." Section 195 authorizes the use of sampling for carrying out these provisions of Title 13.

Chapter 7 (Offenses and Penalties) sets out the penalties for any employee or Census Bureau or Department of Commerce staff member's publishing or otherwise communicating to any person other than a sworn Census Bureau or Department of Commerce employee any data covered by the confidentiality provisions of the law, as well as requiring response to census inquiries and establishing the penalties for noncompliance.

For more detailed excerpts of Title 13, see Appendix A, "Provisions of Title 13, United States Code, Relating to the 2002 Economic Census."

Development of the Economic Census

While Article 1, Section 2, of the U.S. Constitution requires that a census of population be carried out every 10 years, it was not until the census of 1810[1] that the national government tried to collect information about economic activity in the United States. The 1810 census asked for the number of establishments involved in manufacturing and the kind, quantity, and value of goods manufactured. A similar set of questions was asked in the 1820 census, but for some reason was omitted from the 1830 enumeration. The 1840 census restored the manufacturing inquiries, and added questions on mineral industries and agriculture. The mineral industries items were dropped from the 1850 census, but by then a census of manufactures had become part of the decennial census.

After the establishment of a permanent Census Bureau in 1902, the inquiry into economic activities expanded rapidly, first through more frequent censuses—the Census Bureau carried out a census of manufactures every 5 years after 1905 (every 2 years from 1921 through 1939)—then by the addition of other economic sectors to the enumeration. The 1930 census included a Census of Distribution, covering retail and wholesale trade and construction industries, while selected service industries were first enumerated in 1933. Transportation industries were added to the census in 1963, with the data being collected in a set of sample surveys—the Truck Inventory and Use, Passenger Transportation, Commodity Transportation, and Motor Carriers Surveys. Coverage expanded again in the 1992 Economic Censuses, which included censuses of Utilities, Transportation Industries, and Finance, Insurance, and Real Estate.

Increased interest about the participation in the economy of minority populations and women led to the first Survey of Minority-Owned Business Enterprises (SMOBE) as a special project in 1969 and the Survey of Women-Owned Business Enterprises (SWOBE) in 1972. The SMOBE became a regular part of the economic census with the 1972 enumeration, while the SWOBE followed suit in 1977. The 1977 Survey of the Characteristics of Women Business Owners was expanded in 1982 to cover all business owners and was retitled the Characteristics of Business Owners Survey (CBOS). For 2002, the Census Bureau conducted the Survey of Business Owners, which replaced the SMOBE, SWOBE, and CBOS.

[1]The original legislation governing the 1810 census, the Act of March 26, 1810, specified only that population inquiries be made in the census. However, a later bill, the Act of May 1, 1810, directed that the marshals and their assistants also give "an account of the several manufacturing establishments and manufactures within their several districts, territories, and divisions."

The first economic census in the "outlying areas" of the United States (now the "island areas") was done in 1909, when the Census Bureau carried out a special census of manufactures in Puerto Rico. The agency conducted censuses of manufacturers in Puerto Rico every 10 years thereafter through 1949, after which the Commonwealth was included in the quinquennial economic censuses. The Census Bureau extended the coverage of the census of manufactures to include Alaska and Hawaii in the 1939 Census of Manufactures. Guam and the Virgin Islands of the United States were first covered in the 1959 Economic Censuses, and the Commonwealth of the Northern Mariana Islands was first covered in 1982; American Samoa was added in 2002. Data for construction industries was first requested in the economic census for Puerto Rico in 1967, and for the other outlying areas beginning in 1972.

The need to standardize the classification of economic activity led to the development of the Standard Industrial Classification (SIC) System, first introduced for manufacturing industries in 1941, and for nonmanufacturing industries in 1942 (the dual codes were retained until 1954, when they were combined into a single SIC Code covering both manufacturing and nonmanufacturing industries). The Census Bureau continued to use the SIC Code, with periodic revisions until the late 1990s, when the growing obsolescence of the old system led to the development of the North American Industry Classification System (NAICS).[2] The Census Bureau introduced the NAICS in the 1997 Economic Census for the 50 states, expanding coverage to the island areas[3] in the 2002 Economic Census. The latter census also saw the introduction of the new North American Product Classification System (NAPCS) on a test basis covering parts of the services industries.

SCOPE AND COVERAGE OF THE CENSUS

Components of the Economic Census

The 2002 Economic Census used direct data collection or administrative records to compile statistics on approximately 23 million business establishments covering some 97 percent of all economic activity in the United States. The enumeration covered industries defined by the 2002 North American Industry Classification System (NAICS—see below). In addition to the general enumeration of businesses, the 2002 census program included surveys of business owners, vehicle inventory and use, commodity flows, and business expenditures.

Census Geographic Coverage

The 2002 Economic Census encompassed major business activities in the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, the Virgin Islands of the United States, and, for the first time, American Samoa. Special agreements signed with each of the island areas' governments authorized the Census Bureau to collect the economic data within those areas.

What's Asked in the 2002 Economic Census?

The following table shows the major items collected in the 2002 Economic Census by major industrial sector.

Item description	Manufacturing, mining, construction	Service sector industries**
Employment		
All employees	All	All
Production/construction workers	All	
Worker hours	Manufacturing, Mining	
Leased employees*	All	All

[2]For the 1997 Economic Census, the Census Bureau continued to use the SIC Code for the Survey of Minority-Owned Businesses and the Business Expenditures Survey as well, extending NAICS coverage to the equivalent surveys in 2002.

[3]The island areas covered in the 2002 Economic Census were the Commonwealth of Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, the U.S. Virgin Islands, and American Samoa.

Item description	Manufacturing, mining, construction	Service sector industries**
Labor Costs		
Total payroll	All	All
Worker wages	All	
Supplemental costs	All	
Leased employee payroll*	All	All
Measures of Output		
Total value of sales, shipments, receipts, or revenue	All	All
Electronic commerce*	All	All
Class of customer		Selected industries
Method of selling		Selected industries
Detail of sales, shipments, receipts, or revenue	All	All
Type of construction	Construction	
Shipping and handling		Selected industries
Exported services		Selected industries
Assets, Expenditures, Inventories		
Inventories	All	Selected industries
Assets and capital expenditures	All	
Rental payments	All	
Expenses		
Mineral property expenses	Mining	
Selected expenses	All	Selected industries
Cost of supplies	Manufacturing, mining	
Cost of fuels	Mining	
Industry-Specific Inquiries		
Various, by industry	Selected industries	Selected industries
Establishment activities*	Manufacturing	Selected industries

*New for 2002 Economic Census.

**Includes Retail Trade (NAICS sectors 44–45), Wholesale Trade (42), Transportation and Warehousing (48–49), Administrative and Support and Waste Management and Remediation Services (56), and Other Services (81).

MAJOR USES AND USERS OF ECONOMIC CENSUS DATA

The data collected, tabulated, and published in the economic census are critical to many of the functions of government, private business, and the general public. Among the major users of economic census data are:

- **The federal government**. The federal government uses census information 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.
- **State and local governments**. State and local governments use census data to assess business activities and tax bases within their jurisdictions, develop programs to attract new businesses, develop minority contracting guidelines, and design job retraining programs.
- **Manufacturers and distributors**. Companies that sell their products to (or through) other businesses use census data to evaluate markets and plan sales strategies and territories; locate plants, warehouses, and stores; and make economic or sales forecasts.
- **Small businesses**. Small businesses use census data to learn about their markets and industry to improve their business opportunity presentations to bank officers and venture capitalists when seeking funds for expansion.
- **Academic institutions**. Colleges and universities use census data in teaching marketing, business management, and general economics.
- **Research institutions**. Researchers use census data in their studies of long-term economic trends.

- **Business and trade associations, business journals, and the daily press**. These institutions use economic census data as technical background for articles.

Economic census statistics are available in most major public and college libraries designated as government depositories. The Census Bureau's regional offices (located in 12 large cities), the State Data Centers, and Business and Industry Data Centers (located throughout the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands) have economic census reports in their reference collections.

WHAT'S NEW FOR THE 2002 ECONOMIC CENSUS?

Industry and Product Classification

The North American Industry Classification System (NAICS). The 2002 Economic Census collected, tabulated, and disseminated the census data for industries using the North American Industry Classification System (NAICS), developed in extended negotiations among the United States, Canada, and Mexico and introduced in the 1997 Economic Census. This joint project created an integrated industrial classification system for use throughout North America, providing comparable economic statistics for all three national economies.

The NAICS replaced the Standard Industrial Classification (SIC) Code, used by the Census Bureau to define economic activity since the 1940s. The new system defined 20 industrial sectors (compared to 10 under the SIC) and greatly improved and expanded coverage, particularly of services industries. The NAICS was introduced in the 1997 Economic Census, but was not used in that census for portions of the construction and wholesale trade industries or for the island areas.[4] For 2002, the NAICS coverage was extended to include the bulk of the industries not covered in 1997 as well as the island areas.

The North American Product Classification System (NAPCS). Following the success of the NAICS project, the United States, Canada, and Mexico undertook a further initiative to develop and implement a joint classification system for the products of industry—the North American Product Classification System (NAPCS). The objective of the NAPCS program is to develop a market-oriented classification system for products that:

- Is not industry-of-origin based.
- Can be linked to the NAICS industry structure.
- Is consistent across all three participating NAICS countries' economies.
- Promotes improvements in the identification and classification of services products in particular.

The U.S. Census Bureau implemented the first phase of this undertaking as part of the 2002 Economic Census, which introduced NAPCS products for the following four NAICS industrial sectors:

- Information (Sector 51)
- Finance and Insurance (52)
- Professional, Scientific, and Technical Services (54)
- Administrative and Support and Waste Management and Remediation Services (56)

For more information on the NAICS and NAPCS, see below and Chapter 3, "Industry and Product Classification."

[4]For more information on the development of the NAICS, see the *History of the 1997 Economic Census*, Chapter 3, "Introduction of the North American Industry Classification System (NAICS)."

Content Changes

The economy, like the weather, is never static for long. Not only does the volume of economic activity vary from day to day and from hour to hour, but the components of the economy—the kinds of activity that make up the economy—change as well. The economic census seeks to provide relevant measures of economic activity in the United States and to do so it must adjust to the changes in that economy that occur over the years between the censuses. This may require changes in the way the census collects data and it almost certainly will require changes in the kinds of data requested from respondents. The major changes made to the data content of the economic census questionnaires for 2002 are described briefly below.[5]

- **E-commerce**. An item requesting data on e-commerce[6] was added to the census questionnaires for all sectors covered by the 2002 Economic Census.
- **Leased employees**. Prior to the 2002 Economic Census, employment and payroll data collected in the enumeration were limited to establishments with paid employees. However, the rapid expansion of the use of "leased employees"[7] led the Census Bureau to supplement the traditional paid-employees sample with operating establishments that obtained their workforce through a leasing company. An item on leased employment and payroll, asking for full- or part-time leased employees, number of leased employees for the pay period including March 12, and payroll for leased employees, was added to the census questionnaires.
- **Supply chain activities**. The 2002 Economic Census included a new inquiry for information on the supply chain functions performed at specific business locations for the manufacturing, wholesale, retail, and transportation sectors, and for logistical services. This added question was intended to collect information that would help users understand the types of production functions in which the establishments in the sectors involved are engaged. For example, for a manufacturing establishment, the supply chain activities question would enable data users to see how integrated each plant is—i.e., the degree to which the plant is involved in designing the manufactured product; whether parts of the production process were contracted out; what types of transportation services and warehousing were used; and other types of services performed or outsourced.
- **2002 Business Expenditures Survey**. The 2002 Business Expenditures Survey (BES) is part of the 2002 census program. The NAICS was used for the dissemination of data from the 2002 BES, and the scope of the program also was expanded to include finance, insurance, real estate, and selected transportation industries in the survey sample, and by the addition of a new expense item on the cost of leased employees.
- **Alternative reporting units**. Historically, the economic census has been conducted on the basis of the individual business establishment. The owner/operator of each establishment has been asked to provide specified data for that individual operation. For multiestablishment companies, data are still collected for the individual constituent establishments, rather than for the company as a single economic entity. However, for some parts of the economy, particularly firms in the finance, insurance, communications, and utility sectors, revenue data—a key component of the census statistics—are frequently not available at the establishment level. The companies involved have networked their individual establishments into a consolidated economic operation. To cope with this situation, the Census Bureau created consolidated "alternative reporting units" (ARUs) for the 2002 census. For 2002, the Census Bureau sent individual

[5]The quality of some of the new data collected in the 2002 Economic Census, including e-commerce, leased employees, and the supply chain, are still being reviewed and may not meet Census Bureau publication standards. The Census Bureau routinely explores alternate ways to measure economic phenomena such as these, and will continue to do so in the future.

[6]That is, business conducted over electronic information networks.

[7]In this arrangement, the leasing firm retains responsibility and supervision of production and delivery of products, but the basic personnel administration is handled by a contractor—a company usually called an employees leasing company or professional employer organization (PEO). The PEO manages key human resource and employee services, such as payroll, tax compliance, personnel management, pay and benefits packages, and human resources compliance for the client firms. The client firm retains responsibility and supervision of the production and delivery of products.

report forms to networked companies for each industry in which the companies were involved, so a company involved in several networked industries would receive several ARU forms. For the individual establishments or branch offices, supplemental lists of those establishments were included with the questionnaires to collect employment and payroll data. (The employment and payroll data were published at an aggregate level—typically state, metropolitan area, or for the United States.)

Publication Priorities

Prior to the 2002 census, the publication sequence for the economic census data reports varied by subject series and industry sector. Typically, the Census Bureau published the industry series reports first for the manufacturing, mining, and construction sectors, followed by the geographic area series for those sectors. This order was reversed for retail trade, wholesale trade, and the services sectors. For the 2002 census, the Census Bureau adopted a standardized dissemination plan for all 18 NAICS industrial sectors in which the industry series reports were issued first for each sector, followed by the geographic area series reports.

Technological Innovations and the Census

The Census Bureau introduced several significant technological innovations in the 2002 Economic Census to upgrade its processing infrastructure, to facilitate electronic reporting, and to reduce costs in operations.

- **Business Register Redesign**. The Business Register, designed to replace the Standard Statistical Establishment List (SSEL), is the foundation of the Census Bureau's economic programs, providing frames and other critical support for business cycle indicators, the economic census, and other periodic business surveys. Data residing in the SSEL were migrated to the Business Register's Oracle database in fall 2002, and full production of the Business Register began in January 2004, providing analysts with a central repository for administrative records and support for collection, processing, and tabulation for all economic programs, as well as tabulations research into business ownership, demographics, etc.[8]

- **The Economic Metadata Repository (EMR) and the Generalized Instrument Design System (GIDS)**. Improving overall consistency and quality of forms design, as well as facilitating data capture and the Census Bureau's decision to expand electronic data reporting in the 2002 Economic Census meant that the agency had to coordinate the content of the paper-based questionnaires. This required the development of databases to house the content and software to compose the electronic and paper based questionnaires. The Economic Metadata Repository (EMR) was developed to store the content of the information to be collected in the census. The Generalized Instrument Design System (GIDS) was developed to compose the various questionnaires both for electronic reporting and paper-based reporting from the single source content. There were 545 paper-based questionnaires developed for the 2002 Economic Census. Nearly all paper-based questionnaires also had an equivalent and consistent electronic-reporting counterpart.

- **Optical Mark Recognition (OMR)/Key From Image (KFI) system**. The Census Bureau developed an Optical Mark Recognition (OMR)/Key From Image (KFI) processing system for capturing data from the paper questionnaires used in the 2002 Economic Census.[9] This system used composition information provided by the GIDS to create and register templates for each of the more than 5,000 unique questionnaire pages used in the census. The KFI system vastly streamlined data capture of the economic census paper questionnaires by eliminating the keying of individual keycodes, automatically capturing the check-box responses, and automatically taking the keyer to completed responses. It also provided the images for the edit referral review processes associated with post-data capture operations.

[8]Eddie J. Salyers, "An Assessment of Current Quality Assurance Practices and Ongoing Work to Develop a Comprehensive Quality Plan for U.S. Census Bureau Business Register," 18th International Roundtable on Business Survey Frames, Beijing, China, October 18–22, 2004, pp. 1–2.

[9]The OMR system was developed under contract by the Lockheed Corporation.

- **Micro Analytical Database (MADb) and Trade Area Interactive Problem Solving Environment (TIPSE)**. The Census Bureau consolidated the 1997 Economic Census systems used to review and correct respondent data into a single system, using Oracle software, for all trade areas in 2002. Analysts accessed economic census data stored in the MADb and used the TIPSE to view, correct, and edit respondent data.
- **Macro Analytical Review System (MARS)**. The Census Bureau developed the Macro Analytical Review System (MARS) following the 1997 Economic Census to allow analysts the ability to review 2002 Economic Census Data and Annual Survey of Manufactures data at one central location instead of via numerous databases developed for each subject area.
- **Economic Drill Down (ECONDD)**. The Census Bureau expanded the ECONDD that had been in use prior to the 2002 Economic Census, permitting analysts in all subject areas access to search the MADb and other files. The retrieved data could be viewed either on the computer screen or copied to Excel spreadsheets. The ECONDD also allowed analysts to view records in the TIPSE via direct links between it and records retrieved as a result of an ECONDD search.
- **Feith**. The Census Bureau used a Feith document storage and retrieval system to manage electronic images of economic census questionnaires captured during the scanning process. The Feith system allowed analysts to access, via their personal computer, any report filed via paper from the economic census.
- **Electronic reporting**. The Census Bureau greatly expanded the availability of electronic reporting in the 2002 Economic Census, developing electronic questionnaires and reporting software and making these tools available through the Internet. Electronic reporting reduced respondent burden, improved data quality, and sharply reduced paper handling costs.
- **Census data dissemination systems**. Prior to the 2002 Economic Census, economic census data were stored, reviewed, and prepared for publication on a number of separate systems throughout the Census Bureau's Economic Directorate. For 2002, these systems were consolidated into one system. At the core of the system was the Economic Metadata Repository (EMR) and Publication Text Repository. Using newly designed tools to assist with review and publication (i.e., Dissemination Metadata User Interface [DMUI], Final Data Review Tool [FDRT], Publication Source File [PSF], Review Source File [RSF], Publication Extraction Systems [PES]), and numerous online/electronic enhancements (American FactFinder, Economic Census Web site, and Econ02 DVD-ROM), the Census Bureau standardized its economic census data products, released more data in a more timely fashion, saved agency resources, and increased the usability of data for data users.

DATA COLLECTION

The economic census data are collected, for the most part, on an "establishment" basis. An establishment is a business or industrial unit at a single physical location that produces or distributes goods, or that performs services. Each establishment is owned by a "company," and any given company may own one (a "single-establishment" company) or many (a "multiestablishment" company). Further, a multiestablishment company's establishments may be spread across different geographic or political jurisdictions and may be involved in a variety of different business or industrial activities. Collecting data at the establishment level enables the Census Bureau to compile and publish very detailed geographic and industry tabulations.

The Census Bureau compiled a list of business establishments prior to the census and attempted to classify the economic activity of each. The agency used this information to prepare mailout packages, each of which included one or more of approximately 545 industry-specific census questionnaires for each company. These census questionnaires were mailed to company headquarters and requested basic business information for each of the company's establishments on the following subjects:

- Kind-of-business activity
- Physical location

- Dollar volume of business in 2002
- Number of employees
- Payroll

Other industry-specific questions were included, depending on the particular kind of business activities or industry of each establishment.

The primary mailout for the 2002 Economic Census began in late December 2002, when the Census Bureau mailed approximately 4.7 million census questionnaires to companies on the economic census mail list. The firms and individual establishments sent census questionnaires were asked to complete and return them to the Census Bureau's National Processing Center in Jeffersonville, IN, by February 12, 2003. Electronic reporting of census data was available to about 3.5 million establishments covered by the census. Respondents could access nearly all the report forms used in the census and send their data, in a secure encrypted form, directly to the Census Bureau.

In addition to the mail and electronic responses to the economic census, the Census Bureau obtained basic business data for approximately 2.3 million small employer businesses and 16.7 million nonemployer establishments using administrative records provided to the agency by the Bureau of Labaor Statistics (BLS), Internal Revenue Service (IRS), and the Social Security Administration (SSA). The sharing of records by these agencies is strictly one way; the IRS and the SSA provide their records to the Census Bureau for census purposes, but the Census Bureau does not share census respondents' information with any other agency.

DATA PROCESSING AND DISSEMINATION

The 2002 Economic Census publication program included reports on each of 18 industrial sectors defined by the North American Industry Classification System (NAICS—see below), as well as special reports containing data from sample surveys. Since 1972, the Census Bureau has carried out one or more sample surveys as part of each economic census to collect information on the characteristics of business owners.

The data collected in the census had to be classified to make them manageable by data users. This required that the Census Bureau categorize each establishment by the kind-of-business activity reported and the physical location of that activity. "Kind-of-business activity" involved classification into particular activities, such as manufacturing, retail trade, services industries, etc. For 2002, the Census Bureau classified business activities using the North American Industry Classification System (NAICS), which defined 20 industrial sectors. The physical location of the business establishment and its activities was broken down by detailed geographic location through the following levels:

- United States
- State or island area
- Metropolitan area
- County
- Place with 2,500 or more inhabitants
- Five-digit ZIP Code area

Not all data were reported for all geographic levels; the most detailed statistics were reported for the United States, while key data were compiled/disseminated at the state/area level, for metropolitan areas, counties, and for places with 2,500 or more inhabitants. Selected data were released by five-digit ZIP Code, provided that doing so did not violate the confidentiality provisions of Title 13, U.S. Code—Census.

The industrial and geographic classifications of the census data permitted the compilation of the Census Bureau's *Industry Series* and *Geographic Area Series* reports, respectively.

EXPENDITURES

The 2002 Economic Census and its associated activities cost approximately $319 million over a 6-year period of planning and carrying out the census and publishing the results. Census operations invariably overlap one another; one economic census is still being completed while the planning and preparations for the next are begun. Preliminary work and planning for the 2002 Economic Census began only a short time after data collection for parts of the 1997 Economic Census were completed (e.g., the final follow-up mailing for 1997 Surveys of Minority- and Women-Owned Businesses was made in mid-October 1999, at the beginning of fiscal year 2000).

ORGANIZATION OF THE CENSUS BUREAU

During most of the 2002 Economic Census period, the Census Bureau was organized under a director, a deputy director, and several associate directors responsible for specific operational or administrative fields: communications, finance and administration, information technology, field operations, economic fields, decennial census, demographic programs, and methodology and standards.[10] Subordinate to the associate directors were three assistant directors, each with specific responsibilities for marketing and customer liaison, the economic programs, or the decennial census. In addition, there were two "assistants to the associate directors" for communications and for information technology, and a comptroller for the agency.

Economic census operations were the responsibility of the Associate Director for Economic Programs and the Assistant Director for Economic Programs, who oversaw the planning and conduct of the census by the subject-matter divisions. The divisions of the Economic Programs Directorate most directly involved in planning and carrying out the 2002 Economic Census were:

- Company Statistics Division (CSD)
- Economic Planning and Coordination Division (EPCD)
- Economic Statistical Methods and Programming Division (ESMPD)
- Manufacturing and Construction Division (MCD)
- Service Sector Statistics Division (SSSD)

[10]Until 2003, the Census Bureau executive staff also included two "principal associate directors," one of whom also served as the agency's chief financial officer, each of whom oversaw several of the associate directorates and reported to the Deputy Director.

Chapter 2.
The Planning Process

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INTRODUCTION

The U.S. government conducts an economic census every 5 years, but preparations for each such enumeration start well before the preceding census is completed. Planning for the next census usually begins shortly after data collection efforts for the current census are completed and may continue well into the operational phase of the subject census.[1]

The U.S. Census Bureau is responsible, under the overall authority that Title 13, U.S. Code, gives the Department of Commerce, for the census. The planning for the economic census must balance the data needs of the federal government and other public and private data users against the ability and willingness of respondents to supply the information needed. Every census planning effort therefore involves extensive review of the data content of the questionnaires to ensure that only the most needed information is requested, while response burden is kept to a minimum. New fields of economic activity require that the census be modified to cover those areas as well; e.g., for the 2002 census, new areas of inquiry included electronic commerce, leased employment, and supply-chain.

A major innovation in the 1997 Economic Census was the introduction of the new North American Industry Classification System (NAICS) for the majority of the industries covered by the enumeration in the 50 states and the District of Columbia. The 2002 census saw further expansion of the NAICS to:[2]

- Overhaul industry classifications not updated for the 1997 census (e.g., construction and parts of wholesale trade).
- Improve the classification of e-commerce.
- Extend NAICS classifications to the economic census of the island areas (Guam, the Commonwealth of the Northern Mariana Islands, the U.S. Virgin Islands, and American Samoa, the latter included in the economic census for the first time).
- Cover the Survey of Business Owners and the Business Expenditures Survey.

[1] U.S. Census Bureau, "Econ2K Steering Group: Meeting Notes for December 15, 1999." December 15, 1999, pp. 1–2.
[2] U.S. Census Bureau, "Guide to the 2002 Economic Census," <http://www.census.gov/econ/census02/guide/index.html> (September 15, 2005).

The 2002 Economic Census saw a further extension of new classification activities with the introduction of the North American Product Classification System (NAPCS). For selected industries in the service sectors, a prototype NAPCS was developed in cooperation with the statistical agencies of Canada and Mexico for implementation on a test basis in the 2002 census. The NAPCS prototype covered products identified for industries in the following: Information (Sector 51); Finance (Subsectors 521, 522, 523, and 525); Professional, Scientific, and Technical Services (Sector 54); and Administrative and Support and Waste Management and Remediation Services (Sector 56). The Census Bureau plans to expand the new system to cover 18 NAICS industry sectors in time for the 2007 Economic Census. (For more details of the planning and implementation of both the expanded NAICS and the NAPCS, see Chapter 3, "Industry and Product Classification.")[3]

Planning the census also required that the Census Bureau evaluate and adopt new technologies to make data collection and processing more efficient, reduce burden for respondents, and improve data dissemination. For 2002, the Census Bureau planned to introduce several new systems to make it easier for businesses to respond with their information. These innovations included better forms design, expanded and easier electronic reporting, a Web-based Business Help site for respondents, and the integration of new data processing technology into the census. (The development and implementation of these technological innovations are covered in detail in Chapter 4, "Technological Innovations and the Census.")

CONSULTATION ON THE CENSUS

General Information

The Census Bureau consults a variety of experts, both within and outside the federal government, when it is planning any census. The principle source of advice to the agency over the long term are its public advisory committees and key federal data users, while specific industry associations and companies are consulted on particular points, such as the content of a questionnaire to be used to enumerate an industry in the economic census.

Presidential Executive Order 12838, signed in February 1993 and implemented the following year, reduced the total number of Census Bureau advisory committees and reorganized those that remained. The order created a combined Census Advisory Committee of Professional Associations that drew its membership from four professional associations that had previously provided a separate committee.[4]

The Census Bureau contacted more than 1,000 business associations; federal, state, and local agencies; and individual companies to request their advice on the content of the 2002 Economic Census questionnaires. (For a list of respondents to this request, see Appendix D, "Consultation on the Census Questionnaires.") The Economic Programs Directorate staff also reviewed the responses received to the Survey of 1992 Economic Census Data Users, carried out by the agency in 1995 to obtain feedback for use in planning future products and services. (For further information on this survey, see Chapter 2, "The Players and the Plans," of the *History of the 1997 Economic Census*.)

The Census Advisory Committee of Professional Associations

The Census Advisory Committee of Professional Associations was created in response to Presidential Executive Order 12838 (see above), and consisted of representatives of the American Statistical Association (ASA), American Economic Association (AEA), American Marketing Association

[3]Michael F. Mohr, "North American Product Classification System (NAPCS): What's Been Done; What's Being Done; What's Next." Paper presented at the Census Advisory Committee of Professional Associations, April 18–19, 2002, pp. 2–6.

[4]The charter of the Census Advisory Committee of Professional Associations may be consulted at <http://www.census.gov/cac/www/Charter(CACPA).html> (January 13, 2006).

(AMA), and the Population Association of America (PAA). The participating organizations each submitted nominations of representatives for 3-year terms on the committee to the Director of the Census Bureau. Members' appointments could be renewed, although membership generally was limited to two consecutive terms. Committee members received no pay, other than per diem and travel expenses, for attending meetings.[5]

The new committee met twice a year (in the spring and the fall) on average and made recommendations on the scope, content, methodology, tabulation plans, and data product plans for the 2002 Economic Census, as well as the Census Bureau's decennial census and current surveys programs and other facets of the agency's work.[6] (For the membership of this committee during the 2002 Economic Census period, see Appendix C, "Principal Advisory Committees on the 2002 Economic Census.")

Econ2K STEERING GROUP

General Information

The Census Bureau's Economic Programs Directorate formed an Econ2K Steering Group late in 1999 to help coordinate the plans for the 2002 Economic Census and the agency's other economic programs. The Assistant Director for Economic Programs chaired the group, which consisted of the chiefs and assistant chiefs from the following divisions of the Economic Programs Directorate:[7]

Company Statistics Division (CSD)
Economic Planning and Coordination Division (EPCD)
Economic Statistical Methods and Programming Division (ESMPD)
Foreign Trade Division (FTD)
Governments Division (GOVS)
Manufacturing and Construction Division (MCD)
Service Sector Statistics Division (SSSD)

The name of the new steering group related to the fact that the group was formed and began its work in fiscal year 2000 and had, as part of its responsibilities, consideration of ways to improve the Census Bureau's current economic programs, general economic data processing, and the census of governments. However, the bulk of the group's activities was concerned with the planning of the 2002 Economic Census and related activities. The steering group was directed to:[8]

- Facilitate awareness and improve communications on Econ2K initiatives.
- Improve coordination among the various planning teams and across divisions.
- Ensure that key stakeholders were involved in developing plans for the census and that their requirements were considered.
- Resolve issues involving allocation of resources.
- Address and resolve policy issues raised during planning.
- Serve as the principal decision-making entity within the planning effort for the census.

The first meeting of the steering group was held in mid-December 1999, and the group met every 2 weeks thereafter.

[5]U.S. Census Bureau, "Census Advisory Committee Background Information," <http://www.census.gov/cac/www/background(PAC).html> (January 13, 2006).
[6]Ibid.
[7]U.S. Census Bureau, "Econ2K Steering Group—Meeting Notes for December 15, 1999," p. 1.
[8]Ibid.

Econ2K Initiatives

The Econ2K Steering Group initially identified a series of initiatives for improving the Census Bureau's economic programs—most, but not all, of which were related to planning the 2002 Economic Census. The initiatives most directly concerned with the 2002 Economic Census were:[9]

- 2002 business register redesign
- 2002 interactive and analytical routines
- 2002 editing
- 2002 technical issues
- Customer relationship management
- Electronic reporting
- Generalized instrument design
- 2002 forms design
- Imaging/optical character recognition
- 2002 product dissemination plans
- E-business
- Metadata
- Respondent Support Web Site Team
- Census commodity detail
- Business operating expenses
- Automated coding
- Auxiliaries
- Industry classification issues for census

ECONOMIC CENSUS PROJECT TEAMS

Organization and Objectives

The Economic Programs Directorate assembled the individual project teams during 2000 and early 2001 to develop plans for implementing the initiatives listed above. The teams were composed of members from divisions involved in the economic census and were responsible for identifying specific issues relating to each particular team's area of responsibility, developing courses of action required to successfully implement improvements or new programs, promoting communication across operating units and teams, and monitoring the progress made by agency staff working on the specific projects and associated tasks identified by the teams. In organizing the individual teams, the directorate:[10]

I. Established the objectives of each initiative; e.g., the Forms/Instrument Design Team's "objectives" were to:

- Create a unified look and feel for economic census paper and electronic forms.
- Minimize workload during the forms design phase.
- Expand use of electronic reporting.
- Reach timely decisions that can be implemented for the 2002 census.

[9]Ibid., pp. 1–2, and U.S. Census Bureau, "Econ2K Steering Group—Meeting Notes for January 10, 2000."
[10]U.S. Census Bureau, "Form/Instrument Design Team," <http://econdw.econ.census.gov/epcd/Initiatives/CensusProcess/pof.html> (August 2002).

- Reduce respondent burden.

II. Outlined the general scope of the specific team's area of responsibility; e.g., for the Forms/Instrument Design Team, this included:

- Focusing on the core census report forms (e.g., construction, mining, manufacturing, retail, wholesale, services, transportation/utilities, finance, auxiliaries, the island areas, and classification).
- Coordinating training of subject-matter division (i.e., Company Statistics, Manufacturing and Construction, and Service Sector Statistics divisions) analysts who would be involved in forms/instrument design.
- Developing a "change control plan" to control changes introduced by the subject-matter areas during the production phase of the collection instruments.

III. Identified basic assumptions; e.g., the Forms/Instrument Design Team assumed that:

- All 2002 forms would be consistent in design, sequence of questions, and wording.
- The same form would be used for single- and multiunit establishments.
- Standardization issues would be resolved by the team.
- Data content issues would be resolved by the subject areas.
- The Generalized Instrument Design System (GIDS) and the Economic Metadata Repository (EMR) would be in production by September 2000.

IV. Identified key external and internal stakeholders; e.g., the key external stakeholders for the Electronic Reporting Team were identified as business respondents and data users, while the internal stakeholders were the subject-matter divisions within the Economic Programs Directorate, together with the Computer Assisted Survey Research Office (CASRO), the Information Technology Security Office, the Internet Staff, and Fenestra Technologies (contractors).

Project Team Activities

While each team had a specific project area for which it was responsible, the integrated nature of the census meant that many of the teams had to collaborate and coordinate their own activities with those of other project teams to complete their work. In some cases (e.g., the Respondent Support Web Site Team), the teams worked with private contractors to develop the plans and procedures needed for the census.[11]

The teams reviewed and evaluated issues outlined by the Econ2K Steering Group and then organized resources, either as part of each team or in Economic Programs Directorate divisions, to complete the necessary work, adding members as necessary and using working groups to address specific issues. Generally, the teams held periodic meetings to review progress and consider ways and means to accomplish particular goals, forming sub-teams or working groups to address specific areas or problems within each team's overall area of responsibility.

The members of each team were expected to identify issues that needed to be resolved and to keep colleagues and managers within their respective divisions informed about their team's activities. Each team also periodically briefed the Econ2K Steering Committee and the monthly meetings of assistant division chiefs for census (and current) programs on its activities and progress, as well as making progress reports to managers and key stakeholders as needed or requested. In addition, the teams met with appropriate staff, internal or external to the Economic Programs Directorate, to consider new issues that might have an impact on their planning.[12]

[11]The Respondent Support Web Site initiative eventually produced the Business Help Site (BHS) on the Census Bureau's Web site. In July 2000, the Census Bureau contracted with a private company for assistance in preparing the BHS. See U.S. Census Bureau, "Monthly Activity Report for July 2000," August 14, 2000, p. 3.

[12]For examples of the communications strategies used and of the relationship of a particular planning initiative to other initiatives, see U.S. Census Bureau, "2002 Edit System," <http://econdw.econ.census.gov/epcd/initiatives/censusprocess/edit.html> (June 2003), pp. 3–5.

Chapter 3.
Industry and Product Classification

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THE IMPLEMENTATION OF THE NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS)

Background Information

The U.S. Office of Management and Budget (OMB) announced its decision to adopt the North American Industry Classification System (NAICS) on April 9, 1997, and the U.S. Census Bureau introduced the new system in the 1997 Economic Census. The NAICS is the first North American industry classification system—developed in cooperation with Statistics Canada and the Instituto Nacional de Estadística, Geografía e Informática (INEGI) of Mexico—to provide comparable statistics across the three countries. The NAICS replaced the Standard Industrial Classification (SIC) System, first introduced in 1939 to promote uniformity and comparability of data collected and published by federal and state agencies, trade associations, and research organizations. The SIC System[1] was an establishment-based system that classified each establishment according to its primary business activity. Since its introduction, the system has been revised periodically to

[1]For a short history of the development of the Standard Industrial Classification (SIC) System, see U.S. Census Bureau, *History of the 1992 Economic Census*, Appendix A, "Historical Development of the Economic Census in the United States and Outlying Areas," p. A-15.

reflect changes in the economy, but by the 1990s, it was increasingly obvious that the classification system required a massive overhaul, particularly with regard to more rational classification of the vastly expanding services sector of the economy.[2]

The adoption of the North American Free Trade Agreement early in the 1990s[3] underscored the need for a new system, developed in cooperation with Canada and Mexico. On July 14, 1992 the OMB established the Economic Classification Policy Committee (ECPC) to undertake a "fresh slate" examination of the industrial classification system to determine if a new system should be developed and whether it should be based on a specific economic concept. In June 1994, the three signatories of the NAFTA announced a joint project to develop a new industrial classification system for use throughout the North American trade area.[4] The result was the NAICS.

The NAICS is based on the concept that establishments using the same or similar processes to produce goods or services should be classified together. The development of the NAICS has been guided by four organizing principles:[5]

1. A production-oriented or supply-based conceptual framework. This meant that producing units using the same or similar production processes would be grouped together.

2. Production-oriented classifications for (a) new and emerging industries, (b) service industries in general, and (c) industries engaged in the production of advanced technologies.

3. Time series continuity would be maintained to the extent possible. However, changes in the economy and proposals from data users would be considered. Adjustments would be required for sectors where the United States, Canada, and Mexico had incompatible classification definitions in order to produce a common industry system for all three countries.

4. The system would strive for compatibility with the two-digit level of the International Standard Industrial Classification of All Economic Activities (ISIC Rev. 3) of the United Nations.

The NAICS classifies industries using a six-digit system that provides for comparability among the three countries to the five-digit level (with a few exceptions). The first two digits identify the sector, adding a third provides the subsector, the fourth identifies the industry group, and the fifth digit identifies the NAICS industry. A sixth digit identifies industries unique to one of the three NAICS participating countries. The structure may be illustrated as follows:[6]

NAICS level	NAICS code	Description
Sector	72	Accommodation and Food Services
Subsector	722	Food Service and Drinking Places
Industry group	7222	Limited-Service Eating Places
Industry	722221	Limited-Service Eating Places
U.S. industry	722211	Limited-Service Restaurants
	722212	Cafeterias
	722213	Snack and Nonalcoholic Beverage Bars

The NAICS identified 20 sectors (compared with 10 "divisions" in the old SIC System), and, initially, some 1,170 industries, of which 416 were service-related (250 of these industries were

[2]Carole A. Ambler, "NAICS and U.S. Statistics—For Presentation at the Annual Meeting of the American Statistical Association," August 1998, pp. 1–2.

[3]Implementation of the North American Free Trade Agreement (NAFTA) officially began on January 1, 1994.

[4]The ECPC was composed of representatives of the Bureau of Economic Analysis (which chaired the committee), the Census Bureau, and the Bureau of Labor Statistics.

[5]Office of Management and Budget, *North American Industry Classification System—United States, 1997.* Berman Press: Lanham, MD, 1998, p. 12.

[6]Paul T. Zeisset and Mark E. Wallace, "How NAICS Will Affect Data Users," February 23, 1998, <http://www.census.gov/epcd/www/naicsusr.html> (November 15, 2005), pp. 5–6.

newly defined for the NAICS). The Census Bureau introduced the NAICS in the 1997 Economic Census, but the island areas continued to report using the SIC System in 1997. Complete implementation of the NAICS in the census was undertaken for the 2002 Economic Census.[7]

In April 2000, the *Federal Register* published a notice of an agreement among the United States, Canada, and Mexico on the implementation of changes to the NAICS for 2002. These included a revision of the NAICS construction industries, a reorganization of the U.S. Wholesale Trade sector (42), recognition of new industries in the United States for Retail Trade to account for the growth of e-commerce, and reorganization and recognition of new industries in the Information sector.

For 2002, the 20 NAICS sectors are subdivided into 100 subsectors (three-digit codes), 317 industry groups (four-digit codes), and, as implemented in the United States, 1,179 industries (six-digit codes).[8] The 18 NAICS sectors covered by the economic census and the SIC divisions from which they were derived are shown in Table 3-1 below.

Table 3-1.
NAICS Sectors and SIC Divisions

NAICS code	NAICS sector*	SIC division
21	Mining	Mining
22	Utilities	Transportation, Communications, Electric, Gas, and Sanitary Services
23	Construction	Construction
31–33	Manufacturing	Manufacturing
42	Wholesale Trade	Wholesale Trade
44–45	Retail Trade	Retail Trade
48–49	Transportation and Warehousing	Transportation, Communications, Electric, Gas, and Sanitary Services
51	Information	Services
52	Finance and Insurance	Finance, Insurance, and Real Estate
53	Real Estate and Rental and Leasing	Finance, Insurance, and Real Estate
54	Professional, Scientific, and Technical Services	Services
55	Management of Companies and Enterprises	(Parts of all Divisions)
56	Administrative and Support and Waste Management and Remediation Services	Services and Transportation, Communications, Electric, Gas, and Sanitary Services
61	Educational Services	Services
62	Health Care and Social Assistance	Services
71	Arts, Entertainment, and Recreation	Services
72	Accommodation and Food Services	Retail Trade and Services
81	Other Services (except Public Administration)	Services

*NAICS Sectors 11 (Agriculture, Forestry, Fishing and Hunting) and 92 (Public Administration) were not covered by the economic census. Sector 11 is partially covered in the quinquennial census of agriculture carried out by the U.S. Department of Agriculture.

New NAICS Industries for the 2002 Economic Census in the 50 States

General information. In February 1999, the OMB published a notification of intent to "complete portions of NAICS" that solicited comments on the advisability of revising the NAICS 1997 structure for 2002. After considering the proposals submitted by the public and extensive discussions with Statistics Canada and INEGI, the ECPC, INEGI, and Statistics Canada revised the Construction and Information sectors of the NAICS. The United States also revised national details in Wholesale Trade to align the industry structure with observed differences in the involved units.[9]

Wholesale Trade (NAICS sector 42). The United States, Canada, and Mexico attempted to revise Wholesale Trade to extend international compatibility below the sector level. Differences in Wholesale Trade across the three countries precluded additional comparability. Extensive discussions were conducted between the ECPC, INEGI, and Statistics Canada concerning the content of the Wholesale Trade sector, but no additional three-country comparability for the 2002 NAICS

[7]U.S. Census Bureau, *Guide to the 2002 Economic Census*, "What's New for 2002?" <http://www.census.gov/econ/census02/guide/g02new.html> (November 16, 2005), pp. 2–3.
[8]U.S. Census Bureau, "New Sectors in NAICS," <http://www.census.gov/epcd/www/naicsect.html> (November 16, 2005).
[9]Office of Management and Budget, *North American Industry Classification System—United States, 2002*. Berman Publishing: Lanham, MD, 2002, pp. 17–18.

resulted from these talks. The three countries agreed that the overall content of Wholesale Trade would retain unique national industry detail within the sector, but the United States applied the results of these discussions to a new national structure for the NAICS Wholesale Trade sector.[10]

The 1997 NAICS included two main types of wholesalers—establishments that sold goods on their own account and establishments arranging for the purchase or sale of goods on a commission basis. The Wholesale sector comprised two subsectors—421, Durable Goods, and 422, Nondurable Goods. This structure did not adequately identify the different types of units and production processes used in wholesale trade. In addition, the Internet had created inexpensive, efficient national markets for suppliers. To account for these changes, the United States separated merchant wholesalers from agents and brokers and created a new Wholesale subsector for electronic wholesalers, brokers and agents. As reorganized and expanded, the 2002 NAICS Wholesale Trade Sector consists of 71 industries grouped into three subsectors.[11]

Subsector code	Subsector
423	Merchant Wholesalers, Durable Goods
424	Merchant Wholesalers, Nondurable Goods
425	Wholesale Electronic Markets and Agents and Brokers

While these changes did not gain additional international comparability, they improved the statistics generated for wholesale trade using the NAICS and positioned the United States to measure and analyze more completely all distributive trade industries during future NAICS revisions.

Information (NAICS sector 51). The Information sector consists of establishments primarily engaged in:

1. Producing and distributing cultural information.
2. Providing the means to transmit or distribute those products as well as data or communications.
3. Processing data.

When the NAICS was first developed, the bulk of the industries in the Information sector were engaged in producing and manipulating products protected by copyright law or in distributing them (other than via wholesale or retail methods). These industries included traditional publishing, software publishing, broadcasting and telecommunications companies, motion picture and sound industries, and information access providers and processors. Internet providers, Web search portals, and other forms of Internet distribution of content were only beginning to enter the economy and were not separately identified within the sector. The growth of the Internet in terms of economic activity was a major factor in the reorganization of the NAICS Information sector before the 2002 Economic Census.

For the 2002 NAICS, the Information sector was reorganized and expanded. The 1997 subsector 513 (Broadcasting and Telecommunications), was split into two subsectors: 515, Broadcasting (except Internet) and 517, Telecommunications. Three new subsectors were added: 516, Internet Publishing and Broadcasting; 518, Internet Service Providers, Web Search Portals, and Data Processing Services; and 519, Other Information Services. As reorganized, the sector comprises seven subsectors, as follows:

Subsector code	Description
511	Publishing Industries (except Internet)
512	Motion Picture and Sound Recording Industries
515	Broadcasting (except Internet)
516	Internet Publishing and Broadcasting
517	Telecommunications
518	Internet Service Providers, Web Search Portals, and Data Processing Services
519	Other Information Services

[10]Ibid.

[11]The NAICS sector, subsector, and other codes and descriptions outlined below may be seen in *North American Industry Classification System—United States, 2002*, or at <http://www.census.gov/epcd/naics02/>.

The NAICS 2002 recognizes for the first time the significant differences between traditional publishing and broadcasting and similar activities using the Internet, as well as classifying establishments that provide access to the Internet or provide the means to search for information on the Internet.

Construction (NAICS sector 23). When the NAICS was introduced for the 1997 Economic Census, the Construction industries were comparable only at the sector level for Canada, Mexico, and the United States, and the 2002 revisions to the system targeted this area for improved comparability. A construction subcommittee was created to review the structure of the Construction sector, and the statistical agencies of all three countries worked intensively to bring the level of comparability down to the four- and five-digit level. The Census Bureau implemented the new NAICS structure for Construction with the 2002 Economic Census. It comprised 65 identified industries grouped into 3 subsectors:

Sector code	Sector title
236	Construction of Buildings
237	Heavy and Civil Engineering Construction
238	Specialty Trade Contractors

The Construction sector structure was designed for comparability across the economies of the three signatory countries at the five-digit level, except for subsector 238, Speciality Trade Contractors, which was designed for comparability to the four-digit level.

Implementation of the NAICS for the Island Areas

The NAICS was first implemented in the 1997 Economic Census for the 50 states. At that time, the governments of Puerto Rico, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands requested and received a postponement of the introduction of the new classification system until the 2002 census. The Census Bureau and the participating governments agreed to the delay to ease the impact of the change to the new system on local surveys and the national accounts. For the 2002 Economic Census, the necessary developmental work by the local governments was done and the 2002 NAICS was used for the economic census in Puerto Rico, Guam, the Northern Mariana Islands, the U.S. Virgin Islands, and American Samoa. In general, the census coverage of NAICS industries in the island areas was similar to that in the 50 states.[12]

THE DEVELOPMENT OF THE NORTH AMERICAN PRODUCT CLASSIFICATION SYSTEM (NAPCS)

Background Information

When the statistical agencies of the United States, Canada, and Mexico undertook the development of the NAICS, they agreed that adequate measurement of productivity, unit labor costs, and capital intensity of production required that information on outputs and inputs be used together. The participating agencies also recognized that they needed to develop and implement a common product classification system.

The progress and adoption of the NAICS emphasized the need for improved product classification. The OMB's Economic Classification Policy Committee (ECPC) had first looked at the possibility of establishing a new product classification system as early as 1995. However, the new industry classification system was considered a higher priority, and any further work on the product classification system was suspended while all available resources from the participating countries were devoted to the development and implementation of the NAICS as quickly as possible. By the

[12]See Chapter 9, "The 1992 Economic Census in the Outlying Areas," in the *History of the 1997 Economic Census* regarding the postponement of the adoption of the NAICS for the island areas. The respective 2002 Economic Census Geographic Area Series Reports for Puerto Rico, Guam, the U.S. Virgin Islands, the Northern Mariana Islands, and American Samoa include information in the introductory matter and an appendix on the implementation of NAICS for 2002.

beginning of 1999, the NAICS was being brought "on line," allowing the ECPC and the statistical agencies to turn their attention and resources to the question of a new commodity classification system.[13]

Guiding Principles

The product classification system used by the Census Bureau was developed "on the job" over the previous century, and reflected the agency's long experience in collecting and classifying data about the products of the manufacturing industries and the revenues received in service industries. No formal system for identifying or classifying the products of service industries existed. In an economy moving massively from heavy manufacturing into services, there was an obvious need for the prompt development and implementation of a system for extending product classification to the service industries.

In February 1999, the statistical agencies of Canada, Mexico, and the United States began a joint project to develop and implement a new product classification system—the North American Product Classification System (NAPCS). The new product classification initiative served to complement the North American Industry Classification System (NAICS) introduced in the 1997 Economic Census of the United States and since implemented throughout the statistical systems of the participating countries.[14]

Statistics Canada; Mexico's Instituto Nacional de Estadística, Geografía e Informática (INEGI); and the ECPC, acting for the OMB, agreed that a common product classification system for the three countries was needed and should be put in place. They further agreed that the new North American Product Classification System (NAPCS) should conform to the following principles:[15]

1. The conceptual framework would be demand-based. (A demand-based system groups together commodities or services that have similarities in use, that belong together or are used together for some purpose, or that define market groupings. Such a system complements the supply- or production-based NAICS adopted by the United States, Canada, and Mexico. Identifying and aggregating detailed products of goods- and services-producing industries into demand-based categories based on product substitutions or end use would provide users with the information needed to compute market share and prepare market studies.)[16]
2. The NAPCS should classify all products produced by NAICS industries, but its structure would be independent of the NAICS structure.
3. Special attention would be paid to identifying products and developing demand-based classifications that encompass service industries in general, new products, and advanced technology products.
4. Every effort would be made to achieve compatibility between the detailed products of the new system and the most detailed level of the Central Product Classification (CPC) system, version 1.0, to the maximum extent appropriate within a demand-based framework.
5. The objective of the initial phase of the project would produce a detailed list of products derived from four NAICS sectors: Information (Sector 51); Finance (Subsectors 521, 522, 523, and 525); Professional, Scientific, and Technical Services (Sector 54); and Administrative Support and Waste Management and Remediation Services (Sector 56).

Organization

The Trilateral Steering Committee for Classification. While the statistical agencies of Canada, Mexico, and the United States had made no formal agreement about the structure of the proposed product classification system, early in 2000 they established a classification steering

[13]Michael. F. Mohr, "North American Product Classification System (NAPCS): What's Been Done; What's Being Done; What's Next," presented at the Census Advisory Committee of Professional Associations Meeting; April 18–19, 2002, p. 2.
[14]Ibid.
[15]Ibid., p. 10.
[16]The demand-based approach to product classification is thoroughly described in ECPC *Issues Paper 1*; published in the *Federal Register*, pp. 16,991–17,000, Vol. 58, No. 60, March 30, 1993.

committee with members representing the three countries to oversee the development of the product classification test project. The new Trilateral Steering Committee for Classification (TSCC) began working in March 2000, meeting every two or three months to consider:[17]

- The treatment of products that cross industry sectors, subsectors, or industry groups and the appropriate actions required for each such product.
- Hierarchy questions.
- Conceptual issues related to the integrated products and the path taken to develop structures and minimally agreed upon levels of comparability.

Four trilateral working groups—one for each of the four NAICS sectors identified for inclusion in the test project—were formed to consider and review the product classifications produced by each industry.[18]

The trilateral steering committee and working groups met periodically to review ongoing work from the classification subcommittees (see below) and propose trilateral agreements for products.

The classification subcommittees. The ECPC functioned as the steering group for the U.S. component of the NAPCS project and, in February 1999, it directed the formation of four classification subcommittees to carry out the detailed development of the production classification lists for the selected industries within the four sectors. The membership of the classification subcommittees included representatives from the following federal agencies concerned with data collection and the economy:[19]

Bureau of Economic Analysis
Bureau of Labor Statistics
Census Bureau
Commodity Futures Trading Commission
Federal Deposit Insurance Corporation
International Trade Commission
Securities and Exchange Commission

The subcommittees met weekly to work on their product lists, then met with their Canadian and Mexican counterparts every few months to discuss the proposed lists.

The subcommittees were directed to complete development of their product lists by August 2000 to allow those lists to be incorporated into the design of the questionnaires for the 2002 Economic Census of the United States.

Developing a Prototype Product Classification System

Methodology. The development of a product classification system for the services industries had to incorporate the necessary methodology to address questions of product identification and measurement, data collection, and classification. The U.S. ECPC determined that the development of the product classification system required a methodology that would incorporate the following basic activities or steps:[20]

1. A description of the production process for each industry.
2. The identification of the final products produced by each industry.
3. The determination of the appropriate unit(s) of measure of the output of a given product and an assessment of the feasibility of collecting output and price measures for those units.

[17]U.S. Census Bureau, "Class Act," Volume 1, Issue 1, April–May, 2000, pp. 7–8.
[18]U.S. Census Bureau, "Progress Report on Product Development Under Phase I of NAPCS," <http://www.census.gov/eos/www/napcs/progress.html> (June 21, 2004). Hereafter "NAPCS Progress Report Under Phase I."
[19]"Class Act," p. 3.
[20]Office of Management and Budget, "Economic Classification and Policy Committee; Initiative to Create a Product Classification System, Phase I: Exploratory Effort to Classify Service Products," <http://www.census.gov/epcd/products/products99.htm> (August 22, 2002), pp. 5–6.

4. The identification of the appropriate reporting unit (e.g., enterprise, company, establishment) for collecting product data for each industry.
5. The development of formal definitions for identified products.
6. The creation of a classification system that will permit data users to (a) identify the amount of each product produced by each industry, (b) aggregate common products across all industries, and (c) group and aggregate products to satisfy the demand-side classification framework adopted by the three NAICS countries.

The basic process employed to create the product lists for the NAPCS involved identifying and defining all products produced by establishments within the NAICS sectors being reviewed. The new demand-based approach to product classification required additional guidance to subcommittees and working groups. The classification committees were directed to:[21]

- Prepare a comprehensive list of products produced by establishments in each subject matter area.
- Apply a specific name to each product using terminology that could stand alone if necessary
- Determine the *important* and *primary* products of the subject-matter area (unresolved issues about this determination within the committees were forwarded to the trilateral steering committee [see below] for guidance).
- Determine the *minimally* comparable level of product detail for all three countries (conceptual or methodological disagreements within the committees were referred to the trilateral steering committee for guidance).

Consultation with industry. The Census Bureau and the other agencies participating in the NAPCS project desired product classifications that were recognizable by businesses, followed their record keeping practices, and would be useful to them. This meant that the cooperation and help of people with expert knowledge of the industries covered by the project would be invaluable to the classification subcommittees. Accordingly, each of the subcommittees compiled lists of industry experts for their specific NAICS sectors and contacted them to ask for their assistance.[22] The experts (over 160 were contacted during Phase I, including representatives of concerned federal agencies, business associations, and individual companies) were asked to provide information to the subcommittees, either in presentations or written form, focusing on activities within specified five- or six-digit NAICS industries and addressing the following issues:

- General overview of the industry, including the scope of services provided, recent changes or developments in types of services provided, size and distribution of establishments, international sales of products, and restrictions requiring professional licenses, certificates, or degrees to perform specific services.
- A working description of the typical product process for firms in the industry, including information on any government regulations impacting production, how customer needs are assessed, steps in fulfilling the transaction of services to customers, and procedures used to formalize transactions between firms and their customers.
- A description of each industry's final service products, including what those products are, how the industry defines its product(s), consumption of products within reporting units in other phases of production, degree of service product standardization, products sold as a "bundle" or unit for a single price that differs from the sum of the individual prices of products in the bundle, and what service products produced by other industries are substitutes for those offered by this industry.

[21] Ibid., pp. 6–7.
[22] U.S. Census Bureau, "North American Product Classification System: Phase I.1 of NAPCS: Industry Experts Contributors to Provisional Product Lists," <http://www.census.gov/eos/www/napcs/napcs.htm> (June 21, 2004).

- Pricing conventions, including how prices are determined, how prices are conveyed to the customers, what physical unit is priced (e.g., liters, quarts, kilos, etc.), hours worked, type of tools or machines required, type of specialist that does the work, object rented, number of seats, number of tickets sold, etc.
- Record keeping and reporting, including whether firms typically maintain records providing details of services completed and invoices and bills presented, the appropriate reporting unit for the industry, and whether the reporting units typically compile information on the value of detailed service products sold and can report that information.

Implementation

Phase I. While the three participating countries agreed on the need for a product classification system, there was no agreement on the specific structure of such a system. Instead, the national statistical agencies informally agreed on the base principles that should govern the eventual design of the classification system, and that the provisional products and aggregations should be tested to determine the practicality of such classifications in data collection and processing. Accordingly, the initial phase of the project (Phase I) was planned as an exploratory activity to develop prototype product classifications for the selected service industries.[23] Following the study of results of product classification in these sectors, the Census Bureau incorporated its findings into the questionnaires for the 2002 Economic Census of the United States.[24] This meant that the Census Bureau would necessarily take the leading role in the initial testing of the classifications.

The initial target date for completion of the product lists for the selected industries was set as the end of calendar year 2000. As the work proceeded, however, it became evident that the resources available would not permit the completion of the initial phase of the project on the original schedule. This led the TSCC to modify the work plan for Phase I by reducing the industries covered from 161 industries to approximately 120. For the Phase I initiative, the industries were divided into two parts, Phase Ia and Phase Ib. Phase Ia was to be completed by the end of calendar year 2000 while Phase Ib was extended to mid-2001.[25]

Phase I results. Phase I generated 36 product lists that cover the final products produced by 117 U.S. service industries. Products from 26 of these lists were incorporated into the 2002 Economic Census, and some were incorporated into the 2001 and subsequent Service Annual Surveys. Based on the success of Phase I, the three countries agreed that the NAPCS should continue and be expanded to cover the products of industries in all NAICS service sectors from Sectors 48–49 through Sector 81 (excluding those in Sector 814, Private Households, and Subsector 525, Funds, Trusts, and Other Financial Vehicles). Each product list developed included the following information:

- The industry subject area identifying the NAICS industry code(s) covered by the product list.
- Interim product codes assigned by the trilateral working group to organize the list.
- Whether any provisional agreement had been reached by the three participating countries on the level of product detail for the product listed.
- The English title and definition for the product.
- The country or countries in which the product exists.
- National product detail.
- NAICS industries producing the product.
- The United Nations Central Product Classification Code (Version 1) that corresponds to each NAPCS product or product aggregate on the list.

[23]As mentioned earlier, these industries were: Information; Finance; Professional, Scientific, and Technical Services; and Administrative and Support and Waste Management and Remediation Services.

[24]"North American Product Classification System (NAPCS): What's Been Done; What's Being Done; What's Next," p. 3.

[25]See the U.S. Census Bureau's NAPCS home page at <http://www.census.gov/napcs>.

The product lists prepared by the working groups were used by the Census Bureau in designing the 2002 Economic Census questionnaires for the service industry sectors covered by the Phase I NAPCS project.

The 2002 Economic Census data for the four services sectors incorporated into the Phase I NAPCS project were published in *Product Lines* subject reports similar to the 1997 reports on sources of receipts or revenue for the same sectors.[26] The categories in each were comparable to product line data published from other countries' statistical agencies.

Further Development of the NAPCS

General information. While only Phase I of the NAPCS project was completed in time to provide for testing the concept in the 2002 Economic Census, the ECPC and the Canadian and Mexican statistical agencies continued work on the initiative, projecting increasingly detailed development through three more "phases" of activity. The 2002 Economic Census tested the feasibility of collecting and publishing data using the provisional services product lists developed during Phase I; the additional products developed in Phases II and III were to be tested in the 2007 Economic Census.[27]

Phase II. The Trilateral Steering Committee on Classification had previously (at its February 2000 meeting) agreed on a provisional work plan for Phase II of NAPCS.

Phase II had three major goals, the first of which was to extend the product list development begun in Phase I to five NAICS service sectors:[28]

- 48–49: Transportation and Warehousing
- 61: Educational Services
- 62: Health Care and Social Assistance
- 71: Arts, Entertainment, and Recreation
- 72: Accommodation and Food Services

The planned scope of work included complete coverage of the industries in NAICS sectors 61, 62, 71, and 72, but only partial coverage of the industries in sectors 48–49.[29]

All common products under NAPCS were to have a common code, title, and definition regardless of where they were made, so the second objective of Phase II was the systematic review of the products embodied in the product lists to identify and delete duplicate products and ensure that standardized titles and definitions were used.[30]

The third goal of Phase II was to investigate alternative prototype demand-side classification frameworks for the NAPCS, based on the product lists compiled in Phase I.

Phase III. At its May 5–9, 2003 meeting, the Trilateral Steering Committee on Economic Classification agreed that Phase III of the NAPCS project would have as its principal objectives completing product development and classification for all of the NAICS service sector industries. To that end,

[26]The reports on sources of receipts or revenues for these sectors are part of the 2002 Economic Census Subject Series: EC02-51-SL-LS, *Information*; EC02-52SL-LS, *Finance and Insurance*; EC02-54SL-LS, *Professional, Scientific, and Technical Services*; and EC02-56SL-LS, *Administrative and Support and Remediation Services*.

[27]Mohr, "North American Product Classification System," pp. 4–6.

[28]U.S. Census Bureau, "North American Product Classification System: Scope of Phase II," <http://www.census.gov/eos/www/napcs/scope.htm> (June 21, 2004).

[29]Ibid. Phase II would cover the following NAICS industry groups within Sectors 48–49: 4811, Scheduled Air Transportation; 4821, Rail Transportation (passengers only); 4841, General Freight Trucking; 4842, Specialized Freight Trucking; 4852, Interurban and Rural Bus Transportation; 4855, Charter Bus Industry; 4921, Couriers; 4922, Local Messengers and Local Delivery; and 4931, Warehousing and Storage. Three industry groups in Subsector 487 (Scenic and Sightseeing Transportation) originally were to be covered in Phase II but were reassigned to Phase III.

[30]Mohr, "North American Product Classification System," p. 4.

several subcommittees were established to address particular areas with the general development plan that required the most intensive work to obtain the information needed to accurately classify their products.[31] The subcommittees and their particular NAICS sectors/subsectors/industries were as follows:[32]

- Subcommittee 1: The balance of NAICS sectors 48–49 (Transportation and Warehousing) industries, with industries in NAICS subsector 487 (Scenic and Sightseeing Transportation) reassigned from Phase II to Phase III.
- Subcommittee 2: Selected industries in NAICS sector 56 (Administrative and Support and Waste Management and Remediation Services).
- Subcommittee 3: Balance of NAICS sector 54 (Professional, Scientific, and Technical Services).
- Subcommittee 4: Balance of NAICS sector 56 industries and industries in NAICS subsectors 812 (Personal and Laundry Services) and 533 (Lessors of Nonfinancial Intangible Assets [except Copyrighted Works]).

There were, of course, additional industries whose products needed further classification, but the Steering Committee agreed that these could be dealt with at a lower level of effort than that required of the subcommittees. These industries were:

- The balance of NAICS sector 51 (Information).
- NAICS sector 55 (Management of Companies and Industries).
- NAICS subsectors 813 (Religious, Grantmaking, Civic, Professional, and Similar Organizations) and 814 (Private Households).
- NAICS sector 92 (Public Administration).

[31] U.S. Census Bureau, "North American Product Classification System: Work Plan for Phase III of NAPCS," <http://www.census.gov/eos/www/napcs/workplan.htm> (June 22, 2004).
[32] Ibid.

Chapter 4.
Technological Innovations and the Census

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INTRODUCTION

The 2002 Economic Census featured several major innovations and technological improvements that enhanced the U.S. Census Bureau's ability to prepare questionnaires, collect data from respondents, and process data. Efforts for the 2002 enumeration included the redesign of the agency's Business Register, which is a computer database that was created in 1968 that contains identification information on U.S. business establishments and companies, and the creation of both the Electronic Metadata Repository (EMR) and the Generalized Instrument Design System (GIDS). Innovative technologies, such as the Key From Image (KFI) system, Optical Mark Recognition (OMR), and Internet reporting were implemented in the economic census for the first time in 2002. The review and publication systems were also redesigned. The Micro Analytical database (MADb) with a Web browser interface, Trade Interactive Problem Solving Environment (TIPSE), provided interactive review, correction, and editing of respondent data. The Feith Image system provided online immediate access to images of respondent completed reports. The Economic Drill Down (ECONDD) provided a database search tool for analysts. The Macro Analytical Review System (MARS) provided tools to review Economic Census summary data, and the Dissemination Economic Metadata repository, paired with the Dissemination Metadata User Interface (DMUI), provided software to analysts to review and update publication data. The Final Data Review Tool (FDRT) provided software to analysts to review publications. These systems replace numerous outdated systems, provided common tools replacing trade area-specific software, and provided immediate access to data at all points of processing.

These technologies significantly improved the Census Bureau's ability to prepare questionnaires and capture and process content more rapidly and cost effectively. They also provided businesses with a wider array of response options, permitted the rapid electronic collection of data from electronic questionnaires, and accelerated tabulation of data that more accurately represented the nation's economy.

REDESIGNING THE BUSINESS REGISTER

Background Information

The Business Register is a centralized, multipurpose, computerized database of U.S. business establishments and companies. Prior to 1974, each federal agency that collected and tabulated economic data compiled and maintained its own business register. Since the agencies designed programs for their own purposes, there were serious comparability problems, significant duplication of effort, and unnecessary costs for those using economic data across agencies. In 1968, the Bureau of the Budget[1] addressed this problem by directing the Census Bureau to develop, establish, and operate a general, multipurpose business directory. The new directory would be used as a sampling frame for data collection by the entire federal statistical system, but the Census

[1]The Bureau of the Budget was renamed the Office of Management and Budget in July 1970.

Bureau was not permitted to share the directory itself with any other federal agency. Funding for the project began with fiscal year (FY) 1972, and the new directory—designated the Standard Statistical Establishment List (SSEL, later the Business Register)—became operational for data year 1974.[2]

The SSEL listed employer and nonemployer[3] business establishments (except private households and governments) and organizational units of multiestablishment businesses. "Businesses" are legal or administrative entities or self-employed individuals assigned an employer identification number (EIN) by the Internal Revenue Service (IRS), and "units" include divisions, subsidiaries, companies, and other affiliated organizations. The SSEL was designed to:[4]

- Identify the most useful definition of business establishment units for statistical analysis.
- Build bridges between these statistical units and legal entities for which administrative records were available.
- Facilitate more efficient use of administrative records for statistical purposes.

The establishment is the basic building block of the list, and for economic census purposes, is the smallest unit for which key data on economic activity (e.g., employment and payroll) are available.

Planning for the 2002 Economic Census

Introduction. The SSEL had been in use for nearly 25 years when the 2002 Economic Census planning began. Its systems were outdated and unable to keep pace with the growth, increasing complexity, and rapid structural change in the nation's economy. But most important was the SSEL's deteriorating ability to support the economic census. This prompted the Census Bureau to undertake its modernization before the 2002 enumeration got under way.

Purposes. The redesigned business register served as the comprehensive central source of list frames for the quinquennial economic census program and for the Census Bureau's periodic economic surveys, as authorized by chapter 5 of Title 13. The redesigned register would have the *secondary* purposes of functioning as:[5]

- A central repository for administrative records information to support the register's primary purpose and to mobilize administrative data for other authorized uses.
- A central facility to support and integrate economic data collection and processing.
- The source of basic employment and payroll data for the annual County Business Patterns statistical series and receipts data summarized in the annual nonemployer data products.
- A data resource for economic research projects.
- A data source for custom tabulations and other special statistical projects. (To these ends, the register would include both employer and nonemployer enterprises. The latter, based on administrative records, would provide full establishment coverage for employer enterprises engaged in any industry that was in-scope of one or more of the Census Bureau's programs.)

The Business Register Redesign Team

Preliminary work. The business register redesign effort was part of a broader set of innovations and initiatives for the 2002 Economic Census (see below), and many of those innovations and initiatives had direct or indirect impacts on the redesign effort. (For example, the online Business Help Site [BHS] developed for the 2002 Economic Census required sharing information regarding a company's reporting status with the Business Register.) The Census Bureau's Economic Directorate

[2]U.S. Census Bureau, "The Standard Statistical Establishment List," Technical Paper 44, January 1979, p. 7.
[3]An "employer" business establishment is a business that has at least one paid employee; a "nonemployer" establishment is one that has no paid employees but has annual business receipts of $1,000 or more ($1 or more in the construction industries) and is subject to federal income taxes.
[4]"The Standard Statistical Establishment List," p. 53.
[5]U.S. Census Bureau, "Business Register Redesign," <http://cww.census.gov/econ/Initiatives/BusRegister/html> (December 5, 2005), p. 3.

established several planning teams even before the completion of the 1997 Economic Census to begin laying the groundwork for extensive methodological and technological innovations for introduction in the 2002 enumeration. A framework team, with membership drawn from the Economic Planning and Coordination Division (EPCD) and the Economic Statistical Methodology and Programing Division (ESMPD), carried out initial conceptual work, identified broad modernization goals, and proposed general solutions to achieve these goals. The team presented a series of papers with its recommendations for discussion at the [Business Register] Modernization Conference held in July 1999.[6]

Organization of the Business Register Design Team. In February 2000, the Economic Directorate created a Business Register Design Team to begin detailed work on modernizing and updating the business register. The team was chaired by the Economic Planning and Coordination Division's (EPCD's) Assistant Division Chief for Post Census and Register Activities. In addition to the EPCD and the ESMPD, members were drawn from the following divisions and offices:[7]

- Center for Economic Studies (CES)
- Company Statistics Division (CSD)
- Economic Planning and Coordination Division (EPCD)
- Economic Statistical Methods and Programming Division (ESMPD)
- Service Sector Statistics Division (SSSD)
- Manufacturing and Construction Division (MCD)

The team's assigned task to modernize the business register addressed the following major areas:[8]

- The standard statistical units maintained in the register.
- Content and organization of the register database.
- Physical and logical design and implementation of the data using the Oracle RDBMS, Version 8 or higher (to be done in collaboration with the ESMPD technical staff).
- Processes for migrating legacy data to the new database.
- Basic business rules governing register operation (e.g., coverage, data integrity, etc.).
- Administrative records sources, content, and uses.

Redesigning the business register. The redesign team made several basic assumptions when it began its work. For example, it assumed that the Census Bureau would continue to maintain its own business register even though the federal statistical system was about to introduce a degree of data sharing between specified agencies (the Census Bureau, the Bureau of Economic Analysis [BEA], and the Bureau of Labor Statistics [BLS]). Moreover, existing administrative data sources (e.g., IRS tax files) remained available to the agency for use in compiling the register. The team planned to include in the new business register:

- Employer and nonemployer enterprises (nonemployer enterprise records were derived exclusively from administrative records).
- Full establishment coverage for employer enterprises engaged in any industry that is in scope of one or more of the Census Bureau's economic programs (this excluded establishments involved in agricultural crop and livestock production, rail transportation, and the U.S. Postal Service, together with private households and public administration).
- A set of standard statistical units.
- North American Industry Classification System (NAICS) classifications for establishments.

[6]Ibid., p. 6.
[7]Ibid., p. 5.
[8]Ibid., p. 2.

- Other identifying information, classifications, size measures, and activity/status indicators as needed to support frame construction and sampling.
- Traditional ALPHA-based affiliation information (a six-digit identification number originally assigned during the compilation of the old SSEL; new ALPHAs would be assigned to multiunit enterprise births).

The redesign team met at least weekly to develop plans for the new business register, concentrating its efforts on the logical design of the register database.

The Census Bureau defined the basic components of businesses in the following three major units:[9]

- *Establishments*—single physical locations where business was conducted or where services or industrial operations were performed.
- *Enterprises*—one or more establishments under common ownership or control.
- *EIN units*—tax reporting units established by the IRS for the purposes of administering payroll and business income taxes.

A single-unit enterprise was defined as consisting of a single establishment that was also an EIN unit. The simplest muiltiunit enterprise was defined as having two establishments, but would still generally comprise a single EIN unit. A more complex multiunit enterprise might consist of several subsidiary enterprises, each with several establishments and individual assigned EIN units. Such an enterprise could have a number of establishments controlled directly by the "parent" enterprise with a consolidated EIN unit assigned to the parent for income tax purposes and two (or more) payroll-tax only EIN units associated with the establishments. All of these individual enterprises, establishments, and units were included in the updated business register.[10]

The business register design that resulted from the redesign team's efforts was organized to permit linkage of all the different component units of the register. Several "parent" tables containing survey and administrative records were established. Linked to each parent table were "child" tables with information specific to varied data sources, such as IRS payroll data or income data, and to reference periods. The parent tables were linked together via a centralized "Link" table that connected the varied units in the Business Register; e.g., establishments to enterprises. This system allowed the Census Bureau to track any changes in company organization reported via changes made to the Link table to reflect the relationships among entities in the Business Register.[11]

The redesign project schedule called for the new business register to be in place in time to be used for compiling the 2002 Economic Census mailing list—that is, by late summer of 2002. Accordingly, the design team planned to have an online transaction processing (OLTP) database ready for evaluation by the end of March 2000 and a production version in place by July 31, 2002. The Census Bureau allowed for an 18-month gap between the introduction of the initial prototype OLTP and the production version in order to permit thorough testing and evaluation of the systems involved. Migration of the legacy data (i.e., the contents) from the SSEL to the new register was a major concern, as it involved a substantial amount of data. The test period enabled the Census Bureau to construct the full database for the new business register, examine its major functions as both the legacy data from the SSEL were transferred to the new register and new source data were added, and determine whether it would perform as intended. By the end of 2002, the new register was fully operational.[12]

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[9]Ibid., p. 3.

[10]U.S. Census Bureau, *2002 Economic Census: Manufacturing—General Summary*, Appendix A, "Explanation of Terms," EC02-31SG-1, October 2005.

[11]Edward D. Walker, "Overview of Data Storage," 2002 Economic Census Offsite Symposium, November 4–5, 2002.

[12]Memorandum from Dennis Shoemaker to Lawrence A. Blum, "Monthly Activity Report—August 2002," p. 2.

ECONOMIC METADATA REPOSITORY (EMR)/GENERALIZED INSTRUMENT DESIGN SYSTEM (GIDS)

General Information

The Census Bureau began developing the Economic Metadata[13] Repository (EMR) in late 1998 to create a "clearinghouse" for economic metadata. The database is based on a census and survey life cycle and contains detailed metadata used during questionnaire design and for data dissemination.

The repository's Oracle database platform was designed to be fully Web-based; the only tool needed to perform tasks within the repository is an Internet browser on the user's desktop computer. The Census Bureau initially planned to build the repository as a generic set of tools that would allow the management and use of the metadata stored within it. In order to show how it could be used effectively, the agency worked with several subject-matter specialists to build applications that used the metadata repository. It quickly became apparent that requirements for applications in different business units were governed by different business rules. The Census Bureau completed development of an operational pilot EMR project in December 1999 using core capabilities with a combination of standard interfaces and customized applications. Loading of the initial metadata in preparation for use during the 2002 Economic Census was completed in May 2001. Over the economic census' life cycle, the EMR's functionality continued to expand as the form design metadata were added and edited. The EMR, as envisioned for questionnaire design and populated with 2002 Economic Census metadata, was "completed" in December 2002.[14]

Economic Metadata Repository (EMR)

In order to ensure consistency of questionnaire content across both paper and electronic questionnaires (i.e., Computerized Self-Administered Questionnaires [CSAQ]), the Census Bureau developed the EMR, which houses all of the economic census questionnaire content. The EMR interfaces with the Generalized Instrument Design System (GIDS) to facilitate the design of all questions asked on the economic census questionnaires. Furthermore, the creation and administration of standardized sections eliminates many of the verification problems between and across trade areas that had been experienced in past censuses.[15]

Generalized Instrument Design System (GIDS)

In 2002 and previous economic censuses, the U.S. Census Bureau used administrative records to collect data for many of the nation's smaller business establishments (14 million in 1997). The remaining businesses were mailed paper questionnaires, tailored to each establishment's NAICS or Standard Industry Classification (SIC)[16] code. If a company was classified as doing business in more than one NAICS sector, several types of questionnaires were required to collect data for these activities. The result was that for large and diverse companies, the response burden could be overwhelming.

Development. The Census Bureau designed 545 questionnaires for the 2002 Economic Census—up from 460 for the 1997—each customized to collect data on particular kinds of economic activity. Creating 545 questionnaires was a significant undertaking, requiring the efforts of hundreds of people over several years. For the 1997 Economic Census, the subject-matter specialists within the Economic Directorate who devised the questions and designed the questionnaires

[13]Metadata is "structured data about data." The term metadata has been used only in the past 15 years, and has become particularly common with the popularity of the World Wide Web. In the context of the GIDS and the EMR, metadata refers to the data stored within the EMR that are used to create questions and questionnaires, including question wording, data elements needed for capturing response, question sequence, etc.

[14]Memorandum from Shirin A. Ahmed to Frederick T. Knickerbocker, "Monthly Activity Report for December 2002," January 14, 2003, p. 3.

[15]U.S. Census Bureau, *2002 Electronic Collection and Customer Support Plan*, "Attachment B: 2002 Economic Census Metadata Plan," September 14, 1999, p. 24.

[16]These classifications were defined in the Standard Industry Classification (SIC) Code, which was the precursor to the North American Industry Classification System (NAICS). The NAICS was first used for stateside establishments in 1997. The Census Bureau continued using the SIC for businesses in the island areas until it implemented the NAICS in the 2002 Economic Census.

provided paper drafts of the individual form layouts and sent them to the Census Bureau's Administrative and Customer Services Division (ACSD), where graphic artists used graphics-drawing software to compose the specific forms. Each proposed final form design was sent back to the relevant subject-matter areas for review and approval or modification by the analysts involved. The turnaround time for a single layout/edit review cycle for each questionnaire ranged from several days to several weeks. The process was labor intensive, error prone, and impossible to translate to the electronic surveys.[17]

For the 2002 Economic Census, the Census Bureau wanted to radically streamline the process of questionnaire design and production. The development of the EMR (see above) provided a single common repository containing the content and layout information for the census questions and questionnaires. The Census Bureau wanted to use that resource in the design of both paper and electronic (CSAQ) economic census and survey questionnaires. This GIDS would provide the subject-matter specialists involved in the design effort with real-time feedback as they designed and edited those forms.[18]

The Census Bureau contracted with Fenestra Technologies Corporation (Gaithersburg, MD) for the design and implementation of the proposed system. The contractor was given the following design objectives:[19]

- Expand the use of electronic reporting for all areas of the economic census.
- Minimize the effort needed to design the different collection instruments (paper and CSAQ) used in the census.
- Provide the same content, look, and feel for all collection instruments used in the census.
- Provide the layout information needed for imaging all paper forms.
- Use the one-source EMR database to manage content of the forms.

The GIDS is the end product of Fenestra's effort. It consists of several software modules, each performing particular tasks within the system:[20]

- **Forms designer**. The subject-matter specialists used the forms designer to lay out "custom-formatted" sections of forms; these are sections that are not amenable to fully automated layout.
- **Autoformatter**. The autoformatter automatically lays out regular, repeating sections of forms based on a set of layout rules and templates, and it renders questionnaires.
- **Previewer**. The previewer provides visual feedback to the designers so that they can inspect individual questions and/or entire forms, with custom- and autoformatted sections combined.
- **Publisher**. The publisher takes form layouts destined for paper output and produces postscript or Adobe portable document format (PDF) files for printing, either by the Census Bureau's in-house printing facilities (for limited-run forms), or by commercial printers (for large-quantity production).
- **Builder**. Electronic forms have "behavior" (auto-calculated response fields, navigation, data validation) in addition to visual layout; subject-matter specialists use the builder to attach these functions to the various items on a form.
- **Surveyor**. The surveyor was the electronic instrument supplied to respondents; it presents an electronic form to a respondent, collects the respondent's response data, and securely transmits those data back to the Census Bureau.

[17]For more information on the design of the report forms for the 1997 census, see *History of the 1997 Economic Census*, Chapter 4, "Questionnaire Design and Development," POL/00-HEC, 2000, pp. 26–33.
[18]Steven A. Schafer, "Digitizing the U.S. Census Bureau," <http://www.idealliance.org/papers/xmle02/dx_xmle02/papers/04-04-03/04-04-03.html>, p. 2.
[19]Ibid.
[20]Ibid.

Operation. The subject-matter specialists generated files from the EMR to be used within the GIDS to create a draft of each question and questionnaire, which analysts reviewed to ensure correct and consistent content. Layout designs of each "custom-formatted" question variation were created using the GIDS Forms Design Tool. (A custom-formatted question included such things as employer identification, physical location, employment and payroll, etc.) A custom-formatted question variation layout is created once and can then be assigned to any questionnaire, appearing exactly the same on each questionnaire in which it is used. Consequently, when a change needed to be made to any such question, it needed only to be made to the question once, and was automatically carried across all the questionnaires on which that item appeared. Each variation of a custom-formatted question had to be created by a layout designer. For the 2002 census, these layouts were created by the Instrument Design Team staff, or by other subject-matter division staff as required. Layouts were stored in the EMR.[21]

The GIDS implementation included the following:[22]

- Supplying the EMR with question and questionnaire layouts.
- Automatically generating layouts for variable questions and rendering questionnaires.
- The capability of producing both paper and electronic layouts from the same content source.
- Producing and providing questionnaires to the ACSD and the Census Bureau's National Processing Center (NPC), in Jeffersonville, IN, for commercial and Docuprint[23] printing of paper forms and information copy portable document files (PDFs) for promotional work.

The GIDS permitted the Census Bureau to use the systems Forms Designer application for layout, an auto-format application to assemble the pages into questionnaire packages, a preview tool, and a surveyor tool to display electronic versions of the forms and collect responses. The 2002 Economic Census used approximately 545 questionnaires to enumerate specified NAICS industries. The GIDS automated the layout of more than 60 percent of the questionnaire pages, and the Extensible Markup Language (XML)[24] attached to each question in the repository controlled the typography and placement of questions on the page.[25]

OPTICAL MARK RECOGNITION (OMR) AND KEY FROM IMAGE (KFI)

Background Information

Prior to the 2002 Economic Census, employees at the NPC collected data from questionnaires by manually keying each response from the paper questionnaires. Such a timeconsuming and costly process ($6 million alone in 1997, 60 percent higher than in 1992), demanded a more efficient mode of data capture and led to the implementation of Optical Mark Recognition (OMR) and Key From Image (KFI) technology for the economic census data processing operations. The Census Bureau developed the software needed to facilitate the capture of data returned on the 2002 Economic Census paper questionnaires. The software provided for auto-templating, registration,

[21]Ibid., pp. 2–3 and 10–14.

[22]U.S. Census Bureau, "2002 Electronic Collection and Customer Support Plan: Attachment A: Generalized Instrument Design System—Overview," September 24, 1999, pp. 19–21.

[23]DocuPrint printing technology made it possible to customize, print, and assemble the questionnaires and packages that would be mailed to an entire company. This eliminated the need for the complex clerical assembly line that was used in all censuses prior to 1997 to assemble the mailing packages.

[24]Extensible Markup Language (XML) describes a class of data objects called XML documents and partially describes the behavior of computer programs that process them. It is an application profile, or restricted form, of the Standard Generalized Markup Language (SGML).

XML documents are made up of storage units called entities, which contain either parsed or unparsed data. Parsed data is made up of characters, some of which form character data, and some of which form markup. Markup encodes a description of the document's storage layout and logical structure. XML provides a mechanism to impose constraints on the storage layout and logical structure.

[25]"2002 Electronic Collection and Customer Support Plan: Attachment A: Generalized Instrument Design System—Overview," pp. 20–21.

batching and exception review, OMR, KFI, and quality control. (For more information on questionnaire receipt, check-in, scanning, and processing, see Chapter 8, "Data Collection and Processing.")[26]

Development of Optical Mark Recognition[27]

General information. In all previous censuses, the response data were manually keyed directly from the paper questionnaires. Increasing labor costs led the Census Bureau to investigate methods to reduce the total number of keystrokes while increasing speed and accuracy. A cost-benefit analysis of the keying operations showed that it would be possible to reduce keystrokes by as much as 45 percent by using optical mark recognition equipment and key the data from an image rather than from the paper copy.

Auto-templating. The large number of unique questionnaires (545) and individual questionnaire pages (over 4,000) used in the 2002 Economic Census made it infeasible to manually template—i.e., electronically define the pages and answer zones—accurately within the short time frame available. Accordingly, the EMR/GIDS with enhancements provided the name, location (the "x,y coordinates"), and attributes of every answer on every page for nearly every questionnaire type used in the census. Since all pages and answer zones were developed using the GIDS, their standardization and accuracy was assured. In effect, the system that designed the paper questionnaires also provided most of the information necessary to key the image of the paper forms. The economic census staff supplemented the EMR/GIDS information with specifications to produce the template.

Template. The template is the economic census metadata necessary to register images of paper and key the responses from the images. It contained all the questionnaires, pages, and answer zones collected in the 2002 Economic Census.

Registration. The registration software developed by the Census Bureau for the economic census performed the following functions:

- Recognized printed border lines on the documents to find the "origin" point of each page.
- Rotated the page to the "upright" position if it was upside down.
- "Deskewed" the page if it was tilted as it went through the scanner.
- Read the "page ID" barcode, address label barcode, and individual "field level" barcodes embedded in some of the pages.
- Looked up and retrieved the document's "template" from the library of page templates.
- Navigated to each object of interest on the scanned page and recalculated the answer coordinates to the exact placement of each observation.
- Performed checkbox "OMR" on all of the checkboxes on the page.
- Detected the presence or absence of writing in respondent-filled answer fields.

Pages or barcodes that failed the process were automatically referred for manual registration.

Manual registration. The Census Bureau also developed software that recognized paper questionnaires that were severely damaged, poorly printed, scanned, faxed, duplicated, or otherwise not up to standard for auto-registration and guided staff in the manual registration process. This software significantly enhanced the process by reducing the volume of process failures requiring manual review.

[26]B. J. Fitzpatrick, "Key From Image (KFI)," 2002 Economic Census Offsite Symposium, November 4–5, 2002, p. 3.

[27]Information for the following section was drawn from: B. J. Fitzpatrick, "Key From Image (KFI)," 2002 Economic Census Offsite Symposium, November 4–5, 2002.

Script. The registration process converted the template file into the "script" file of the same definition. Whereas the template contained the information about the entire economic census, the script file held only the information (in the same format as the template) about the contents of the individual batch being processed. Rather than the answer coordinates provided in the template by the EMR/GIDS, the script contained the exact coordinates (calculated by the registration process) for each answer zone within the batch.

Batching with exception review. The barcodes on incoming questionnaires were wanded (i.e., the barcode was "read" using a hand-held laser wand) and collected into batches of about 400 sheets (the approximate limit of the scanner's input tray and of a size easily handled by the staff) each. The barcode provided the respondent identification, characteristics, and questionnaire type (the sheet count was derived by the software based on the number of pages for each questionnaire type). The scanner operator entered page counts only for variable sized questionnaires where the variable was dependent on the respondent.

After scanning and registration, the batching information was compared to the information obtained by registration (i.e., respondent identification, questionnaire type, and page counts). Staff manually reconciled discrepancies between the two independent processes in the exception review process. The clerk conducting the reconciliation could recycle the paper forms through batching and registration, or could allow the discrepancy in cases where the respondent introduced the discrepancy. When the exception review was completed, the batch was referred for keying.[28]

Key From Image (KFI) System

Key from image operations. Once batches were referred for keying, the KFI software guided the keyer to the answer zones to be "input"—the program went directly to the field that contained data for keying, and once that field was keyed, moved directly to the next. The program automatically skipped empty data fields, so no key codes were keyed. The keyer could scroll back to previously keyed fields and the prior contents could be displayed and corrected if necessary. The system displayed error messages if the keyer made a mistake that was caught in the simple keying edits. Some fields that had "known-ranges" of values were handled by "drop-down" lists. The software system auto-indented dollar amount fields, enabling the keyed entry to align exactly with any written entry. The system also displayed a warning if a keyer omitted part of a field (the keyer could set a status for a field declaring the contents or interpretation questionable for purposes of later review).

The system compiled a history of all keying for each field, together with any comments by the keyer. The keyer could choose to key documents from front to back, or to key like elements throughout the batch. (For the details of KFI operations, see Chapter 8, "Data Collection and Processing.")[29]

ELECTRONIC REPORTING[30]

General Information

The 2002 Economic Census marked a major commitment toward expanding the use of electronic reporting, which not only promised to reduce respondent burden and lower costs, but also to increase the Census Bureau's efficiency in all phases of census operations. Electronic reporting, however, is not new to the Census Bureau. Several of the business surveys conducted by the Census Bureau offered an electronic reporting option. Nearly half of all establishments in the Census Bureau's 2002 Annual Report of Organization survey of companies were reported electronically, up from about 10 percent in 1997.

[28]U.S. Census Bureau, "Procedures for Check In and Batching of Multiunit Questionnaires Including Procedures for Screening for Analysts Review," December 20, 2002.

[29]"Key From Image (KFI)," p. 3.

[30]Information for the following section was drawn from: U.S. Census Bureau, "The Evolution of Web Data Collection at the U.S. Census Bureau—From Research to Production: Working Paper 27," Conference of European Statisticians, February 13–15, 2002. See also the U.S. Census Bureau's Business Help Site, <http://help.econ.census.gov/econhelp/resources/> (January 18, 2005).

As early as 1967, the agency accommodated a few large retailers who requested permission to file census reports on computer tape. In subsequent censuses, the number of requests for such reporting increased gradually. The program remained limited to a few large retailers until the 1997 Economic Census, when it was expanded to all retailers. Electronic versions of 21 census retail questionnaires were developed for the 1997 census, and more than 300,000 business establishments reported electronically.

Development of the Computer Self-Administered Questionnaire (CSAQ). A Computer Self-Administered Questionnaire (CSAQ) is an executable computerized questionnaire that is available from the Internet. The automated questionnaire controlled the flow of survey questions, provided instructions and help, and included edit checks performed as the data were entered by the respondents. The Census Bureau first used CSAQs in the 1993 Report of Organization survey, when the agency contracted a private company to develop an electronic questionnaire on diskette for use with personal computers. Respondents installed and ran the program on their personal computer. The respondent completed response by mailing the diskette or transmitting the data via modem to the Census Bureau electronically. In 1998, the Internet option was added to the CSAQ, which allowed companies to transmit data via the Internet. This capability has helped to diminish the need to mail diskettes to companies. The CSAQ and data were placed on the Census Bureau's Business Help Site, and companies were sent a username and password to use to sign on to the site to retrieve or transmit information.

By 2002, CSAQs and Web-based reporting were being used for more and more of the Census Bureau's business surveys. The CSAQ enabled a company to easily report similar information on each of its establishments. For example, a company could report payroll, revenue, and number of employees information for each of its establishments in one CSAQ by importing the data from their databases rather than keying it. Additionally, the edits built into the CSAQ programming helped resolve data discrepancies when the respondent was reporting, eliminating the need for later telephone follow-up.

Internet infrastructure. Respondents choosing the CSAQ or Internet option were required to have a computer operating with Windows 95 or higher. Internet respondents required Internet Explorer 4.0 or Netscape Communicator 4.0 or higher.

The Computer Assisted Survey Research Office (CASRO) bought all the Sun/Solaris hardware, and the Systems Support Division (SSD) maintained the hardware and developed the software to implement electronic reporting for the 2002 Economic Census. Most of the hardware was housed at the Census Bureau's Bowie, MD, computer center.[31] There were two primary servers outside the "firewall"; one smaller server served the static forms and software to the public, and a larger server was for Census Taker, which did the upload/download of all the millions of secure/encrypted files. Inside the firewall at the Bowie center, a third server was used for the hourly processing (i.e., pulling the files inside the firewall and pushing new files out, decrypting, virus scanning, etc.). One more server and one workstation at the Census Bureau's Suitland, MD, headquarters also was available for development and testing.

Implementation. Businesses responding to the 2002 Economic Census could report using conventional paper forms or the CSAQ electronic forms (using menu-driven, Windows-compatible software). The electronic forms were delivered to some businesses by mail on CD-ROMs; otherwise, businesses could download the forms from the Internet. Large multiestablishment companies could report electronically using spreadsheets customized by the Census Bureau.

All businesses on the Census Bureau's Business Register were mailed paper questionnaires; multiestablishment companies received a separate questionnaire for each establishment. The questionnaire packages included the information respondents needed to access the Census Bureau's Internet site and download the auto-templating software. Most single-establishment firms used a

[31]Construction of the Census Bureau's Bowie Computer Center was completed in May 1997. The facility was built to house all of the agency's computer systems and operations except the high-speed printer systems (which remained at the Suitland, MD, headquarters). From the Bowie, MD, facility, staff members are able to provide day-to-day operational support for agency computer systems, including systems management, system and application upgrades, and configuration management.

simple questionnaire program that was tailored to their NAICS industry. The program prompted the respondent through the questions one at a time and provided feedback when a figure appeared inconsistent.

Respondents had the option of returning their data to the Census Bureau from office computers via a secure Internet site or saving the completed electronic questionnaire on a diskette or CD-ROM and mailing that to the Census Bureau.

The electronic reporting option's greatest potential benefit proved to be the reduction of the reporting burden for firms with dozens or even thousands of business locations. Instead of completing a separate paper questionnaire for each establishment, electronic reporting would enable these companies to electronically import information for each establishment from company spreadsheets to the electronic versions of the census questionnaire.

Also, the online Business Help Site allowed respondents to:

- Check their own filing status; i.e., check which report forms the Census Bureau had received from their company and which had not been returned.
- Request replacements for lost or misplaced report forms.
- Request additional forms (e.g., for any locations/establishments for which they were not received).
- Request additional time to complete questionnaires.

Internet and telephone help desk. The Census Bureau urged respondents to learn more about the electronic reporting option by visiting the Business Help Site, which included "Frequently Asked Questions," general information, sample copies of the paper forms, links to related sites, verification of the agency's receipt of their response to the census submitted electronically or on paper, and other online requests. Additional assistance was available by calling a toll-free telephone number answered by Census Bureau employees beginning December 1, 2002.

Respondents who were unable to find answers to questions in the information received in the mailed questionnaire package or CSAQ had the option of visiting the Census Bureau's Business Help Site, calling a toll-free number to receive assistance, e-mailing questions, and/or writing to a postal address to request assistance.

The agency's Internet help page could be accessed by entering the 2002 Economic Census's Business Help Site at <www.census.gov/econhelp>. This page contained individual form instructions, frequently asked questions, and contact information (encrypted e-mail, telephone, and postal address) if additional assistance was needed. Telephone and e-mail assistance was available for the 50 states, the District of Columbia, and the island areas from 8 a.m. to 8 p.m., Eastern Time. Paper correspondence was directed to the National Processing Center in Jeffersonville, IN.

Security. Confidentiality was ensured through encryption—the process of disguising information so that it cannot be deciphered (or decrypted) by anyone but the intended recipient.[32] If the encrypted information is intercepted, it is unreadable by a third party. The only information that can be discovered is that the two parties are communicating. Encryption also safeguards the integrity of transmitted data (i.e., if someone attempts to alter an encrypted message, coding within the message will not decrypt correctly, thus alerting the recipient to the possibility that someone has tampered with it).

[32]This disguised information is called ciphertext, and a "key" is required to translate the disguised information. Ciphertext is sent across the Internet. For example, suppose there is a financial report stored at a Web site; if Secured Sockets Layer (SSL, the standard protocol for Web server authentication and encryption) is enabled on the Web server, the server encrypts the report and sends the ciphertext to a client, where the ciphertext is decrypted back into the financial report.

Decryption reverses the process, turning the ciphertext back into the original message. Only the recipient can decrypt the text because only the recipient has a key. Only someone with the correct key can "unlock" a message.

The data sent over the Internet between respondents and the Census Bureau's servers was encrypted using 128-bit encryption for Netscape Communicator 4.0 and Internet Explorer 4.0 (and above) and the Secure Socket Layer (SSL) protocol.

MICRO ANALYTICAL DATABASE AND TRADE AREA INTERACTIVE PROBLEM SOLVING ENVIRONMENT[33]

In 1997, the Census Bureau used three separate systems to review and correct respondent data. These systems were developed independently along organizational lines based on trade area. For the 2002 Economic Census, they were consolidated for all trade areas. The system was developed using Oracle software. Data were loaded into the Micro Analytical Database (MADb), and a Web-based user interface—the Trade Interactive Problem Solving Environment (TIPSE)—was developed, which allowed users to view, correct, and edit respondent data.

Micro Analytical Database (MADb)

The MADb was designed to meet the needs of Census Bureau analysts and clerical staff for review and correction of respondent data. The database had separate tables for each major trade area: i.e., retail; wholesale; utilities; finance, insurance, and real estate; services; manufacturing; minerals; and construction. Having the data in a single database allowed for development of a much more efficient process for transferring establishment data from one trade to another, known as inter-trade transfers (ITTs). The tables were designed to efficiently process data relevant to the industries within each trade area.

Respondent data were first loaded into the business register and subjected to completeness and coverage edits to address any issues with company organization and basic data consistency. Upon completion, respondent data and relevant administrative data were copied to the MADb. Industry-specific edits were run on the data in the MADb, and referral listings were printed that listed all cases identified in the edit as having possible data problems.

Trade Interactive Problem Solving Environment (TIPSE)

The Trade Interactive Problem Solving Environment (TIPSE) is a Web-based interactive tool developed with Oracle forms for analysts and clerical staff to view and correct respondent data. Screens were developed to meet the specific needs for review by trade area. Records were retrieved based on survey unit ID number. Once corrections were entered, the records were edited immediately to assure data were complete and consistent.

Economic Drill Down (ECONDD)

Prior to the 2002 Economic Census, several different tools were used to research respondent data and to resolve reporting problems. One of those tools was called Economic Drill Down (ECONDD), which was written in Visual Basic.[34] ECONDD is a custom-designed system that allowed analysts to run and develop SQL-based searches.[35] For the 2002 Economic Census, the Census Bureau decided to expand ECONDD to meet the needs of all economic areas to search the MADb and other files. The ECONDD provides for predefined searches that can be selected from a menu, a menu-based system to build searches, and "ad hoc" capability for users to write their own SQL statements or modify a predefined SQL statement. Data retrieved via a search could be viewed on the screen and copied to Excel spreadsheets. The ECONDD also provided direct links to TIPSE, allowing users to click on a survey unit ID retrieved as a result of a search and directly access the records in TIPSE.

[33]The following sections' text was provided by the Census Bureau's Economic Planning and Coordination Division (EPCD).

[34]Visual Basic is an event-driven programming language (a programming language in which events such as mouse clicks and key strokes cause portions of the code to execute) and associated development environment. In business programming, it has one of the largest user bases.

[35]SQL is a standard computer language for accessing and manipulating databases.

Feith

Feith, a product of Maryland-based Feith Systems and Software, Inc., is a commercial product used by the Census Bureau to manage the storage and retrieval of scanned form images. With the Feith system, all economic census analysts had immediate access to any report filed via paper for the Economic Census. Feith provided a critical tool for data review and eliminated the process of filing, microfilming, and retrieving millions of paper forms.

MACRO ANALYTICAL REVIEW SYSTEM

Background Information

The Census Bureau's mission to release quality data sooner challenged the agency to create systems with shorter development cycles and better tools for analysts. Better tools meant shorter data review cycles and budget savings.

In the past, the Census Bureau processed economic census data by subject area. This meant that after the data was collected from establishments, it was divided into separate databases. As a result, decentralized analysis and publication of data occurred by subject (or industry) area. Publications were unique, and it was difficult to compile a complete outlook of the economic census.

Since analysts and application developers were organized by subject area, the online processing systems were also by subject area. Multiple processing systems created redundant development, implementation, and processing. Due to these obvious redundancies, shrinking budgets, and limited resources, the Census Bureau sought a single review system for the 2002 Economic Census.

For the 1997 Economic Census, the Census Bureau looked for new technology (SAS/EIS® and SAS/MDDB™ software) to improve data review tools for the analysts. As a result, the NAICS database was created to test new technology on selected data from all subject areas. While the NAICS database showed the benefit of having the ability to combine and publish data from several subject areas, there were several things that warranted improvement. For example, the majority of the data were still processed and reviewed in separate systems with similar functionality. In addition, because much of the summary data were stored in Multi-Dimensional Database (MDDB) structures that were not suitable for producing publications, data for publication was produced in an entirely separate process, duplicating the data in the MDDBs.

To resolve these lingering technological issues, the Census Bureau established an interdivisional team to centralize processing for the 2002 Economic Census. In response to this team's research, a new Oracle database (MADb) was created to replace multiple databases used in 1997. Data within the Oracle database was standardized where possible, thus providing a standardized source for all processing systems.

The data review system was separated from the transactional correction system. Data were extracted from the database for data review and processed in SAS®, reducing the processing burden of the transactional system.

Master tab and detail files were created to feed both the review and publication systems. Rather than writing two specifications, one for data review and one for publication, one specification and one program were written to produce each summary file. The resulting files could be used for both review and publication. This reduced the resource requirements and ensured data consistency between data in the review and publication systems.

Macro Analytical Review System (MARS)

The Macro Analytical Review System (MARS) is the central review location for all 2002 Economic Census data. The Census Bureau's MARS Team studied the analytical review systems from previous economic censuses to gain insight into the analytical reports and data structures. The MARS needed to surface large summary-level SAS® data sets quickly into multidimensional reports. The team researched solutions within the SAS® system and discovered a new approach to analytical processing: Hybrid Online Analytical Processing (HOLAP). Unlike older technologies, HOLAP technology allows for scalability and the ability to use very large data efficiently.

Hybrid Online Analytical Processing (HOLAP). Hybrid Online Analytical Processing (HOLAP) is an integral part of the Census Bureau's MARS system. The reasons for utilizing HOLAP are threefold. HOLAP technology provides efficient access to summary data stored in a format that can also be used for dissemination systems. It also gives users the ability to drill down and reach through to the detail data. Another significant benefit of using HOLAP is that it speeds up the query and reporting times.

The Data Model

The backbone of MARS is the data model. The data model consists of hundreds of summary and detail files. To surface data quickly, the files are organized by trade, sector, and summary levels. Understanding the user requirements and ascertaining how analysts want to surface the data was the key to designing a good data model. Where possible, similar files were given identical structures to reduce the number of files and reports.

MARS load. To properly structure files for HOLAP, MARS utilizes a parameterized load process to store and load files. The load process reads the data model along with the analyst's specifications (created and maintained in Excel spreadsheets) into SAS® to determine all the information about the files, including the input and output filenames, indices, field name, lengths, and formats, etc. It then uses these files to restructure the input summary and detail files.

User interface. MARS allows analysts to view the data in several ways to meet their needs. Analysts can subset data by NAICS, state, products, materials, and fuels codes. The subset information captured in the front end is then passed to the HOLAP data provider, which retrieves data from the server.

MARS provides to analysts:

- Multidimensional reports to review summary data and ratios, and to analyze establishment level data using SAS/Insight®.
- Select subset criteria on the front end to customize and reduce the size of the surfaced data. They can choose to subset by industry, state, products, materials, fuels, and primary product class code (PCC).
- Ability to clear all the subset criteria they have entered or use relevant subset criteria for more than one report without needing to repick selections.
- Report lists are customized based on the sector to reduce the number of reports from which to make a selection.
- Choice to see all the data within the detail data set or only the variables that directly correspond to the report chosen.
- Online help for analysts.
- Web-based Status Center for analysts to see which files were processed and when.
- SAS/Insight® within the MARS system to perform graphical data analysis on both the summary and detail data.
- Ability to save summary and detail data into SAS® data sets or into Excel spreadsheets for further manipulation.
- Subsetting of detail data with a WHERE clause or sort the data set using a "sort" routine.
- Quicker queries and reports surfaced faster.
- Review of summary data and ratios.
- Analyze establishment-level data and surface the SAS® data sets through logical MDDBs as well as view/manipulate custom reports using SAS/EIS® and SAS/Insight®.
- Choice to select from a list of states, NAICS or product codes, etc., such that the data surfaced is in smaller chunks, thus surfacing reports more quickly.

ECONOMIC CENSUS DATA DISSEMINATION SYSTEMS

Background Information

Prior to the 1997 Economic Census, the Census Bureau's primary method of disseminating census data was the distribution of printed reports. As a result of data user feedback, the agency began shifting its focus from printed reports to electronic data products (HTML tables and databases) in 1997. Despite this advance, the systems used by the Census Bureau to disseminate data products were separated by dissemination format and required substantial manual intervention and resources.

For the 2002 Economic Census, the agency completely redesigned its economic dissemination systems, substantially automating the creation process. The redesigned system standardized the "look and feel" of data products across all economic census sectors and programs and allowed the agency to disseminate a number of additional economic census-related publications through the same standardized system, resulting in resource savings.

Economic Metadata Repository (EMR) and Publication Text Repository

The Economic Metadata Repository (EMR) and Publication Text Repository foundation are the metadata files stored in Oracle tables. These metadata files not only contain the publication "stubs" (NAICS and geography titles, for example) and table column heading information, but also much of the information defining the structure and content of the data products themselves. There are also metadata tables included in this repository that "drive" the Census Bureau's internal data dissemination systems. Storage of all metadata in a centralized repository greatly improved the agency's ability to assure standardization of its data across each of the economic programs and sectors and improved the data products themselves.

The text components of the data products (introductory text, appendixes, etc.) are stored in an HTML format in a separate repository. Previously, the text for each dissemination format was stored in separate locations and in separate formats. The Census Bureau also developed systems to process, coordinate, and forward this text to each of its data product creation systems for integration into the data products themselves. This system results in substantial resource savings and increased standardization, as analysts are able to "repurpose" the same text in multiple dissemination formats.

Dissemination Metadata User Interface (DMUI)

To manage the metadata files stored in the EMR, the Census Bureau developed the Dissemination Metadata User Interface (DMUI). This intranet application allows dissemination system coordinators, subject-matter analysts, and clerical staff to view, edit, add, and delete publication metadata. Analysts developed screens and processes to meet the specific needs of each subject area and to assure consistency of the metadata across programs and sectors and across metadata files. Like the text repository described above, systems were developed to forward this metadata to each of the data product creation systems for integration into the data products themselves.

Final Data Review Tool (FDRT)

Prior to the 2002 Economic Census, Census Bureau analysts used several different tools to review data prior to publication. Analysts also used separate systems to prepare the data for publication via the addition of data symbols, footnotes, and other information. For 2002, the agency consolidated each of these disparate systems into the Final Data Review Tool (FDRT).

The FDRT allows subject matter analysts to:

- Dynamically build their publications from the most current tabulated data.
- Review the publishable data in each of its dissemination formats.
- Add symbols and footnotes to the published data rows.
- Finalize the publishable data for release.

The FDRT also allows data dissemination system coordinators and Census Bureau managers to track the status of the publications via an e-mail messaging system built into the FDRT as well as status fields in the EMR.

Publication Source File (PSF), Review Source File (RSF), and Publication Extraction Systems (PES)

Up through and including the 1997 Economic Census, data that appeared in each dissemination format came from different sources and through different processes, requiring additional resources to assure data consistency across all formats. For 2002, the Publication Source Files (PSFs) were developed as a single source to store the data for a publication in all of its formats. These single-source data sets were further processed (adding in disclosure symbols, for example) to create Review Source Files (RSFs). Finally, they were extracted (using the Publication Extraction System [PES]) to create the individual data sets needed to build each table and file for publication. These systems are instrumental in assuring that the data released in each format exactly matches, saving substantial resources.

American FactFinder, Economic Census Web Site, and Econ02 DVD-ROM

As a result of these aforementioned 2002 Economic Census data dissemination systems, the Census Bureau substantially improved data products released to the public. For 2002, the agency expanded the scope to the data displayed in database files on the American FactFinder (AFF) to include all data products from the Economic Census. Furthermore, the Census Bureau added data files from the following programs or products, which were previously unavailable on AFF:

- Business Expenses Survey
- Survey of Business Owners
- Economic Census of Island Areas
- Nonemployer Statistics Series
- Annual Survey of Manufactures
- County and ZIP Code Business Patterns reports

The Census Bureau also expanded, standardized, and simplified the HTML tables available on the economic census Internet page and updated the 1997 Econ CD-ROM software for release on DVD-ROM. All of these enhancements have resulted in much-improved data products for data users.

Chapter 5.
Questionnaire Development and Design

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INTRODUCTION

The 2002 Economic Census collected data on approximately 24 million business establishments, covering some 97 percent of all economic activity in the United States. The enumeration covered 1,096 separate industries defined by the North American Industry Classification System (NAICS).[1] The 2002 census covered the 50 states, the District of Columbia, the island areas,[2] and offshore areas (for mining), and included surveys of business owners, vehicle inventory and use, commodity flows, and business expenditures.

The 1997 Economic Census had used 460 paper-based questionnaires. For the 2002 census, the number of questionnaires increased to 545. The adoption in 1997 of the North American Industry Classification System (NAICS) expanded the number of specific industries identified in the census and caused an increase in the number of questionnaires. For the 2002 census, the total number of report forms (including forms used to obtain additional information needed for the correct classification under the NAICS of establishment activities) used for the major trade areas defined by the

[1]There are 1,179 separate industries, organized into 20 industrial sectors, defined by the 2002 NAICS. However, two sectors—agriculture, with 64 separate industries, and public administration, with 29 industries—are out of scope of the 2002 Economic Census.

[2]The island areas for 2002 consisted of Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, the Virgin Islands of the United States, and, for the first time, American Samoa.

NAICS is shown in Table 5-1, "Total Number of 2002 Economic Census Questionnaires by Trade Area."[3]

Table 5-1.
Total Number of 2002 Economic Census Questionnaires by Trade Area

Trade area	Number of forms
Total	**545**
Company organization	1
Construction	13
Finance classification	4
Finance	22
General classification	1
Manufacturing classification	1
Manufacturing	291
Mineral industries	17
Retail classification	7
Retail trade	33
Services classification	18
Services industries	65
Utilities classification	1
Utilities	9
Wholesale trade	40
Island areas	22

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.[4] 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.

CONSULTATION ON QUESTIONNAIRE DESIGN

Prior to the Census Bureau's submission of the draft questionnaires for OMB approval, the agency 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.

The Census Bureau asked for comments and suggestions on questionnaire content and design from a wide variety of professional, industry, and business associations.[5] Mailing packages sent to the associations contained a cover letter explaining the request for comments and referenced the "census comment" Web site.

[3]Table reproduced from Bruce M. Goldhirsch, "General Changes to Questionnaires: Total Number of Forms by Trade Area," presented at the 2002 Economic Census Symposium, University of Maryland, College Park, MD, November 4–5, 2002, p. 16.

[4]See Title 44, U.S. Code—Public Printing and Documents, Sections 3501–3502, 3504, and 3507.

[5]The names of these organizations are contained in Appendix D, "Consultation on the Census Questionnaires."

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. (For more on the Census Advisory Committees, see Chapter 2, "The Planning Process," and Appendix C, "Principal Advisory Committees on the 2002 Economic Census.")

FORMS/INSTRUMENT DESIGN TEAM

The Census Bureau established the Forms/Instrument Design Team to develop the basic design of the questionnaires used in the census. The team consisted of representatives from the following Census Bureau divisions:

Economic Planning and Coordination Division (EPCD)
Company Statistics Division (CSD)
Economic Statistical Methods and Programming Division (ESMPD)
Manufacturing and Construction Division (MCD)
Service Sector Statistics Division (SSSD)
Administrative and Customer Services Division (ACSD)

DESIGN REQUIREMENTS AND CONSIDERATIONS

General Requirements

The 2002 Economic Census used 545 paper-based report forms (including 32 classification forms and 1 organization questionnaire) to collect detailed information about the national economy (excluding agriculture and public administration). The efforts of the Forms/Instrument Design Team led to the standardization of the multiple styles of data collection instruments used in previous censuses into a general layout and format for the 2002 enumeration.

Questionnaire design and development began in January 1999. Much of the work on the detail design and content of the census questionnaires was done by the staffs of the Census Bureau's economic subject divisions, assisted by the EPCD. Subject-matter specialists and EPCD staff made many decisions regarding the size and format of the questionnaires, questionnaire identification (i.e., form numbers and titles), wording and sequencing of standard questions, design techniques, color schemes for the paper and ink, shading, type of processing equipment to be used, and imaging requirements.[6] The majority of this work was completed in June 2002.

Standardization

One of the principal tasks of the team was to standardize the questionnaires used in the economic census. The Census Bureau revised the design of the paper and electronic questionnaires to make the overall layout, flow, style, and appearance more consistent across trade areas. While data content necessarily varied by form and by industry, the individual data items common to all questionnaires used standard titles and were numbered identically on all the forms (items that did not apply to a given industry were simply omitted from the questionnaire for that industry). This facilitated the preparation of paper forms and accelerated the Census Bureau's efforts to offer all respondents the option of reporting electronically for 2002. (In 1997, by comparison, only 21 retail trade forms were available as Computerized Self-Administered Questionnaires [CSAQs].)

The standardization effort for the 2002 Economic Census had the following objectives:[7]

- Create a unified "look and feel" for economic census paper and electronic forms, which also would reduce respondent burden for diversified companies.
- Minimize workload during the forms design process.

[6]Ibid., p. 2.
[7]Ibid.

- Expand the use of electronic reporting for all industries covered by the economic census.

Once the standardization issues were resolved and the content for 2002 was known, the Generalized Instrument Design System (GIDS) was used to design both the paper and electronic questionnaires.

GENERALIZED INSTRUMENT DESIGN SYSTEM (GIDS)

For the 1997 Economic Census, the Census Bureau developed separate paper questionnaires for each of the economic sectors covered by the census and, within each sector, developed questionnaire variations for the different industries. During the 1997 Economic Census, 21 electronic retail trade questionnaires also were developed.[8] The Economic Directorate decided to expand electronic data collection to encompass all NAICS industry sectors for the 2002 Economic Census. The need to coordinate the content of the paper forms and electronic forms required developing software that used one source file for the content. The GIDS efforts for 2002 facilitated the design process for paper and electronic instruments used in the collection of census data. The GIDS reduced the amount of effort to produce both paper and electronic versions of the 2002 census forms since it allowed analysts to build the collection instruments from one software system. (For more information on the development of the GIDS, see Chapter 4, "Technological Innovations and the Census.")

The GIDS obtained the content for each form type from the Economic Metadata Repository (EMR). The EMR houses a "forms matrix" that details the content of each form and the variation of the particular item for each form. The GIDS uses this matrix to generate a "draft" of each form for analysts to review for content and layout. Analysts were able to "tweak" the appearance of the form to produce various formats.

Layout designs of each item variation (employer identification number, physical location, etc.) were generated using the GIDS Forms Design Tool. Templates were generated by staff from the Forms/Instrument Design Team and other subject-division staff as required, and stored or referenced in the EMR. The "forms matrix" allowed the GIDS to do most of the design work for the analyst. When an analyst designated a form, the GIDS pulled together the appropriate item layout designs for the analyst to review.[9]

The plan for GIDS/Metadata Implementation included the following:[10]

- Populating the EMR with forms metadata.
- Creating the "forms matrix" and "Item Templates."
- Developing controls for correcting the EMR metadata.
- Developing controls for maintaining form versions across multiple data-collection instrument types (e.g., paper forms, electronic response).
- Establishing flow and control of form versions through the ACSD/NPC for commercial and Docuprint printing of paper forms and informational copy portable document formats (PDFs) for promotional work.
- Establishing flow and control of electronic form versions to Internet, CSAQ.

[8]U.S. Census Bureau, *History of the 1997 Economic Census*. POL/00-HEC, Government Printing Office, Washington, DC, 2000, p. 74.
[9]U.S. Census Bureau, "Generalized Instrument Design System" <http:econdw.econ.census.gov/epcd/initiatives/gids/index.htm> (August 2002), pp. 3–5.
[10]Ibid., pp. 5–6.

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.[11] However, the following basic data items were requested of all respondents to the 2002 Economic Census:

- Months in operation
- 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 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 2002 Economic Census is outlined below.)

The standardization efforts for 2002 aided efforts to generate both paper and electronic report forms. While standardization helped restrain the number of different versions of industrial questionnaires needed (and reduce the design work needed to produce them), it was not adopted primarily to save work by the Census Bureau's staff. Rather, it offered an opportunity to generate electronic data-collection instruments and to reduce the reporting burden for diversified companies. With standard layouts and wording, the shared organization and look helped respondents by reducing interpretation errors caused by variations in styles between census questionnaires. In addition, the standardization gave a unified "organizational" look to the questionnaires that reinforced the impression that they had been prepared and sent by a single agency.

Changes to Questionnaires' Format and Design

The expansion of the use of standardized questionnaire appearance and overall design implemented for the 2002 census resulted in a number of changes to the physical appearance, format, and layout of the questionnaires. As part of the questionnaire design effort for the 2002 enumeration, the Census Bureau adopted a standard paper sheet size of 8½ inches by 11 inches. This was somewhat smaller than that used in the 1997 census, when the paper questionnaires measured 8½ inches by 14 inches. The smaller sheet size meant that the number of pages per questionnaire was higher for 2002 than for the 1997 census.

The format of the questionnaires also was modified:[12]

- The most obvious change was the use of a "single-banked" layout for questionnaire content, which allowed individual items to be extended across the entire width of each page. Previously, the Census Bureau used a "double-banked" layout that compressed content into two columns. This simplified the appearance of the form and individual items.
- The format used for the item numbers also changed; the 1997 questionnaires combined the individual item number with item title—e.g., "Item 5. PAYROLL." On the 2002 forms, the item numbers were simple numerals in white on a black filled-in circle, with the item title printed separately; e.g., "❺ E-COMMERCE SALES, SHIPMENT, RECEIPTS, OR REVENUE."

[11] For example, 40 separate questionnaires ultimately were used to enumerate wholesale trade establishments.

[12] "General Changes to Questionnaires."

- "Skip patterns" were used on the 2002 census questionnaires. This enabled respondents to skip sections, or even the bulk of the individual items, on a report form when the answer to a critical item indicated that those sections or items were not applicable to the establishment involved, or directed respondents to provide more detailed response in a different item. For example, an establishment checking off the "None" box in response to item 1, "MONTHS IN OPERATION," was directed to skip to item 29, "OPERATIONAL STATUS," which asked for information on the status of the establishment during the census year.

- Check boxes indicating "None" were added to specific items allowing respondents to check off certain individual questions rather than having to fill in "none" or "zero" responses; e.g., item 6, "EMPLOYMENT AND PAYROLL" (for manufacturing and construction), asked for number of employees and payroll for one pay period in each quarter during the year plus a sum of all four periods, as well as annual payroll, payroll for production workers, payroll for all other employees, first-quarter payroll, cost of fringe benefits, and number of annual hours worked by production employees—a total of 11 separate items, not all of which would necessarily apply to every establishment, particularly the smaller ones. The "none" check boxes enabled establishments to respond more quickly and easily to these items.

New Questions

Number of months in operation. The 1997 and previous economic censuses included a question about the number of months in operation of respondent establishments as part of Item 3, "Operational Status," for all industries except manufacturing and mining. For the 2002 Economic Census, coverage was expanded to manufacturing, and the question, as Item 1, "Months In Operation," was included on questionnaires for all industries.[13]

E-commerce. The economic census is an important source of information about U.S. economic output. An increasing number of businesses conduct their business activities by ecommerce, and the Census Bureau needs to measure this activity to better measure the changing ways in which Americans are doing business. The recent expansion of Internet commerce focused attention on the use of computers and computer networks in business. Computers and computer networks are expected to continue to lead to major innovations in the areas of new products, services, delivery methods, business processes, structures, and performance. These changes already affect every facet of economic performance; i.e., economic growth, productivity, prices, employment, trade, and the structures of businesses, regions, and markets.

Evaluating these changes required solid statistical data, but prior to the collection of ecommerce data in the 2002 Economic Census, little identifiable data about the electronic economy were available. In 1999, the Census Bureau implemented a measurement initiative to begin improving the quality of data about the electronic economy. The Census Bureau first established the E-Commerce Steering Committee to review user needs for data and develop a strategy for meeting these needs. As a result of the recommendations of this committee, the Census Bureau began providing a snapshot of e-commerce activity for key sectors of the U.S. economy through the agency's *E-Stats* report series. (The 2000 report, *E-commerce 2000*, was based on data collected from approximately 125,000 manufacturing, wholesale, services, and retail businesses.)[14]

E-commerce includes sales, receipts, and/or revenue from any transaction completed over an Internet, Extranet, Electronic Data Interchange (EDI) network, electronic mail, or other online system. Transactions are agreements between buyers and sellers to transfer ownership of, or rights to use, goods or services. Payment for these goods and services may or may not be made online.

[13]For an example, see any of the Manufacturing sector questionnaires, viewable at <http://help.econ.census.gov/econhelp/resources/>.

[14]B.K. Atrostic and John Gates, "E-Business Measurement at the U.S. Census Bureau: We're Moving On," presented at the Census Advisory Committee of Professional Associations Meeting, October 17–18, 2002, pp. 2–3.

An item about electronic commerce—asking for either the dollar value of e-commerce sales or their percentage of total sales, receipts, and/or revenue excluding sales taxes—was added to virtually every 2002 Economic Census form.[15]

Leased employees. Leased employees work at a business but are not considered direct employees because their tax, benefits, and other payroll functions are provided by an employee leasing company or "Professional Employer Organization" in exchange for a leasing fee. This is consistent with Internal Revenue Code 26, U.S. Code 414(n). Typically, employee leasing companies provide human resources and human resource management services to client businesses. They usually perform duties such as payroll, accounting, payroll tax return preparation, benefits administration, recruiting, and managing labor relations.

Leased employees constitute a significant and growing share of employment in many industries and the part of the economic data set on the number of workers required to produce the output for various industries. The Census Bureau wants to account for leased workers in the industry and geographic area in which they work to ensure a complete measure of industry employment.

The question about leased employees was included on nearly every 2002 Economic Census form and asked for the number, annual payroll, and first-quarter payroll of full- and part-time leased employees.[16]

Supply chain (establishment activities). The "supply chain," known as "Establishment Activities" on the questionnaires, is the series of activities and processes performed by manufacturers, wholesalers, transportation firms, retailers, and their customers, as products and services are distributed through the economy. The supply chain is important as an indicator of economic efficiency. Understanding these activities—who uses them and who performs them—will allow better understanding of productivity increases in the nation's economy.

The supply chain item asks for checkbox responses to identify whether businesses perform or outsource particular activities.[17]

Specialized Inquiries

While the Census Bureau spent a great deal of time and effort standardizing the economic census questionnaires, consideration also was given to the kinds of information needed only for particular sectors of the economy. Thus, particular items were added to the questionnaires to collect new kinds of data needed from all industries. The agency also developed a series of inquiries to collect the specialized information required from only certain industrial sectors or industries and incorporated these inquiries into the content of the questionnaires designed for those specific sectors and/or industries. These specialized inquiries fell into six general categories:[18]

- **Inventories**. Inventories provide a measure of the amount of tangible inventories owned by an establishment. The inventory data provides a benchmark for annual and monthly estimates of inventories during the years between the censuses and are one of the components of business investments used in calculating the National Income and Product Accounts.

- **Assets and expenditures**. The 2002 Economic Census asked for information on assets, capital expenditures, and depreciation; rental payments; and lease rents.

1. Assets, capital expenditures, and depreciation are key components in estimation of the nation's stock of tangible wealth, often referred to as "capital stock." The level of capital stock

[15]U.S. Census Bureau, "New for 2002, E-Commerce Sales," <http://help.econ.census.gov/econhelp/new/ecomm.html> (November 2005), p. 1.
[16]U.S. Census Bureau, "New for 2002, Leased Employees," <http://help.econ.census.gov/econhelp/new/leased.html> (March 2004), p. 1.
[17]U.S. Census Bureau, "New for 2002, Supply Chain Activities," <http://help.econ.census.gov/econhelp/new/supply.html> (November 2005), p. 1.
[18]The following descriptions are drawn from U.S. Census Bureau, "Economic Census Questions on Forms for Selected Sectors Only," at <http://www.census.gov/epcd/ec02/ec02questions2.htm> (April 14, 2004), pp. 2–11.

is an important component in determining the flow of capital services available to national production, and estimates of capital stock are used in calculations involved in developing the Gross Domestic Product (GDP) estimates and for computing labor and capital productivity.

2. Rental and lease payments allow consistent measurement of assets and capital expenditures (many firms use leasing in place of purchasing equipment or land). The data collected by this item (which asks for the expenditures for [1] rental and lease of equipment, tools, machinery, vehicles, and furniture; and [2] buildings, job-site trailers, and other structures) facilitate calculation of measures of capital investment.

3. Lease rents are asked for mineral properties and are used in computing measures of capital investment.

- **Costs and expenses**. Two items on the census questionnaires asked for information on costs and expenses of business operations:

1. Selected expenses (including costs of materials, parts, and supplies; construction work subcontracted to others; electricity; and selected purchased services [e.g., maintenance and repair of buildings, legal services, advertising and promotion]).

2. Cost of detailed supplies (specific to industry), and fuels used. Expenses data were used to compute value added for an industry and are subtracted from the gross output (e.g., value of shipments) to ensure consistent measurement of value added for establishments with similar levels of output, but different levels of input (i.e., supplies used and expenses).

- **Check box inquiries**. Check box inquiries were used to collect relatively simple information on specific subjects that could be answered by checking off an appropriate box on the questionnaire. Four general kinds of check box inquiries were used in the 2002 census:

1. Kind of business/type of operation: "Kind of Business" was asked of all industries covered by the census except selected Manufacturing. "Type of Operation" was used on the wholesale and mining questionnaires. Data collected by this item were used to classify establishments by industry according to the NAICS and, in some cases, to provide additional detail beyond that required by the NAICS.[19]

2. Class of customer (i.e., household, individual, business, or government) is important to the Bureau of Economic Analysis in calculating the national income and product accounts.

3. Method of selling (e.g., electronic commerce, store or display room, mail order, direct selling, vending machines, etc.); used for retail and wholesale trade industries only.

4. Activity of operating establishments was asked of establishments providing enterprise support to businesses. Respondents were asked to check off the primary kind of business or activity—e.g., manufacturing, educational services, transportation services, transportation and warehousing, etc.—of the establishments managed or serviced by the respondent. The information collected through this item was used to produce tabulations that more accurately linked inputs and outputs at broad industry levels.

5. Supply chain.

- **Selected sections**. Three primary kinds of inquiries were included in selected sections—i.e., sections of the questionnaires that had limited or specialized application in specific industries or industry groups—asking for data on type of construction (i.e., building or nonbuilding, by respective type—used for the construction industry sector), shipping and handling (whether receipts for shipping and handling were received, value of those receipts, and whether they were included in the sales and receipts totals reported elsewhere on the questionnaire), and exports of goods and services (i.e., did receipts reported include amounts for exported goods and services and, if so, what were the amount of receipts). Type of construction section served much the same purpose for the construction industries as the kind of business check box did

[19]Construction industries were asked Kind of Business and Type of Construction. Mining industries were asked Type of Operation to determine the type of mining activities (surface, underground, etc.).

for the other NAICS sectors;[20] the shipping and handling section was used to verify that receipts for those services were included in the total sales and receipts reported for individual establishments, while the data collected on exports of goods and services were used to measure the level of exported goods and services for service industries. The latter information was intended to complement the detailed statistics on merchandise exports compiled from customs data.

- **Special inquiries**. Two general kinds of special inquiries were included in the economic census:

1. Individual items that varied from industry to industry appeared on virtually all the questionnaires. The specific items were customized to the industry involved: e.g., Form MC-33101, "Iron, Steel Mill, and Electrometallurgical Products Mfg," included, under Special Inquiries, an item asking hours worked and payroll by "Departmental Operations"—e.g., for coke ovens, blast furnaces, basic oxygen furnaces, rolling and finishing mills, forging, etc.

2. Inquiries on supply chain activities and "other special inquiries."[21]

Deleted Questions

Two questions included in previous economic census questionnaires were deleted from the 2002 report forms. The first, asking for legal form of organization, was dropped because the information was available from administrative records. The second question deleted was a request for county name included in the item on physical location of the responding establishment. This question had been included in previous censuses to help identify the physical location of rural business establishments. The Census Bureau determined that these locations would be easier to determine because local emergency services throughout the country now require street number addresses for all houses, business establishments, and the like.[22]

ELECTRONIC DATA COLLECTION INSTRUMENT

Background Information

The Census Bureau first offered electronic reporting using magnetic computer tape to a few large companies in the 1967 Economic Census. Larger-scale use of electronic reporting had to wait until the 1987 Economic Censuses, when the agency offered to mail the magnetic computer tapes to selected respondents—primarily large retail, food services, and hotel chain enterprises—who could then enter the data for their establishments on the tapes and return them to the Census Bureau. The Census Bureau continued using this method until the 1997 Economic Census, when the agency again offered companies the chance to respond on computer tape, but also contracted with a private company to develop electronic versions of 21 retail census questionnaires on diskette (the Computerized Self-Administered Questionnaire [CSAQ][23]) for use with personal computers. Altogether, CSAQ diskettes were mailed to 471 companies, and computer tapes used for "flat file" reporting in the 1997 census were sent to another 200 companies.[24] (This total of 671 companies represented more than 300,000 individual business establishments.)[25]

The Census Bureau further expanded the use of electronic reporting for the 2002 Economic Census as a means of reducing respondent burden while maintaining and increasing response rates.

[20]The type of construction and kind of business inquiries were used together to determine the classification for construction industries.
[21]Ibid., pp. 1–2.
[22]Bruce M. Goldhirsch, "General Changes to Questionnaires," p. 13.
[23]For details on the development of the CSAQ, see Chapter 4, "Technological Innovations and the Census."
[24]"Flat file" reporting creates an electronic record that is stripped of all specific application (program) formats, such as the American Standard Code for Information Interchange (ASCII). This allows the data elements to be migrated into other applications for manipulation and prevents data loss due to hardware and proprietary software obsolescence.
[25]*History of the 1997 Economic Census*, p. 74.

The agency's objectives in this effort were to offer electronic response to any respondent willing and able to take advantage of the option.[26]

Methods of Reporting

General information. Advances in information technologies enabled the Census Bureau to further streamline its electronic data collection operation for the 2002 Economic Census, and offer electronic reporting to all companies covered by the census, through the development and use of a CSAQ mailed to respondents on CD-ROM or downloaded via the Internet. The Census Bureau considered the CSAQ the "standard" method of electronic reporting, and all companies were given the option of using it for their response. Single-unit respondents had to use the CSAQ to respond electronically. (The Census Bureau expected about 90 percent of companies reporting electronically to use the CSAQ.) The "nonstandard" methods of reporting—by flat file or company-specific—were options for very large companies with 2,000 or more establishments or that were reporting nonstandard formats for the Report of Organization Survey.[27]

Business Help Site (BHS). Establishments or companies that received the economic census questionnaire could use their own computers to respond to the census, request administrative actions, check their own response status, and ask for assistance from the Census Bureau through the online Business Help Site (BHS) available through the agency's Web page. To report electronically or to access other online services, respondents needed to use their username (uid) and password, both of which were printed on the label of their census questionnaire and, for multiestablishment companies, on the mailing label of the cover letters included in their census packages. Businesses wishing to respond electronically could download the required census software and the necessary census questionnaire(s) and instructions from the Census Bureau's secure Internet site. Respondents were directed to the Census Bureau's Web site, where they were instructed to download the required software (GIDS Surveyor 3.57) and given the necessary instructions for setting up a file for census response and downloading the required report forms.[28]

The Business Help site also offered frequently asked questions (FAQs), PDFs of paper forms, contact information, secure e-mail, and links to various other economic related sites. Respondents used the site for informational purposes to complete paper forms as well as downloading software to report electronically.

Once respondents had filled out the applicable questionnaires, each report form could be reviewed to identify inconsistencies and make necessary corrections, copies could be printed for the respondents' own records, and the completed electronic questionnaires could be transmitted, in encrypted form, to the Census Bureau's secure Web site.

***Surveyor* software**. The Census Bureau's *Surveyor* software enabled respondents to import information from their own spreadsheets to provide information for the census. (Using this software package required several steps to set up, so respondents who needed to provide information for only one or for a few locations could save time by entering the data through an interactive option of *Surveyor* or on paper forms received by mail.) Importing the data from one or more of their own spreadsheets saved time for respondents who had to provide data for a large number of business locations. The *Surveyor* software could be used to import data from any spreadsheet where each row was associated with a separate establishment (although the Census Bureau assumed that respondents would export a spreadsheet tailored to economic census reporting from *Surveyor* and then copy data into it from other sources).

The Census Bureau provided instructions on the use of the *Surveyor* software on its 2002 Economic Census help Web site <http://www.census.gov/econhelp>. Users either downloaded *Surveyor* or updated earlier versions of the software, then made certain that the Form Inbox included all of the individual establishments being covered.

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[26]U.S. Census Bureau, "2002 Electronic Collection and Customer Support Plan: Overview," September 24, 1999, p. 4.

[27]M. Diane Harley, "Electronic Reporting," pp. 3–7.

[28]Instructions and other assistance for electronic responders could be consulted online at the Business Help Site <http://help.econ.census.gov/econhelp/electronic>. The system requirements for businesses that wanted to respond electronically included Microsoft Windows© 95 or higher and Microsoft Internet Explorer or Netscape Navigator 4.0 or above (128-bit encryption).

The respondent could use the census questionnaire(s) received by mail (they also could be printed out from *Surveyor* or the BHS) to mark or highlight each of the reporting fields that applied to any of the reporting establishments. The marked-up questionnaires then served as references for respondents to use in creating a spreadsheet with a column for each response field marked. Respondents assigned each separate line in the spreadsheet to a different establishment, identifying it with a unique store/location number, then cut and pasted the data from the reference spreadsheets to the census response spreadsheet.

If more than one type of questionnaire had to be completed (not counting the classification forms) the respondent could create (1) supplementary spreadsheets for those items not included on the majority of forms, (2) separate spreadsheets to use for each separate type of establishment, or (3) a general spreadsheet covering the data required for all establishments and do separate importing operations for each.

Once the respondent had imported the data from the spreadsheet(s) into *Surveyor* for all the establishments involved and made any corrections needed, the completed response(s) could be submitted directly to the Census Bureau. The respondents also had the option of copying the response data to a diskette/CD-ROM and mailing it to the Census Bureau in a prepaid envelope supplied in their mail package.[29]

[29]Ibid.

Chapter 6.
Promoting the Census and Product Awareness

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INTRODUCTION

The economic census provides a critical measure of the national economy and supports the U.S. Census Bureau's current economic surveys program and the Business Register. The census produces benchmark measures upon which many other national economic measures are based, including the gross domestic product (GDP).

The objectives of the 2002 Economic Census public awareness program were to promote response to the census and to create awareness among data users of the kinds and availability of products derived from the census. While response is required by law, a small but significant percentage of businesses either fail to respond or do so late in the census cycle. Nonresponse and

late response required numerous follow-up questionnaire mailings and other contacts to prod businesses into reporting, with the consequent increase in the cost of the enumeration. As a result, the Census Bureau took a number of steps to obtain early and complete response to the economic census. Similarly, although all economic census results are disseminated on the Internet, the availability and usefulness of this information has not been widely known. The Census Bureau undertook a major effort to communicate information about these economic census data products to potential data users.

PROMOTING RESPONSE TO THE CENSUS

General Information

The program to promote response to the 2002 Economic Census was overseen by the Census Bureau's Economic Planning and Coordination Division (EPCD). The EPCD provided guidance and coordination for promotional activities to the various agency offices participating in the census, and to Image Media Services, a consulting firm hired in the summer of 2001 to assist with economic census promotion.[1] In addition, the EPCD worked with the Census Bureau's Public Information Office (PIO) and with Image Media Services to develop and evaluate components of the contract, and to integrate contract output with other publicity activity.

Promotional Activities by Census Bureau Communications Offices

Congressional Affairs Office (CAO). The CAO is responsible for maintaining contacts and providing information and assistance to members of Congress and their staffs with respect to the activities and products of the Census Bureau. The CAO:

- Assisted in communicating with Congress about the 2002 Economic Census.
- Helped design the media information kit for congressional offices.
- Arranged briefings on the economic census for congressional staffs.

Marketing Services Office (MSO). The MSO provided guidance to the Economic Directorate on product marketing activities. It helped to produce some of the publicity materials used and to schedule and conduct the Economic Census User Conferences (see below) carried out after the census.

Public Information Office (PIO). The PIO developed press releases and other publicity materials, including radio and video materials, and distributed them to a variety of media outlets. (Image Media Services complemented this with distribution through the State Data Centers [SDCs], Business and Industry Data Centers [BIDCs], chambers of commerce, business associations, and so on.) The PIO assisted in conducting taped interviews by Census Bureau staff of government officials, business leaders, and data users for use in the public awareness program, and consulted with the Economic Directorate in developing publicity and advertising themes and messages, organizing special events, and gathering testimonials that were used in the publicity campaign.

Customer Liaison Office (CLO). The CLO served as a principal contact between the Census Bureau and its SDCs and BIDCs, keeping the centers informed about the plans for the 2002 census by direct briefings of SDC and BIDC staffs and preparing and maintaining mailing lists of the centers for the distribution of informational materials.

Publicity Contractor

Contract requirements. Image Media Services' contract with the Census Bureau gave it primary responsibility for conducting focus groups to evaluate and validate publicity materials, messages, and strategies; developing, reproducing, and distributing information kits; assisting the Census

[1] U.S. Census Bureau, "Statement of Work for TASK #46-YABC-2-002; Publicity Effort—Response Publicity and Corollary Activity" (Contract #50-1-66004), "Task Order 46-YABC-2-0002," pp. 1–2. Hereafter "Task Order 46-YABC-2-0002." The period covered by this contract was January 1, 2002, through September 30, 2003.

Bureau in its partnership activities and developing lists of "intermediaries" (i.e., recipients of promotional material likely to use them in publications or other public communications); and arranging for a clipping service to monitor the placement of publicity materials by venue, audience, and date. The company provided the following deliverables:[2]

- A research plan for focus groups to evaluate the public service announcements (PSAs) and other communications materials, including screening and moderators' guides, summaries, and detailed reports and video "transcripts" of each group's discussions.
- PSAs: These included preliminary and final versions (the latter in both print and digital versions) of ads reflecting the key messages for the promotion campaign ("Put the census on your calendar," "The census provides data for your business," etc.).
- Information kits tailored to three different publicity time periods (before mailout, before due date, and after due date).
- Concise guides in bulleted format to advise intermediaries receiving promotional materials of the best ways to use them in publications or other communications.
- Other materials to include fact sheets and editorial materials.
- Digital versions of publicity materials for dissemination on a CD-ROM or on the Internet.

Business Census Response Focus Groups. The Census Bureau and Image Media Services conducted a series of focus groups to investigate how business people recalled and perceived the 1997 Economic Census. Seven of these groups consisted of probable business respondents, and two were composed of members of trade or business associations and chambers of commerce. With the business focus groups, the Census Bureau sought to assess recall and awareness of the economic census and to evaluate promotional themes, messages, and images being considered for the 2002 Economic Census promotion effort. The first three groups, composed of employees of small single- and multiestablishment firms in the Washington, DC, and Tampa, FL, areas, were held in the summer of 2001, while the remaining four—from the Philadelphia, PA, and Dallas, TX, areas—were conducted early in 2002. The principal findings of the focus groups were:[3]

1. Few business people recalled the 1997 Economic Census at all.
2. The legal requirement to respond was a strong motivator for business people to answer the questionnaire. Even those who doubted the Census Bureau would actually impose the specified fines reported that they were more likely to respond when they were informed that response was required by law.
3. Participants wanted to know how the data they provided were used, particularly how the data benefited public policy.
4. Many prospective respondents used the Internet for business purposes and said they would be interested in visiting a census Web site for more information and assistance. Participants also expressed interest in reporting electronically via the Internet.
5. The focus groups revealed that the September 11, 2001, attack affected business attitudes about government and government programs; there was greater acceptance of appeals based on patriotism and civic responsibility in the focus groups held shortly after "9/11" than in those done prior to the attack. (The impact of this event was relatively short-lived in terms of its effect on Census Bureau data collection activities and did not have any lasting effect on economic census response.)

[2]Ibid., pp. 4–5.
[3]Paul Zeisset, "Promoting Response in the 2002 Economic Census. U.S. Census Bureau, 2002," Professional Associations Advisory Committee, October 17, 2002, pp. 2–3.

The Census Bureau conducted two more focus groups with representatives of trade associations and chambers of commerce to test promotional ideas based on analysis of the results from the respondent focus groups, and to see how best to motivate these groups to use census promotional materials. The results indicated that the business groups and chambers of commerce:[4]

1. Were attracted to appeals to patriotism.
2. Were wary of any focus on mandatory reporting.
3. Wanted toolkits to make the promotional materials easier for them to use.
4. Wanted the promotional materials available in both electronic and hard copy formats for ease of use.

Publicity and Public-Service Advertising

General information. The Census Bureau used the findings from the focus groups to develop materials and messages to promote early and complete response by businesses through a publicity and advertising campaign designed to set the stage for the economic census. Publicity materials placed in the media would reinforce messages contained in the economic census questionnaire packages. They would have the greatest impact if they persuaded business accountants to watch for the economic census mail packages and motivated business managers to encourage their employees to complete the forms and return them promptly. Moreover, except for the largest companies (see below), the Census Bureau did not have the resources to mount an intense campaign of personal contacts by agency staff with each of the millions of individual businesses sent questionnaires.[5]

Mail campaign. The mail public awareness campaign was carried out in several phases. An "alert" letter to intermediaries asked them to watch for coming census-related materials, which would be involved in a series of coordinated informational mailings. These intermediaries comprised about 10,000 organizations providing information and communications to the business and economic community, and included the following:[6]

1. Chambers of commerce (3,000)
2. Trade and professional associations (2,000)
3. National and regional business journals (2,000)
4. Major metropolitan newspapers (500)
5. Census Bureau-affiliated organizations; e.g., SDCs, BIDCs, and Census Information Centers (CICs) (1,500)
6. State and local government offices and organizations (500 to 1,000)

The address lists for this mail campaign were compiled by ECPD using lists purchased by Image Media Services combined with others obtained from the Census Bureau's own internal resources (including the PIO, the CLO, and subject-matter divisions within the Economic Directorate). EPCD staff worked with Image Media Services to develop, produce, and distribute press kits to communicate the Census Bureau's core messages about the economic census.[7] The kits contained:

1. PSAs in a variety of sizes, up to four designs, one including a calendar.
2. News releases, sample articles and editorials developed by the Census Bureau, in a variety of lengths, addressing the purposes, uses, and history of the census, and including testimonials from business leaders.

[4]Ibid., p. 3, and WB&A Market Research, "2002 Economic Census Concept Testing: St. Louis, May 14, 2002," May, 2002, p. 6.
[5]Zeisset, p. 2.
[6]The approximate numbers for the informational packages are drawn from "Task Order 46-YABC-2-0002," p. 2.
[7]Ibid.

3. Guides to help recipients use the materials in the kits.

4. Response postcards asking recipients to indicate how and when they used, or planned to use, the information materials.

5. A CD-ROM disc containing sample data, digital versions of printed materials, and graphic materials.

The slogan selected for the campaign, "America Needs Your Numbers," was featured on all of the mail materials. Most of these items also featured the tag line "Counting American Business. Charting America's Progress."[8]

The kits were mailed in three "waves" at intervals coinciding with census data collection operations. An appropriate overall message was used for each wave: "the census is coming" for use during November and December, immediately prior to the census mailout; "the census is under way," for use while the questionnaires were in the field; and "the census is due (or past due)" for use in February and March, after the due date for response arrived or had passed. (Image Media Services coordinated the timing of the production and distribution of kits to coincide with the lead times needed by the various kinds of media outlets—early for monthly publications and closer to the desired running date for daily publications and broadcast media.) Census Bureau staff also contacted the staffs of trade and professional associations to encourage their use of the materials.[9]

The Census Bureau also developed a "Writer's Toolkit" on the Internet that provided electronic files containing all the news releases, editorials, and PSAs produced for the 2002 Economic Census. The Census Bureau sent electronic mail messages to selected news media and trade association contacts, reminding them of the census promotional effort and inviting them to use the Web-based materials.[10]

Events, Testimonials, and Sample Articles

Special events. The Census Bureau conducted several special events during the opening days of the 2002 census data-collection operation to draw attention to the economic census and as another reminder to watch for the economic mail packages. On December 9, 2002, the Census Bureau and the Department of Commerce held a "kick-off" news conference at the National Press Club in Washington, DC. The Secretary and Under Secretary of Commerce attended and made remarks on the importance of the economic census, and the Director of the Census Bureau talked about census methods and processing. On January 14, 2003, several Department of Commerce officials, including the Under Secretary, the Director of the Census Bureau, the Associate Director for Economic Programs, and the Director of the Bureau of Economic Analysis, visited the New York Stock Exchange, rang the "Opening Bell," and commented on the census to assembled print and broadcast media.[11]

Testimonials. The Census Bureau learned from participants in its research focus groups that businesses wanted to be assured that the economic census was important and useful, and that they would not be wasting valuable time and resources in responding. The agency addressed this, in part, by compiling testimonials to the value of the economic census from prominent leaders and officials in the public and private sectors. (Several of these testimonials were obtained from attendees at annual meetings of major business and economic associations, such as the National Association of Business Economics, while others were taken by visiting officials at their places of business.) Alan Greenspan, Chairman, Federal Reserve Board of Governors, for example, said:

[8]Zeisset, p. 3.
[9]"Task Order 46-YABC-2-0002," pp. 2–3.
[10]See "2002 Economic Census Promotion" on the Census Bureau's Web site at <http://www.census.gov/epcd/ec02/2002promo.html>.
[11]U.S. Census Bureau Media Advisory, "Secretary of Commerce to Launch 2002 Economic Census, CB02-158," December 9, 2002, and "Commerce, Census Bureau Officials to Ring NYSE Opening Bell Ceremony Highlights Economic Census, CB03-CN.01," January 10, 2003.

> The Economic Census is indispensable to understanding America's economy. It insures the accuracy of the statistics we rely on for sound economic policy and for successful business planning. Returning your economic census form helps us all.[12]

Sample articles and clips. At the Census Bureau's request, Image Media Services used a clipping service to collect news articles on the census as a means of assessing the effectiveness of the public awareness campaign. The Census Bureau also conducted periodic Internet searches to locate articles in chamber of commerce newsletters and other online publications that a clipping service normally would not be able to pick up. (Unfortunately, there was no way in the end to know with certainty whether the publicity activity had the desired impact because it took place at the same time as other promotional efforts, such as follow-up mailings and Web page redesigns.)

The news stories collected consistently included the themes that the Census Bureau had identified as important in encouraging response; i.e., the economic census is important, report forms are due by February 12, 2003, and response is required by law. Many also stressed that businesses could now report electronically. The greatest number of stories were published during the period December 2002 through March 2003, when the census datacollection effort was at its height.[13]

COMPANY CONTACT PROGRAM

Large Company Program

The 10,000 largest companies in the United States account for about half, and the 1,000 largest companies account for about one-third, of the nation's total gross domestic product (GDP).[14] The inclusion of data from these companies is critical to any accurate description of the national economy. The Census Bureau developed and implemented a program of contacts with selected large companies to encourage their response. The agency sent packages of "advance" information about the upcoming economic census to the 10,000 largest companies (those with 500 or more employees) and assigned "account managers" to the 1,000 largest companies. The goal of the Advance Information and Account Manager Programs was to promote early and complete response to the census by the "M" and "L" companies.[15] These large businesses already were subject to intensive mail and/or telephone follow-up (see Chapter 8, "Data Collection and Processing") in the census and, eventually, a very high percentage responded. However, the longer delays in response, the greater the expense involved in collecting the information and the less timely the data provided. The Census Bureau employed the Account Manager Program to establish working relationships with large companies to encourage their prompt and complete response and to assist these companies to complete and return the census questionnaires as early as possible.[16]

Account Manager Program

General information. From March 2002 until January 2004, some 138 census and survey analysts from the Census Bureau's Company Statistics (CSD), Economic Planning and Coordination (EPCD), Manufacturing and Construction (MCD), and Service Sector Statistics (SSSD) divisions and the National Processing Center (NPC) served as "account managers" (AMs) for about 1,000 of the nation's largest companies. The AMs were the principal personal contact between their assigned companies and the Census Bureau (in addition to their regular jobs on the economic census). They

[12]The testimonials may be seen on the 2002 Economic Census promotional Web site at <http://www.census.gov/epcd/ec02/2002promo.html>.

[13]E-mail memorandum to Michael A. Hovland, History Staff, from Robert A. Marske, Chief, Customer and Respondent Outreach Branch, Economic Planning and Coordination Division, "Promoting Response," October 31, 2005.

[14]Robert A. Marske and Laurie Torene, "Promoting Business Response to the 2002 Economic Census," Professional Advisory Committee Meeting, October 18–19, 2002, p. 3.

[15]The overall pool of L and M companies is those identified as having specified numbers of employees. For the purposes of the Large Company and Account Manager Programs, an L company was any company selected for inclusion in the Account Manager Program. See the U.S. Census Bureau, "Glossary of Terms Used in Processing The 2002 Economic Census," October 11, 2002, p. 12.

[16]Memorandum, Robert A. Marske to Shirin A. Ahmed, "Findings from the 2002 Economic Census Account Manager Surveys," March 18, 2004, p. 1.

helped company staff prepare for and respond to the census by dealing with difficult census concepts, unfamiliar questionnaires or other documents, new questions that needed additional explanation for complete understanding, and electronic reporting software.[17]

Record-keeping system. To keep track of company contacts and to provide assistance and information to both the AMs in their work and to Census Bureau senior staff, the EPCD's Customer Relationship Management (CRM) Unit and a private vendor—Rigid Systems, Inc.—developed a software application for use in record keeping for the Account Managers Program. The resulting system was called Remedy/CRM. Remedy/CRM was used to collect and make available to the AMs and the Economic Directorate staff all the information needed to keep track of the companies' response—or lack thereof—to the economic census, as well as whatever data were needed to enable the AMs to give effective and efficient service to contacted companies.[18] The key "modules" of the system—including data entry from the Contact Exchange Cards, automatic call scheduling, and a "Paddlewheel" screen to guide the AMs through their required contacts—were ready for production work by the beginning of March 2002. By the end of April 2002, training in the system had been completed for 125 AMs (all who had requested the training) drawn from EPCD, SSSD, and MCD staff, and training began for the AMs who would be using the system at the NPC in Jeffersonville, IN, and production work was underway.[19]

The AMs used the Remedy/CRM system to document nearly 7,000 contacts with "L" companies included in the Account Managers Program. The Remedy/CRM was used to:[20]

1. Capture company name, address, and contact information from Contact Exchange Cards (see below). The system generated automatic e-mail messages to the AMs, alerting them to call their assigned companies, and to the companies involved, thanking them for the returned Contact Exchange Card.
2. Store company Web site addresses.
3. Produce establishment lists.
4. Record company requests for extensions.
5. Alert AMs about changes in response rates.

Company selection. The criteria for company selection for the Account Manager program were (1) a company's importance to the economy or to a specific industrial sector, based on number of employees, payroll, total number of establishments (in 2001), or total sales or receipts reported in the 1997 Economic Census; and/or (2) the expectation that, based on previous experience, the company would have difficulty with responding or might not respond at all. Companies were selected by subject branches within the Economic Directorate divisions. Once the list was compiled, the Economic Directorate staff selected to act as AMs were each assigned specific companies' "accounts" and were responsible for contacting the individual firms.[21]

Advance information mailing. In March 2002, the Census Bureau mailed advance information packages to the 1,000 companies and their subsidiaries identified for the Account Managers program, plus approximately 8,000 other large companies and their subsidiaries. The packages included information about the forthcoming census, requested the identification of a "company contact" for the census, and asked for an updated mailing address. They also gave the companies an opportunity to plan and to allocate resources for responding to the census and to assemble the necessary data.[22]

[17]Marske and Torene, p. 4.
[18]Marske to Ahmed, "Findings," p. 6.
[19]Memorandums from Shirin A. Ahmed to Frederick T. Knickerbocker, "Monthly Activity Report for March 2002," April 10, 2002, p. 2; and "Monthly Activity Report for April 2002," May 9, 2002, p. 2.
[20]Ibid.
[21]The criteria for selecting companies for the Account Managers program were discussed in detail by the Census Bureau's Response Improvement Team. See U.S. Census Bureau, "2002 Economic Census Response Improvement—Meeting Notes," January 16 through March 14, and October 17, 2001.
[22]Memorandum, Shirin A. Ahmed to Frederick T. Knickerbocker, "Monthly Activity Report for March 2002," p. 2.

A cover letter, signed by the Assistant Director for Economic Programs, introduced the upcoming census, while an information pamphlet provided general information about the census, including the kinds of data that would be requested, key dates, information on how business use the census data, new features, and a list of Census Bureau contacts. An enclosed Contact Exchange Card provided the name and contact information of a Census Bureau account manager who would be available to assist them through the reporting process (see below). The Contact Exchange Card also asked for mailback of a postcard to confirm or update the company's mailing address and a contact within the company who would be responsible for completing the questionnaires. Using information from the returned contact exchange cards, the agency updated its Business Register in time to correct names and addresses for the census mailouts.[23]

In early May 2002, the Census Bureau sent a reminder letter to those companies still nonrespondent to the advance information mailing asking them to respond as soon as possible.[24]

Contact operations. The AMs made initial contacts (by telephone or e-mail) to assigned companies beginning in April 2002, following receipt of the returned Contact Exchange Cards, or following up with companies that had not responded. That first contact was essentially introductory, offering help and suggesting that companies use electronic reporting if possible. Following the census mailout in December 2002, the AMs contacted their assigned companies to confirm receipt of the census questionnaire packages, established a schedule for reporting, provided time extensions when the companies requested, and monitored company activity until the completed forms were received.[25]

Evaluation of the program. The Census Bureau attempted to evaluate the effectiveness of the Account Managers program in two studies—the first a Web-based survey of AMs and the second a series of focus groups discussions—carried out in February and March 2004.[26]

In February 2004, the EPCD's Customer Relationship Management (CRM) staff used a Web-based survey to review feedback from census and survey analysts who served as AMs, asking participants' views on the activities they performed, the resources they used, and improvements they recommended should be made. Following receipt and review of the responses to this survey, the Census Bureau hosted four focus group meetings facilitated by the Economic Statistical Methods and Programming Division's (ESMPD's) Establishment Survey Methods Staff. One of these focus groups consisted of managers who had supervised the AMs, two others were made up of first-time and "experienced" AMs, and the fourth was comprised of AMs working in EPCD and SSSD analytical units at the NPC in Jeffersonville, IN. The groups' discussions explored the findings of the Web survey in depth and considered various census activities and operations and how they correlated with company response.[27]

Results and recommendations. The AMs' program had a positive effect on the Census Bureau's efforts to improve and accelerate response to the economic census. The AMs were asked to guide some of the largest companies in the nation through the 2002 Economic Census, and they took their jobs very seriously. Observations and recommendations made in response to the survey of AMs and the focus group meetings continue to be studied for use in improving the program for the 2007 census.[28]

ROLE OF THE INTERNET

General Information

The Census Bureau's use of the Internet for both improving response and marketing economic products continued to expand in the 2002 Economic Census. A Web page <http://www.census.gov/econ2002> provided a public face for the economic census. The focus

[23]See the U.S. Census Bureau, *Preparing for the 2002 Economic Census, Advance Information You Can Use*, EC02-PR-1, February 2002; and Marske and Torene, p. 5.
[24]Marske and Torene, p. 5.
[25]Ibid.
[26]Marske to Ahmed, "Findings," p. 1.
[27]Marske to Ahmed, "Findings," p. 7.
[28]Ibid.; for details of the observations and recommendations made by the AMs, see pp. 2–7.

of this page changed over the life cycle of the economic census. Initially, the page provided information to help businesses respond to the census. The page complemented the Business Help Site (BHS) for respondents and provided a repository for reports from the census that also were available to intermediaries and news media. The page provided access to digital versions of advance information before the BHS was available. (At respondents' request, the Census Bureau created a section that included a discussion of each item on the census questionnaires and the reasons each item was included in the census.) The page included statistical data from the 1992 and 1997 Economic Censuses and from many of the recent economic surveys carried out by the Census Bureau. The page offered responses to "frequently asked questions" about the census, as well as the "Ask Dr. Census" link enabling users to pose questions directly to Census Bureau staff. In addition, the page contained:

1. Samples of every 2002 Economic Census questionnaire.
2. 2002 publication titles and release schedules.
3. Information on 2002 Economic Census data user conferences.
4. Information on "What's new in the 2002 Economic Census."
5. The *Guide to the 2002 Economic Census* describing how the data were being published.
6. Information on how people use the economic census data.
7. Electronically accessible slide shows and exercises for data users.

The Web page also provided links to other Census Bureau sites that might be of interest to respondents or data users, such as "drill-down" tables from the 2002 census for selected subjects, 1997 census tables, the home page for the North American Industry Classification System (NAICS), and American FactFinder—the Census Bureau's primary electronic data dissemination system.

Writer's Toolkit

The Census Bureau also used the economic census Internet page to assist reporters preparing stories about the census. The "Writer's toolkit on the 2002 Economic Census" provided electronic versions of the materials in the information kits mailed to media outlets (see above); testimonials from Alan Greenspan and other prominent economists and business leaders; information on what data the census asks for and why; and recordings of radio PSAs for the census.[29]

MARKETING ECONOMIC CENSUS PRODUCTS

Press Releases and Product Brochures

The Census Bureau used press releases, its Web page, and brochures as the principal means of informing the public about the release of the 2002 Economic Census data products. The agency also conducted a series of data user conferences around the country to familiarize probable users of census data and intermediaries with the products as they became available. The first data products from the 2002 Economic Census were released in March 2004 in the form of the *Advance Summary Statistics of the United States: 2002*, a set of preliminary tabulations by industrial sector. The Census Bureau announced the publication of these data in a press release on March 29, 2004.[30] Thereafter, the PIO issued press announcements as the first reports were issued for each industry sector. (The press releases are available at the PIO's "Newsroom" page on the Census Bureau's Web site at <http://www.census.gov>.)

The EPCD produced a folder, "Econ Quicksheet No. 1, Accessing Economic Census Data," with information on how to access 2002 Economic Census Data electronically. The folder's graphics reproduced selected pages from the Web site with explanations and provided basic instructions

[29]See "2002 Economic Census Promotion" on the Census Bureau's Web site at <http://www.census.gov/epcd/ec02/2002promo.html>.

[30]U.S. Census Bureau, "Census Bureau Releases First Economic Census Results; Six Sectors Report Sales Above $1 Trillion," CB04-54, March 29, 2004.

for accessing the data and navigating around the site. Paper copies of the folder were printed for distribution at conferences and meetings, and an electronic version also was available on the agency's Web site.[31] In addition, EPCD staff developed an "Economic Census Slide Rule," a card envelope with cut-outs arranged to show data on an insert. By moving the insert, sector-level highlights for employer and nonemployer businesses in the 2002 Economic Census could be shown. (The Census Bureau's Marketing Services Office [MSO] coordinated production of the slide rule.[32])

2002 Economic Census Conferences

The Census Bureau conducted 32 data user conferences between June and September, 2005, to inform people who work with data users about the availability and content of 2002 Economic Census data products.[33]

Sponsors of the conferences were drawn primarily from the Census Bureau's State Data Center program, and the agency asked that the sponsors think as broadly as possible about the types of data users to invite to the conferences/workshops. The Census Bureau hoped particularly to reach intermediaries that would be able to, in turn, train and provide data services to others. Attendees included small business development centers, libraries (particularly federal depository libraries), business associations and chambers of commerce, college faculty, key government agencies, and local business media.[34] The conferences were intended to inform users about obtaining and using economic data for industries and local areas. Each conference totaled about 3 hours and included several 30-minute modules providing an overview of the census, industrial classification, and products. A workshop followed in which participants could work on their own at a computer to retrieve economic data via the Web. The workshops included a series of exercises designed to reinforce key concepts in working with the data for local areas. The conferences concluded with a discussion period for participants' review of changes to dissemination methods being considered for 2007. The Census Bureau staff assisting in the conferences provided users with information on:[35]

1. The background of the economic census, including recent trends and uses of economic census data.
2. The North American Industry Classification System (NAICS) and how it changed for the 2002 census, plus information on bridging data for the Standard Industrial Classification (SIC) Code used in economic censuses prior to 1997 and for various intercensal economic surveys until 2002.
3. 2002 Economic Census products, including the publication schedule, the redesign of economic census products for contemporary use, types of reports, and how CD-ROM, Internet, and print products compare.
4. The availability of economic census data on the Census Bureau's Web site and accessing data in "drill-down" tables and in American FactFinder.

[31]The brochure could be accessed online via the Census Bureau's Web site at <http://www.census.gov/econ/census02/guide/AccessingEconomicCensusData.ppt>.

[32]Memorandum from Shirin A. Ahmed to Thomas L. Mesenbourg, "Monthly Activity Report for June 2005," July 14, 2005, p. 2.

[33]U.S. Census Bureau, *2002 Economic Census Conferences*, at <http://www.census.gov/econ/census02/guide/ec02conf.htm>. The seminars were held in Charlotte, NC; Des Moines, IA (2); Detroit, MI; Duluth, MN; Indianapolis, IN (2); Iowa City, IA: Knoxville, TN; Lansing, MI (2); Lawrence, KS (2); Little Rock, AR (4); Los Angeles, CA; Minneapolis, MN; Modesto, CA; New Brunswick, NJ; New York, NY (2); Oakland, CA; Sacramento, CA; St. Cloud, MN; San Diego, CA (2); Shreveport, LA (2); Shrewsbury, MA; Storrs, CT; Tempe, AZ (2); and Tucson, AZ.

[34]E-mail memorandum to Distribution List from Paul T. Zeisset, "2002 Economic Census Conference Series Update," May 2, 2005.

[35]2002 Economic Census Conferences, <http://www.census.gov/econ/census02/guide/ec02conf.htm>.

5. The impact of changing data publication technology, including projected changes for the 2007 Economic Census.
6. Sources of annual (intercensal) and subnational economic census data from the Census Bureau.

Chapter 7.
Preparations for Data Collection

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INTRODUCTION

The general planning for the 2002 Economic Census, the continued expansion and implementation of the North American Industry Classification System (NAICS), the introduction of the new North American Product Classification System (NAPCS), and the development and introduction of the new systems and technologies for the 2002 enumeration were long-term activities that determined the basic structure of the census. Once the planning phase had progressed sufficiently, the Census Bureau began direct preparations for the 2002 Economic Census data collection. These preparations encompassed the following major activities:

- Compiling the economic census mailing list.
- Acquiring and using administrative records for small establishments not subject to direct data collection.
- Assigning identification numbers to individual establishments to provide identification for each during data collection and processing.
- Printing and assembling the mailout packages, instructions, and cover letters for the initial mailout and follow-up mailings.
- Establishing pre-census contacts between Census Bureau staff and the largest companies and maintaining those contacts during the census to ensure coverage.

COMPILING THE ECONOMIC CENSUS MAIL LIST

The Business Register

Background information. The Business Register is the foundation of the Census Bureau's economic programs. It provides the sampling frames and other critical support for the periodic business surveys, such as the business cycle indicators, as well as for the quinquennial economic censuses. Prior to 1968, each federal statistical agency had their own form of "business register" and designed its own statistical programs. In 1968, the Bureau of the Budget, predecessor of the Office of Management and Budget (OMB), designated the Census Bureau as the lead agency in a project to develop a general, multipurpose business directory for use throughout the federal statistical system. The modern business register became operational for data year 1974 as the Standard Statistical Establishment List (SSEL).[1]

Redesigning the Business Register. By the time the Census Bureau began planning the 2002 Economic Census, the basic design of the SSEL was 25 years old, and its aging systems could no longer keep pace with the growth, complexity, and rate of structural change in the business system.

Organized in February 2000, the Census Bureau's Business Register Redesign Team included representatives from the Economic Directorate. The team was directed to modernize the following critical features and functions of the Business Register:[2]

[1]For more details of the origins and development of the SSEL, see U.S. Census Bureau, Technical Paper 44: *The Standard Statistical Establishment List*. Washington, DC: Government Printing Office, 1978.

[2]Eddie J. Salyers, "An Assessment of Current Quality Assurance Practices and Ongoing Work to Develop a Comprehensive Quality Plan for U.S. Census Bureau Business Register," 18th International Roundtable on Business Survey Frames, Beijing, PRC, October 17–22, 2004, p. 1.

- Content and organization (logical design).
- Standard statistical units maintained in the register.
- Physical design and implementation of the database.
- Processes for migrating legacy data to the new database.
- Basic business rules governing operation.
- Administrative records sources, content, and issues.

The redesign team met weekly with the objective of producing a production register design by the end of July 2002.

Content. The new Business Register[3] design was organized to enable linkages among all component units of the register. It used a centralized Link table that enabled many records (e.g., income tax returns, survey responses) that apply to a business to be linked together. Using this table, company organizations or acquisitions of new administrative records can be accommodated by creating a new link record without changing the many tables in the Business Register that may be affected. It also allowed storage of links by date, which allowed users to see the history of each business, such as the date(s) new locations were added.

The Business Register contained five central, or "parent," tables:

- ADDRGEOS—addresses and geographic coding information.
- EINUNITS—Internal Revenue Service (IRS) data filed based on Employer Identification Number (EIN).
- EMPLOYER_UNITS—a complete file of key edited information for all units of a business.
- SSN_UNITS—all IRS information for self-employed individuals that own businesses and do not have employees or an EIN.
- SURVEY_UNITS—records specific to an economic census, survey, or product.

Under each of these parent tables were "child" tables containing information specific to varied data sources such as IRS payroll data or income data, and to reference periods. The Business Register also contained several ancillary tables to manage specific processes such as edits, user list compilation, etc.

This structure allowed the Register to be dynamic with new records and linkages added as they were acquired without displacing historic information.

Sources for the Business Register. The Business Register database was maintained using separate processes for single-establishment versus multiestablishment companies. The information for single-establishment companies was updated continually, using both payroll tax records and receipts data from tax records provided by the IRS and industry classification information from Social Security Administration (SSA) and Bureau of Labor Statistics (BLS) files. Information on multiestablishment companies was updated annually based on information from the Census Bureau's Company Organization Survey (COS).

The operating data were derived initially from information collected in the COS for multiestablishment (MU[4]) companies and from the IRS records for first-quarter employment and quarterly and annual payroll. The Business Register retains administrative data for establishments in "parent" and "child" tables; the "child" tables show the latest identification information on the subject establishment collected in successive contacts.

[3]The following descriptions of the characteristics, sources, and uses of the Business Register in the 2002 Economic Census are drawn from Edward Walker, "2002 Economic Census Offsite Symposium: Overview of Data Storage," November 4–5, 2002.

[4]The Census Bureau previously used single unit (SU) and multiunit (MU) to identify companies with one and those with several physical locations of economic activity. While the terminology has changed, the old abbreviations have been retained in processing procedures and is retained here to conform to actual usage.

For more information on the use of administrative records, see "Administrative Records" below.[5]

Using the Business Register. For the economic census, the Business Register functions as a universe file to control questionnaire mailing and data processing. The Census Bureau used the Business Register source files for a final pre-census update of the Business Register in the late summer of 2002. These source files included administrative data from the SSA, IRS, and BLS, as well as the results of the 2001 COS. Of particular importance in the update were the mailing addresses for individual establishments and the NAICS classifications.

During mail-list compilation, the Census Bureau used the Business Register as the source for mailing addresses for individual establishments. For MU companies, the Census Bureau used the Business Register to:[6]

- Identify all active companies (excluding farms) and all active establishments.
- Identify consolidated companies/establishments.[7]
- Assign report form (questionnaire type) numbers for finance, insurance, and real estate, and communications establishments (consolidated questionnaires).
- Assign report form numbers (Form 99001) for out-of-scope or suspected out-of-scope establishments.

For single-establishment (SU) companies, the Census Bureau used the Business Register to:

- Identify and select establishments with 2002 payroll.
- Split the SU company universe, using NAICS and program division information, to assign appropriate questionnaire type.
- Sample by trade area.[8]

Sampling

Background information. The 2002 Economic Census covered more than 24 million establishments. The smallest of these—sole proprietors, partnerships, and corporations without paid employees—were not required to complete questionnaires but were covered using administrative records provided to the Census Bureau by the BLS, IRS, and SSA. The cutoffs established for each industry were set so that the establishments exempted from the requirement to complete census forms accounted for only about 3 percent of the total value of receipts for that industry. Establishments that otherwise would have been accounted for by 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 mailout. These latter totaled approximately 1.2 million.[9]

The preparation of the mail list, and the arrangements made for collecting detailed information on the questionnaires, varied by trade area. All multiestablishment companies in a given sector or trade area were included in the census. These were sent census questionnaires and were subjected to intense follow-up.[10]

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[5]Thomas L. Mesenbourg, Edward Walker, and Paul Hanczaryk, "The Census Bureau's Business Register: Basic Features and Future Direction," United Nations Economic Commission for Europe (ECE) and the Statistical Office of the European Communities (Eurostat) Joint Seminar on Business Registers, Luxembourg, June 23–24, 2003, pp. 2–3. Hereafter referred to as "The Census Bureau's Business Register."

[6]Ibid.

[7]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.

[8]See Thomas L. Mesenbourg, Edward Walker, and Paul Hanczaryk, "The Census Bureau's Business Register."

[9]The mailout counts provided for classification forms, and by NAICS sector and for the island areas in this section, are drawn from U.S. Census Bureau, Economic Planning and Coordination Division, "TABLE: 2002 Economic Census Mailout Counts," September 23, 2003.

[10]For more details on the follow-up operations, see Chapter 8, "Data Collection and Processing."

For smaller single-establishment companies in all trade areas except wholesale trade and auxiliaries, the Census Bureau used 2002 annualized payroll levels to select single-unit (SU) companies to receive questionnaires or classification forms. The sample had three components:[11]

- Certainty SUs: The largest SUs, with a 2002 annualized payroll greater than an industry specific cutoff, were included in the sample "with certainty." The cutoffs for this certainty sample were developed for each eight-digit NAICS industry code[12] within specified areas.
- All Wholesale Trade SU companies were included in the sample, and there were some NAICS codes in each trade area that had cutoffs of zero, which meant that *every* SU in that classification was included in the sample. The ranges of payroll cutoffs[13] in selected trade areas were as follows:

Trade area	Lowest payroll cutoff	Highest payroll cutoff
Finance, insurance, and real estate (FIRE)*	$200,000	$550,000
Retail trade	$28,000	$1,000,000
Services	$15,000	$1,000,000
Utilities	$90,000	$1,000,000

*Most FIRE industries were included in the sample with certainty; only three industries had nonzero cutoffs.

- Noncertainty SU sample: For SUs with 2002 annualized payroll below the industry specific certainty cutoff, a stratified (by industry and geography) random sample was selected.
- Classification sample: SUs not selected for the certainty or noncertainty samples, and for which the Census Bureau lacked complete NAICS industry codes, were selected to be mailed classification forms.

Service industries.[14] The Census Bureau identified approximately 465,000 multiunit establishments in the service industries for the initial census mailout. The certainty sample for the services industries included a further 585,000 single-unit establishments with 2002 annual payroll above the cutoffs for their industries. The Census Bureau selected an approximate 9.5 percent stratified sample of the remaining 1.35 million services single-unit establishments for inclusion in the sample. This yielded a sample of 128,000 addresses, which were mailed the appropriate services questionnaire. An additional 397,000 companies, for which the Census Bureau lacked adequate information to classify at the six-digit level, were selected and mailed classification questionnaires.

Retail trade.[15] The initial mailout plans for the 2002 Economic Census called for mailing questionnaires to all multiestablishment retail, accommodations, and food services establishments. The Census Bureau mailed forms to 566,451 MU companies and 289,000 certainty case SU businesses and to a stratified sample—a further 156,000 addresses—of the remaining in-scope, but noncertainty, SUs; and to 131,000 single-establishment companies for which the Census Bureau had insufficient classification information.

[11]Memorandum from Scott A. Dahl to Michael A. Hovland, "2002 Sampling Information," September 25, 2003.

[12]For the 2002 Economic Census, NAICS codes are used for industry classification. NAICS classifies industries using two-, three-, four-, five-, and six-digit levels of detail. Sectors, the broadest classifications, are two-digit codes, while individual industries are represented at the six-digit code level. Internally, the Census Bureau defines eight-digit NAICS levels to identify sub-industries important to the U.S. economy. In addition to industries, products in the manufacturing and mining industries are classified consistently with the NAICS structure. The first six digits of the 10-digit product code are normally the same as the NAICS code for the industry with which the product is most often associated. Broad product or service lines also are provided for retail and wholesale trade and other service industries.

[13]These cut-offs were determined by individual industry; thus, in the services sector, all of the SU companies in at least one industry with an annual payroll of at least $15,000 were included in the sample, while in at least one other area, the minimum annual payroll required to be included was $1,000,000.

[14]Part or all of the following NAICS sectors were in the old SIC service industries and were included in the general services trade area for 2002: 51, Information; 54, Professional, Scientific, and Technical Services; 56, Administrative Support and Waste Management and Remediation Services; 61, Educational Services; 62, Health Care and Social Services; 71, Arts, Entertainment, and Recreation; and 81, Other Services (except Public Administration).

[15]For the 2002 Economic Census, the retail trade area mailout included NAICS sectors 44–45, Retail Trade; and 72, Accommodations and Food Services.

Wholesale trade. The Census Bureau did not actually sample the wholesale trade area for the 2002 census. Instead, it sent questionnaires to all MU wholesale firms and all SU wholesale establishments with employees—approximately 407,000 addresses in all—for the census. This total consisted of approximately 118,000 MU and 289,000 SU employer establishments, each of which was sent the appropriate NAICS industry-specific questionnaires (there were 40 different wholesale trade questionnaires). (The mailed packages contained separate instruction sheets for MU and SU establishments.)

Finance, insurance, and real estate and rental/leasing.[16] Mailout plans for the Finance, insurance, and real estate and rental/leasing sector called for mailing questionnaires to 177,000 MU establishments or alternative reporting units, and sending classification forms to approximately 51,500 firms for which the agency had insufficient information to classify within these industrial sectors. A total of 158,000 SU establishments that met or exceeded the annual payroll cutoffs for these industries were included as certainty cases in the mail sample and also received questionnaires, while the agency drew a stratified sample of approximately 9.0 percent of the remaining SU firms to be sent questionnaires, adding a further 23,000 SU establishments to the sample.

Utilities, transportation, and warehousing.[17] The initial mailout sent questionnaires to 46,000 MU establishments or alternative reporting units in the utilities and transportation and warehouse services sector, and an additional 25,500 SU companies were selected to receive classification questionnaires. About 67,000 SU establishments met the payroll cutoffs for the utilities and warehouse services industries and were included in the questionnaire mailout as certainty cases. The remaining small SU companies in these NAICS sectors were sampled at a 9.5 percent rate, resulting in mailing questionnaires to a further 6,700 company addresses.

Manufacturing and mining industries. The Census Bureau sent mail to approximately 198,000 manufacturing establishments in the 2002 Economic Census. The agency also sent form NC-9026, "Classification Forms," in the initial mailout to SU companies for which it lacked sufficient information to determine the proper six-digit NAICS industry code. All other MU and SU manufacturing companies were split into three categories: Annual Survey of Manufactures (ASM) establishments, large and medium (based on payroll; the cutoffs varied by industry) non-ASM establishments, and small non-ASM establishments. There were approximately 58,400 ASM cases, about 21,000 of which were SU companies. The medium and large non-ASM establishments, 92,400 in all, were enumerated using the appropriate manufacturing industries census long questionnaires (approximately 290 different industry-specific manufacturing sector questionnaires were used). The Census Bureau mailed short-form questionnaires to approximately 47,000 small non-ASM establishments.

The Census Bureau mailed 13,400 questionnaires to companies involved in the mining industries. Long questionnaires were sent to all MU cases and medium and large SU companies—about 10,600 cases in all. Approximately 2,800 small SU companies (based on annual sales and employment) received one of the short forms.

Construction industries. The 2002 Economic Census covered approximately 700,000 construction establishments. Slightly more than 12,000 MU construction establishments were included in the initial mailout, but the bulk of the establishments on the census list were small SU operations with fewer than 10 employees. The Census Bureau sampled construction industries by partitioning the list into two strata; the primary frame consisted of approximately 145,000 establishments that could be classified to a six-digit 2002 NAICS code with a high degree of confidence. A stratified probability proportionate-to-size (PPS) sample of approximately 80,000 establishments was selected from this stratum. The secondary frame contained the remainder of the population, and the agency drew a PPS sample of approximately 30,000 establishments from this stratum. (Combined with the MU list, this yielded a total initial mailing for construction industries of approximately 122,000 establishments.)

[16]The finance, insurance, and real estate industries included NAICS sectors 52, Finance and Insurance; and 53, Real Estate and Rental/Leasing. The utilities trade area included NAICS sectors 22, Utilities; and 48, Transportation and Warehousing.

[17]The utilities trade area included NAICS sectors 22, Utilities; and 48, Transportation and Warehousing.

Island areas. The island areas in the 2002 Economic Census included the Commonwealth of Puerto Rico, Guam, the Virgin Islands of the United States, the Commonwealth of the Northern Mariana Islands, and, for the first time, American Samoa. All island areas MU establishments and SU employer establishments within the scope of the census were included in the census mailout. The Census Bureau compiled a mail list of approximately 47,000 addresses, which broke down into about 9,000 MU and 38,000 SU establishments (the bulk of these, about 7,500 MU cases and 40,200 SU cases, were in Puerto Rico). The Census Bureau used nine NAICS industry-specific forms for the mailout to Puerto Rico and one general questionnaire each for business sectors (or group of sectors) on Guam, the Virgin Islands of the United States, the Commonwealth of the Northern Mariana Islands, and American Samoa.[18]

Geographic Area Coding

Geographic Interface Team. The Geographic Interface Team was formed in 1999 to plan geocoding operations. The team consisted of representatives from the following Census Bureau divisions or offices:[19]

- Company Statistics Division (CSD)
- Economic Planning and Coordination Division (EPCD)
- Economic Statistical Methods and Programming Division (ESMPD)
- Geography Division (GEO)
- Manufacturing and Construction Division (MCD)
- Service Sector Statistics Division (SSSD)

The team met periodically until the summer of 2003, by which time the basic plans for the census, and the bulk of the "deliverable" geographic files for use in the census, had been completed. The redesign of the Census Bureau's Business Register for use in the 2002 Economic Census meant that many more geographic codes could be stored in the register. This eliminated the need for the Geography Division to produce several of the coding files used in the 1997 census.[20]

A major change in the geographic code structure for the 2002 Economic Census compared to earlier economic censuses involved the metropolitan area coding scheme, which had been completely restructured during the 2000 decennial census. This meant that the Census Bureau had to use the new core-based statistical areas (CBSAs) and adapt the rest of the geocoding structure to the new scheme.[21] (For descriptions of the geographic areas used in the 2002 census, see Appendix E, "Definitions and Descriptions of Geographic Areas.")

The Geography Division remained responsible for preparing geographic files. These deliverables included the following:[22]

- Updated Address Reference File (ARF) geocoding database extracted from the TIGER®[23] database.
- Updated City Reference File (CRF) derived from U.S. Postal Service (USPS) files and the TIGER® database.

[18]For more information about the census of the island areas, see Chapter 9, "2002 Economic Census of Island Areas," and U.S. Census Bureau, *2002 Economic Census of Island Areas: Geographic Area Series*, Appendix C, Methodology, May 2004, p. C-1. The individual reports for each of the island areas may be viewed online at <http://www.census.gov/econ/census02/guide/islandareas.htm>, and are available in electronic format or via print-on-demand hard copy from the Census Bureau.

[19]Memorandum from Pamela J. Coan to Shirin A. Ahmed, "2002 Economic Census Geographic Interface Team—Final Committee Report: Attachment A" (n.d.).

[20]Coan to Ahmed, et al., "Final Committee Report."

[21]Memorandum from Robert W. Marx to Shirin A. Ahmed, "2002 Economic Census Geographic Code Structure," September 23, 2002.

[22]Coan to Ahmed, "Final Committee Report: Attachment B."

[23]Topologically Integrated Geographic Encoding and Reference (TIGER®) files, the Census Bureau's principal geographic database.

- 2002 Legal Codes File and recode files to support the automated geocoding system.
- Modified automated geocoding system software to meet 2002 Economic Census requirements.
- Freestanding 2002 Economic Census Geocoding System.
- Final Geographic Area Reference File (GARF) with a link to the economic census.
- Geographic User Notes File (GEONOTES).
- CBSA Recode File.
- CBSA Appendixes File for Economic Census publications.
- Publication maps.
- Input and output formats for geocoding system software.
- Island area geocoding requirements.
- 2002 Economic Census geographic code requirements.
- 1997 to 2002 Economic Census geographic relationship file.
- GARF requirements.
- Subject review CRF requirements.

The schedule for implementation of these files ran from March 2002 (for the general 2002 census geographic code structure requirements) to August 2003 (for the finalized GARF and CSA, etc., Recode File). The principal recode and reference files are described below.

Geographic recode and reference files. The geographic recode and reference files provided the economic census staff with the information needed to provide accurate geographic area coding to the individual establishment and company records in the census mailing list, and in data processing. The files were compiled by the Geography Division, using the various geographic records available to the Census Bureau, and were provided to the Economic Statistical Methods and Programming Division for the actual preparation of the census files.[24]

- **Address Register File (ARF)**. The Address Reference File (ARF) is an extract of the TIGER® File, reformatted and reorganized to a convenient matching structure, that contains street address information (i.e., house number, street name, ZIP Code) linked to its associated state, county, tract, and block codes. Although the ARF provided block-level geocodes, higher-level geography could be derived for these geocodes as well. The geocoding system matched business addresses from the 2002 Economic Census to the ARF and generated the establishment geocodes. (The geographical information in the ARF must be current to the geocodes in the legal codes and recode files that support the economic census geocoding system.)
- **City Reference File (CRF)**. The CRF contained the "last line" address information—i.e., city, state, five-digit ZIP Code, and the appropriate 2002 place-level geography—for each record in the file. The CRF was updated using the 2002 City State File from the U.S. Postal Service, as well as the most recent updates to the Census Bureau's TIGER® and GEO-CAT[25] files.
- **2002 Legal Codes File**. The Legal Codes File contained the legal state, county, minor civil division (MCD), and place codes for 2002. The file was used to verify and edit the codes generated by the geocoding system.
- **1997 to 2002 Current Recode File**. The Census Bureau used this file to translate 1997 Economic Census geocodes to the corresponding 2002 current geocodes. (Historic geocodes are useful in resolving "tie-breaking" situations that occur during the geocoding processing). The geocoding system uses current codes in processing files, so the historical 1997 geocodes must be translated to the current codes prior to geocoding.

[24]Memorandum from Charles Willard Whittington to Michael A. Hovland, History Staff, "Re: 2002 Geocoding: Attachment," October 21, 2003.
[25]Geographic Catalog of Legal and Statistical Entities.

- **2002 Place-Level to 2002 Economic Census Current Recode File**. This recode file contained the 2002 place-level geocodes and their corresponding 2002 Economic Census geocodes. The geocoding system initially generated 2002 geocodes (i.e., geocodes that were not *economic census* geocodes). The Census Bureau used the file to translate the 2002 codes to 2002 Economic Census codes and to append any ancillary codes, then added the 2002 Economic Census geocodes and required ancillary codes to the economic census geocoding output file.
- **2002 Economic Census to 2002 Recode File**. The geocoding system used *noneconomic census* codes during the coding process, so records having 2002 Economic Census codes had to be translated to 2002 codes as input to the geocoding system. The 2002 Economic Census to 2002 Recode File was used to translate 2002 Economic Census geocodes to 2002 geocodes. Address information on records stored in the Business Register could be updated, which in turn required new economic census codes. The updated records were extracted from the Business Register and sent through the geocoding process again.
- **Final Geographic Area Reference File (GARF)**. The GARF metadata file was used to store the geographic metadata needed by the edit, review, correction, tabulation, and dissemination systems for the reports from the 2002 Economic Census and its related programs from Company Statistics Division (the Survey of Business Owners and the Census of Island Areas). The GARF includes geographies disseminated for 2002 as well as geographies used only for review and disclosure processing purposes, but does not include the ZIP Code data files, which are stored in a separate ZIP Code Reference File. (The dissemination systems included the processes that create the print/PDF reports, the CD-ROM and American FactFinder databases, the HTML tables on the economic census Web site, and the metadata that will be used to drive the geography menus and software on the CD-ROM and on the economic census Web site.[26])
- **Core-Based Statistical Area (CBSA) Recode File**. This recode file was used to recode 2002 Economic Census geocodes to the corresponding CBSA and New England City and Town Area (NECTA) codes. The recode file was delivered to the EPCD and used to provide the CBSA and NECTA codes in the Business Register that had already been geocoded. The new CBSA and NECTA codes were defined after the 2002 Economic Census geocoding process began; therefore, a recode process is necessary to derive the CBSA and NECTA codes for the coded records. This recode file contains the Federal Information Processing Standard (FIPS) state, county, and MCD codes and their corresponding CBSA and NECTA codes.
- **1997 Economic Census to 2002 Economic Census Geographic Relationship File**. This file provided geocode translations from 1997 Economic Census codes to 2002 Economic Census codes. The recode file contained the following fields for each year: place name, FIPS state and county codes, economic census place code, economic census FIPS place code, and notes explaining possible differences between each year's files. This file provided an aid to census subject-matter specialists researching economic census geography that changed from 1997 to 2002.
- **CBSA Appendixes File for Economic Census Publication**. The CSAs, metropolitan and micropolitan statistical areas, and metropolitan divisions (MDs) are described in specific GeoNotes for these statistical areas. The GeoNotes describe the geographical components that comprise the statistical areas. Specific record types exist in the GARF (see above) for each CBSA along with a corresponding geographic identifier that references the appropriate GeoNotes file.
- **Subject Review CRF Requirements**. This file was an extract of the CRF used for the 2002 Economic Census and contained postal name, state, ZIP Code, and corresponding 2002 Economic Census geocodes.

The Geocoding Process: The Freestanding Geocoding System

Conducting a mailout/mailback enumeration and processing the responses to the 2002 census required place-level geographic codes for all establishment addresses. The Census Bureau's Geography Division developed a freestanding geocoding production system that incorporated the

[26]The geography metadata that will be used on American FactFinder (AFF) will come from the GeoBucket file already in the AFF system.

geocoding software and all necessary reference files (notably the Address Reference File [ARF—see above]) to meet the geocoding processing requirements of the 1997 Economic Census.[27] The Geography Division installed the production system on the Economic Statistical Methods and Programming Division's (ESMPD's) computer platform, and the ESMPD used the coding system to apply geographic area codes to the address records on the Census Bureau's 2002 mail list.

Place-level geocodes were required for all establishment addresses, including those without a structure number and street name-type address. The geocoding system created a named output file for each "run"—i.e., for each file of individual establishment records submitted for geocoding. The geocoding system performed the following specific operations for each establishment record in each input file:[28]

- Converted input format to a generic format and prepared the data contained in each record for geocoding.
- Geocoded all records to the place level and prepared the data in each record for the street address match operation.
- Wrote uncoded place-level data to a file for research (this was done only during the initial coding pass).
- Carried out street address geocoding for all records, assigning block codes when possible.
- Merged the results from the place- and block-level geocoding operations and reconciled any inconsistencies (if possible).
- Created a final output file converting Geography Division codesets to economic census codes.

As the system completed processing each input file it, indicated whether it had successfully coded the file or not; files that had not been successfully coded were pulled from the processing cycle and transmitted to the Geography Division for resolution. Successfully coded files were released for use in preparing for census data collection (e.g., printing mailing labels) and data publication (e.g., table header and stub preparation).

ADMINISTRATIVE RECORDS

Background Information

The census first used administrative records to collect data in the 1890 enumeration, when special enumerators visited real estate recorders' offices to obtain data on individual and corporate debt. However, the Bureau of the Census 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 Internal Revenue Service (IRS) tax returns. Thereafter, administrative records obtained from federal agencies were a significant data source for the Census Bureau's economic statistical programs. In the 2002 Economic Census, for example, administrative records were used as the source of basic economic information for more than 16 million small establishments.[29]

Access to already existing administrative records and their use in the 2002 Economic Census:

- Reduced the cost to the Census Bureau of data collection.
- 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.

[27]For more details, see *History of the 1997 Economic Census*, Chapter 6, "Geographic Area Coding."
[28]The specific actions applied by each of the software files incorporated into the processing system are described under "Geographic recode and reference files" above.
[29]Paul Hanczaryk, "Source and Use of Administrative Record Data in the Economic Area," PowerPoint presentation, slide 7 (n.d.).

Obtaining the Records

Preparation. The principal sources of the administrative records used by the Census Bureau were the Internal Revenue Service (IRS), the Social Security Administration (SSA), and the Bureau of Labor Statistics (BLS). Information from these records was compiled by the Census Bureau under the confidentiality laws governing the Census Bureau and the confidentiality regulations of the supplying agencies. (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 it to supply the records to the Census Bureau.) The statistics collected by the Census Bureau could not be used for taxation, regulation, or investigation, and only statistical totals could be released to the public.[30]

The Census Bureau reimbursed the cooperating agencies for staff and other costs associated with the records transfer.

Internal Revenue Service (IRS) records. Title 26, U.S. Code, governing the operations of the IRS, specifically authorizes the agency to provide tax data to the Census Bureau for the latter's data collection programs. The Census Bureau made a specific request identifying the type of information needed and assuring the maintenance of the confidentiality of any files transferred for its use. IRS records were the primary source for data on:[31]

- Business names and addresses.
- Employment and payroll.
- Sales or receipts, interest income, gross rents.
- Broad industry codes.

The records were received weekly, monthly, or annually in electronic form from the following files:[32]

- Annual Business Master File (BMF), containing each legal entity's EIN, business name, address, and principal business 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 business activity code for all corporations, partnerships, sole proprietorships, and nonprofit organizations.

Each May, the IRS supplied its current BMF (about 24 million individual records) to the Census Bureau as a benchmark for the monthly data (the monthly updates typically involve 1 to 2 million records).[33] The Census Bureau converted the IRS's principal business activities codes into NAICS codes for the 2002 Economic Census. Establishments that could not be assigned a NAICS industry 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.

[30]Title 13, U.S. 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.

[31]U.S. Census Bureau, Administrative Records Quality Assurance Team, "Economic Directorate Administrative Records: Their Production Path and Quality Assurance," August 30, 2005, p. 7.

[32]Ibid., pp. 7–8.

[33]Hanczaryk, "Sources and Uses of Administrative Records," slide 12. For a listing of the sources of the administrative records acquired and processed by the Economic Directorate, see the table in "Economic Directorate Administrative Records," p. 9.

The total number of separate administrative records provided to the Census Bureau by the IRS for the 2002 Economic Census was about 94 million. Of this total, approximately 42 million records were drawn from the BMF, a further 22 million from the IRS form 941 Payroll File, and the remaining 30 million from the business income tax file.[34]

Social Security Administration (SSA) records. The records provided by the SSA were drawn from IRS birth[35] classification files and contained information reported to the IRS on Employer Identification Number (EIN) applications. The SSA assigned industry classifications to the IRS records, and the Census Bureau routinely requested that the IRS authorize the SSA to provide the IRS-derived files to the Census Bureau for census purposes. (The SSA provided the Census Bureau with the 1997-based NAICS codes through April 2003, when the SSA converted its operations to the 2002-based NAICS codes.[36]) About 1.7 million records were transferred by the SSA to the Census Bureau for the 2002 census.[37]

Bureau of Labor Statistics (BLS) records. The Census Bureau and the BLS signed a memorandum of understanding in 2001 regarding the use of the BLS records by the Census Bureau. Under the 2001 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 (about 2 million records annually) with the appropriate industrial classification codes and other selected data elements. Unmatched records were returned to the Census Bureau without industrial classification codes. If no other source for an industrial classification was available, unmatched records were coded based on trade name.[38]

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 Business Register. The multiestablishment portion of the Business Register 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 Register. These records were used to update payroll, employment, industrial classification code, and address information.[39] Establishments not matched to the list were added as births.

The Census Bureau used information from the administrative records to divide the census mail file into four major groups for data collection purposes:

- Multiestablishment firms, Annual Survey of Manufactures (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 2002).

Additional administrative record information (e.g., births; NAICS codes; name and address changes; 2002 second-, third-, and fourth-quarter payroll; receipts) arrived at Census Bureau headquarters throughout the first half of 2003. For the second-quarter births, the Census Bureau added the data to the census mail file and sent the appropriate questionnaires to the new businesses. Throughout census processing, the Census Bureau also used the administrative data in the Business Register to edit incoming questionnaire data. Administrative records data for nonmail and delinquent cases were edited and reviewed by the appropriate subject divisions.

[34]Ibid.
[35]"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.
[36]Carole A. Ambler, "NAICS and U.S. Statistics," Annual Meeting of the American Statistical Association, August 9–13, 1998, p. 9.
[37]"Economic Directorate Administrative Records," p. 8.
[38]Ibid., pp. 8–9.
[39]The Census Bureau staff imputed missing payroll and employment data on a continuing basis through December 2003.

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."

IDENTIFICATION NUMBERS

The Census Bureau assigned a permanent, unique, 10-digit identification number to every unit (establishment, enterprise, reporting unit) covered by the census. These identification numbers replaced the historic census file numbers (CFNs) assigned in previous censuses. Previously, for single-unit establishments, the CFN was comprised of "0" plus each establishment's nine-digit EIN. For multiestablishment units, it was previously comprised of the enterprise's six-digit identification number (Alpha), plus four digits identifying the location of the unit. This required that CFNs be changed when the organization of a business changed, such as the expansion of a single-unit business moving to a new location or opening a branch location and becoming a multiestablishment unit.[40]

The identification numbers assigned for the 2002 Economic Census were "permanent" in that they would continue to be used for the life of the unit to which they were assigned. For example, if an entity changed ownership, the permanent identification would remain unchanged. There was no ownership information embedded in the identification numbers; all ownership information for individual units was stored in the Business Register and could be accessed for any specific unit through the Links table connecting all the establishments within an enterprise to the parent record.

PRINTING AND ASSEMBLING THE MAILOUT PACKAGES

Cover Letters, Instruction Sheets, and Other Mailing Materials

General information. Questionnaires and other package materials for MU companies, as well as those for SU manufacturing and mining firms, were printed using 12 DocuPrint 92C programmable graphics printers at the National Processing Center (NPC) in Jeffersonville, IN. The census mailing packages included several other items in addition to the questionnaires: 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 2001 and 2002 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 several basic cover letters for the 2002 census, including one each for SU and MU firms, one for use for unclassified establishments, and one for companies that had previously indicated they intended to respond electronically. The letters informed recipients that federal law required them to complete and return the census questionnaires, gave the requested response date, stated that the information would be kept confidential, and provided a Web site address to contact if the addressee wished to respond electronically. Some special situations required special letters; for example, mailing packages to manufacturing establishments that were part of the 2002 Annual Survey of Manufactures (ASM) panel included a letter explaining that the survey was being integrated into the 2002 Economic Census.[41]

Instructions. The Census Bureau tried to include the necessary instructions on the various questionnaires, but supplemented these with separate instruction sheets in the mailout packages sent to firms with establishments classified in manufacturing; construction; finance, insurance, and real estate; retail trade; services industries; wholesale trade; transportation; communications; and utilities. In addition, the agency prepared and distributed a 16-page instruction manual, Form MA-10000(I), for companies on the 2002 ASM panel.[42]

[40]See "Census File Number" in U.S. Census Bureau, "Glossary of Terms Used in Processing the 2002 Economic Census," October 11, 2002.

[41]Form EC-G-1(A) was used for multiestablishment firms in the ASM sample, while the Form EC-G-L11(A) was used for single-establishment operations.

[42]See Form MA-10000(I), "Annual Survey of Manufactures Report: Information Booklet," August 27, 2002.

Inventory sheets. The census packages for MU companies 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 either were covered by the census—or were known by the Census Bureau to be out-of-scope—and to coordinate and control responses by their subsidiaries. (The Census Bureau's cover letter to MU respondents asked them to call the NPC's toll-free telephone number to ask for additional questionnaires if they believed one or more of their business establishments were in scope but had been left off the Census Bureau's inventory.[43])

Printing the Questionnaires and Other Mailing Materials

Contract printing/package assembly. The Census Bureau used private contractors to print and assemble the bulk of the census and follow-up packages for single-unit (SU) companies other than in the manufacturing and mining industries. Single-unit 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 worked through the Government Printing Office (GPO) to develop and issue the contracts used for the production of the 2002 Economic Census questionnaire packages for the retail trades; wholesale trades; services industries; construction industries; transportation and utilities; and financial, insurance, and real estate industries. The primary contractors were responsible for printing and assembling the mailing packages and could subcontract these activities, if needed, provided the resulting work conformed to the Census Bureau's quality control requirements.[44]

The GPO awarded the major contracts for questionnaires for the 50 states and District of Columbia, by NAICS trade area, between February and April 2002. The contractors began delivering these materials to the NPC near the end of May 2002 and completed final deliveries in November 2002.[45]

Table 7-1.
2002 Economic Census Single-Establishment Mailout Packages and Questionnaires Prepared by Contractors

Type of questionnaire	Package	"Loose" questionnaires
Total		
Classification questionnaires (short)	2,407,900	25,000
Long questionnaires	*9,410,000	*148,000
Retail Trade and Accommodation		
Classification questionnaires	543,400	2,000
Long questionnaires	1,912,100	28,000
Long questionnaires with flyers	36,400	1,000
Wholesale Trade		
Long questionnaires	1,696,800	40,000
Utilities and Transportation		
Classification questionnaires	112,700	1,000
Long questionnaires	466,600	8,000
Services		
Classification questionnaires	1,533,400	18,000
Long questionnaires	3,288,500	56,000

[43]Memorandum from Lawrence A. Blum to Judith N. Petty, "2002 Economic Census: Assembly and Mailout of Multiunit Mailing Packages," September 2002, p. 2.

[44]The two principal contractors for the 2002 census both did printing and package assembly. 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.

[45]U.S. Census Bureau, "2002 Economic Census Master Schedule," p. 9; and Memorandum from Shirin A. Ahmed to Frederick T. Knickerbocker, "Monthly Activity Report for November 2002," December 10, 2002.

Table 7-1.
2002 Economic Census Single-Establishment Mailout Packages and Questionnaires Prepared by Contractors—Con.

Type of questionnaire	Package	"Loose" questionnaires
Finance and Real Estate		
Classification questionnaires	216,400	4,000
Long questionnaires	898,220	19,000
Construction Industries		
Long questionnaires	610,000	13,000
Island Areas		
Puerto Rico (Spanish)	369,000	31,000
Other island areas	112,000	40,000

*These totals include 481,000 packages and 71,000 loose forms for Puerto Rico and the other island areas. There were no separate "classification" questionnaires used in the island areas.

Quality assurance.[46] The staff from the National Processing Center (NPC) in Jeffersonville, IN, monitored questionnaire printing and mailing package assembly at the contractors' production sites and also inspected the contractors' materials received at Jeffersonville. Onsite, the NPC staff monitored the printing equipment during the printing and the questionnaire and package assembly processes, as well as random samples from completed cartons of mailing packages prior to their shipment to the NPC. The Quality Assurance Staff (QAS) monitored the contractors' QA sample selection, checked to make certain that the machine counters worked properly, noted any lapses between samples and checked the counter if applicable, and selected a random sample of printed material for inspection from each machine. The inspectors checked the contractors' own quality assurance plans to ensure proper record keeping and correct sample selection.

During the printing operations, the QAS inspected all QA samples pulled by the contractor. The materials were checked for color, quality of printing, registration (i.e., colored ink "bleeding" from one section of an item into another, or failure to completely fill the appropriate area), and any loss of information (e.g., white spots, extraneous marks, damage, misalignment, color density shift, etc.). The inspectors also verified barcodes for accuracy, checked to make certain that all the pages of an assembled form were for that specific form and were in the correct order, and that the construction and printing of the envelopes matched specifications. Any defects in the QA samples were noted and referred to the QA supervisor for appropriate action.

During the assembly operations, the QAS pulled a random sample of assembled packages from each machine production run and verified that all inserts were present and in the proper sequence and that all documents in the package matched the envelope. The inspectors checked that each item was printed to specifications (i.e., color of shading and ink, quality of image), all pages were in sequential order, and that the envelopes met requirements. The 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.

The QAS also selected a sample of complete cartons of materials from each production line prior to shipment to Jeffersonville for inspection. The staff verified the number of packages in the carton and checked it against the label and checked that the label matched the contents of the carton. Three packages were selected at random from each carton for further inspection to check that the package contents were correct for the package type, were in the right sequential order, color and registration of the form(s) met specifications, and all forms and inserts matched the envelope. If any defects were discovered, the next five packages in the carton on each side of the original sample were pulled and inspected as well. If these additional packages were without defect, the carton was released; if the inspection revealed further defects, the inspector notified the QA supervisor, who determined the appropriate corrective action to be taken.

[46]The information for this section is drawn from a memorandum from Mark T. Grice to Judith N. Petty, "2002 ECONOMIC CENTER—Quality Assurance (QA) Monitoring of the Printing/Assembly Contractors," November 14, 2002.

At Jeffersonville, the mailing packages from the private printing contractors underwent a second quality assurance review.[47] The QAS selected three cartons from each pallet from shipments of one item/form type for inspection, and one carton of each item/form type shipment containing two or more kinds of forms. 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 (one each from top/front, middle, and bottom/back of reach carton) for content inspection.[48]

Any errors detected were entered on the QAS 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 verification of the entire 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.[49]

Address Labels

Description. The addresses for the 2002 Economic Census mailout packages were arranged in a maximum of 16 lines as follows:[50]

Lines	Contents
1–4	Census Bureau barcode at the top of the address area
5	Blank
6	"Eye readable" line of the barcode contents, including establishment identification number, survey code, enterprise code, form number of the questionnaire, statistical period, and letter number
7	Employer identification number (EIN), NAICS industry code, state geographic code, mail division code
8	User identification and password (for online services), sample weight, and mail flag
9	Sequence number of the package within the run, postal tray and bundle numbers
10–12	PostNet barcode and optional postal endorsement line
13–16	Name and address

Printing address labels.[51] The addresses for most single-establishment companies were overprinted onto the commercially printed and assembled questionnaires through open window envelopes using inkjet high-speed printers at the NPC. The computerized address files were created at Census Bureau headquarters and transmitted to Jeffersonville via datalink telephone lines. Approximately 3.2 million single-establishment packages were addressed from October 2002 through January 2003 for the mailout. Approximately 1 million packages were mailed in October/November and 1.9 million in December 2002, with a final 300,000 packages (containing second-quarter 2007 births) mailed in January 2003.

The NPC used the DocuPrint equipment (see below) not only to print the forms and other materials for multiestablishments (MUs) and for manufacturing and mining single-establishment (SU) packages for the census, but also to print the addresses onto the face of the questionnaires prior to the assembly of the mailing packages.

Quality assurance. The Quality Assurance Materials Audit Unit (QAMAU) at Jeffersonville conducted independent inspections of a randomly selected sample of labeled packages. The inspectors pulled a randomly selected, unlabeled mailing package for inspection during the set-up

[47]Shipments of "flat forms" did not require additional inspections.
[48]Memorandum from Mark T. Grice to Judith N. Petty, "2002 ECONOMIC CENSUS—Quality Assurance (QA) Inspection of Materials Received from Contractors," January 7, 2003.
[49]Ibid.
[50]Memorandum from Lawrence A. Blum to Judith N. Petty, "2002 Economic Census—Single-Unit Mailout-Ektajet Applications (Preassembled Mailing Packages): Attachment D," September 3, 2002, pp. 1–2.
[51]Information for this section was drawn from memoranda from B.J. Fitzpatrick to Lawrence A. Blum, "Mailout and Data Capture Branch Monthly Activity Report," October–December 2002.

operation and inspected the contents to make certain that the contents was correct for the type of package being labeled. For labeled mailing packages, the inspectors checked the first five printed labels at the beginning of each printing session (i.e., at the beginning of each work shift). In addition, the QAMAU randomly selected 40 labeled packages for inspection from the file being printed 5 times each day.[52]

The QA inspection checked to ensure that the label was:[53]

- In the proper format.
- Aligned properly.
- Entirely within the label area of the form through the envelope window.
- Not skewed.
- Legible.

The QA inspection also ensured that:

- The barcodes read/scanned correctly.
- The form number matched the label.

The inspectors reported any problems with the label, as well as any other discrepancy observed (e.g., the wrong envelope employed for the package, incorrect label/barcode format, etc.) to the printer machine operator and to the QA supervisor for corrective action.

Using DocuPrint for the 2002 Census

Background information. The Census Bureau used the DocuPrint Highlight Laser Printing System to print a significant proportion of economic questionnaires and other census materials for the first time in the 1997 Economic Census. Prior to that time, the agency depended almost entirely on private printing contractors to print questionnaires, letters, and other materials, which then had to be overprinted with addresses and manually assembled prior to mailout. In the 1997 and 2002 censuses, the Census Bureau used its own DocuPrint equipment to produce all of the materials for the multiestablishment mailing packages, as well as single-establishment questionnaires for the manufacturing and mineral industries.

The DocuPrint systems were able to print highlight color forms identical to those printed by outside contractors, but also could add variable data and text to customize each establishment's questionnaire, collate and staple forms of up to 50 sheets, and produce a complete establishment package in a single printing "pass." Using the DocuPrint system enabled the Census Bureau staff to closely monitor the production process and made the questionnaire package assembly much more efficient. For the 2002 census, the Census Bureau used 1 DocuPrint NPS 92C system at its headquarters in Suitland, MD, for test printing runs and 12 NPS 92C systems at the National Processing Center (NPC) in Jeffersonville, IN, for production. Each of these systems printed 75 to 85 pages per minute for a combined production capacity of 900 to 1,000 pages per minute.[54]

DocuPrint printing and package assembly. Programmers at Census Bureau headquarters and at the NPC prepared PostScript print runs selected from 4,626 different individual stored questionnaire pages to create 545 different questionnaires, as well as the associated letters, instruction sheets, and other materials for the multiestablishment (MU) and Manufacturing/Mining Single Unit (SU) mailing packages. The DocuPrint system stored all the questionnaires and other forms used

[52]U.S. Census Bureau, "2002 Economic Census Single-Unit Mailout; Quality Assurance Instructions: Label Imaging of Pre-Assembled Mailing Packages," Attachment G-1.
[53]Ibid.
[54]Elizabeth Busse, "Improve Forms Management: Centralize Your Forms Collection Across DocuPrint Printer Fleets," XPLOR International Global Document Conference and Exhibit, Atlanta, GA, October 27, 2003.

in the census mailing packages electronically so that the images could be accessed at will. The system drew all the files needed from its own database to customize, print, and assemble specified census questionnaires and packages, eliminating the need to manually assemble packages before mailout.

The Document Services Branch (DSB) of the NPC carried out DocuPrint production for the initial, follow-up, and correspondence operations of the 2002 Economic Census. Production at the Jeffersonville, IN, facility extended from late October through January 2003. The operation involved printing more than 18.6 million individual pages. The MU package materials (cover letter, questionnaires, and any other forms) for each company were printed in order of assembly and manually inserted into outgoing envelopes. Gunther finishing equipment was used to assemble the DocuPrint-produced SU packages. (The automated equipment was programmed to staple, fold, and assemble packages using the printed barcodes on each sheet and the number of sheets for each questionnaire or other form.[55])

Quality assurance: printed materials. The Quality Assurance Printed Materials Unit (QAPMU) monitored the printing operations and reported the results to the DSB for any corrective action needed. The QA process covered all the materials printed on the DocuPrint equipment, including MU packages, manufacturing SU, classification and general questionnaires, consolidated forms, follow-up letters, and instructions and flyers. The QA operation involved the following inspections:[56]

1. A 10-percent sample of the first production file printed for each print file type.
2. Daily monitoring of the printing operation.
3. Special handling for "other" small files.
4. Sample inspection of all reprinted material.

For the 10-percent sample, the QA inspectors chose a "start with" number from a random number table, and every 10th company package or item thereafter, for inspection until reaching the end of the file. The inspectors checked for any printing defects and for the correct address label format; that the package barcode, and the individual page barcodes on each form, were present and could be properly read; and that the package contained the correct questionnaires or other forms.[57]

Once the first production file for a file type was accepted, daily monitoring was used for that file type. Inspectors selected one file from printing each shift (not one file of each type), and inspected one company package for programming defects (e.g., the label barcode read properly and the correct label format was used). The inspectors then selected two additional company packages to check for printing defects. If the inspection found no program or printing defects, the file was accepted. If only printing errors were detected, the file was held and an expanded inspection 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 EPCD staff for instructions to take further action on the file.[58]

Quality assurance: package assembly. Slightly different QA routines were used for packages assembled using the Gunther finishing machines and those done using the mechanical inserters or manually assembled. The staff programmed the finishing equipment to select a sample from each assembled file for inspection, consisting of the first 10 packages for content, followed by every 100th package in the file. The QAS manually checked for the correct contents in each

[55]Ibid.

[56]Memorandum from Mark T. Grice to Judith N. Petty, "2002 Economic Census—Quality Assurance (QA) of the Initial Follow-Up and Correspondence Printing Operations (DocuPrint)," November 27, 2002, pp. 5–9.

[57]Ibid., pp. 5–6.

[58]Ibid., pp. 7–8. The "expanded" inspection selected one company package on each side of the defective package in the work unit and inspecting their materials. If further defects were found, the inspectors moved on to the next two company packages preceding and succeeding the defective package and continued until no errors were identified, or until the next/previous selected company was reached.

sample package, the appropriate survey code for the file in the package label, and the correct sequence number of the sample package (i.e., 1–10, 110, 210, 310, and so on). The staff notified the QA supervisor of any defective packages and that corrective measures were required by DSB.[59]

For packages assembled using the Gunther equipment without using the printed barcodes, by the mechanical inserting equipment or manually, the QAS conducted a completeness check to assure that all sequence numbers were correct for the file and that the correct label information was present in the envelope window of all packages. If a sequence number was missing, the staff checked the preceding and succeeding packages until all defects in the file had been identified and the QA supervisor was notified for corrective action. When label information was not present in the package envelope window, the staff opened the package and checked the contents. If all the contents were present, but had been assembled incorrectly, the staff marked the package for correction.[60]

PRE-CENSUS COMPANY CONTACTS

Advance Information

Each economic census has seen improvements in the information and assistance offered to companies. Beginning with the 1987 Economic Censuses, the Census Bureau mailed information on the upcoming enumeration to a selection of the largest companies in the year preceding the mailing of the census questionnaires. For the 1997 census, the mailout was done in November of the year *prior* to the census reference year. For the 2002 Economic Census, the Census Bureau delayed the advance mailing until the early spring of the census year. This change was made in response to feedback received from companies in the 1997 Economic Census.[61]

In the 2001 Company Organization Survey (COS) mailout in December 2001, the survey packages to targeted companies in the survey sample included an economic census "alert" message informing them of the mailing of the census advance information and describing the relationship between the census and the annual "Report of Organization"—essentially letting the companies know about the upcoming economic census and that they would not be receiving the "Report of Organization" at the end of 2002.[62]

In March 2002, the Census Bureau mailed the advance information packages to approximately 9,000 large and medium companies and their subsidiaries. The companies were selected from the Census Bureau's Business Register, based on the total number of employees reported in the 2001 Report of Organization, and represented about 50 percent of all the economic activity covered by the census. (For more information on this mailing, see Chapter 6, "Promoting the Census and Product Awareness."[63])

Account Manager Program

The purpose of the Census Bureau's Account Manager Program was to establish a working relationship with large companies to assist them in their complete and accurate response to the economic census. About 1,000 of the largest companies that received the advance information packages also were assigned an Account Manager, an analyst within the Economic Directorate division staffs (subject-matter specialists from the Company Statistics Division, Economic Planning and Coordination Division, Manufacturing and Construction Division, and Service Sector Statistics Division) to serve as agency contacts for that company.[64]

[59]Memorandum from Mark T. Grice to Judith N. Petty, "2002 Economic Census—Quality Assurance (QA) for Machine-Assembled Mailing Packages," November 21, 2002, pp. 4–5.
[60]Ibid., p. 5.
[61]Robert A. Marske and Laurie Torene, "Promoting Business Response to the 2002 Economic Census," Meeting of the Census Advisory Committees: American Marketing Association, October 18–19, 2001, p. 4.
[62]Ibid., p. 6.
[63]Memorandum from Shirin A. Ahmed to Frederick T. Knickerbocker, "Monthly Activity Report for March 2002," April 2002, p. 2.
[64]Memorandum from Robert A. Marske to Shirin A. Ahmed, "Findings from the 2002 Economic Census Account Managers Surveys," March 18, 2004, p. 1.

The criteria for company selection for the program were (1) a company's importance to a specific industry or industries and (2) the company's likelihood of having difficulty with census reporting or not responding at all (based on previous experience). Companies were nominated by subject branches within the concerned Economic Directorate divisions. Each staffer assigned to the program was responsible for managing 5 to 15 companies' "accounts."

The account managers made their first contacts (by telephone or e-mail) to their assigned companies in April 2002, following receipt of the returned Contact Exchange Cards,[65] or following up with companies that had not responded. The formal relationships continued until receipt of the completed census forms. (See Chapter 6, "Promoting the Census and Product Awareness," for more details on this program.[66])

Company Information Updates

As Contact Exchange Cards were returned by companies, the Census Bureau entered the updated information into the CRM Remedy database (see Chapter 6, "Promoting the Census and Product Awareness" for more information about the CRM Remedy software application). CRM Remedy generated e-mails notifying the account managers of the response so that they could contact their assigned companies to introduce themselves and offer further assistance.

The Census Bureau compiled files to update company names, contacts, and affiliation based on the information reported by companies on their Contact Exchange Cards or in subsequent follow-up telephone calls.[67] All information that would affect the preparation of the mailing packages (e.g., mailing address, creation of new mailing parts, or change of format [electronic or paper format]) was used to prepare corrected packages.

[65]Contact Exchange Cards were mailed in early 2002 with the Advance Information asking establishments to identify an individual within the organization who would be responsible for completing and/or overseeing the completion of the census questionnaire(s).

[66]Marske and Torene, p. 3.

[67]Ibid., p. 4.

Chapter 8.
Data Collection and Processing

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CLASSIFICATION MAILOUT

Background Information

The American economy is not static. Every year, thousands of new businesses appear (over the past decade, each year has seen more than 500,000 new businesses start up) and old ones disappear or change to adapt to new conditions. The objective of the economic census is to collect, tabulate, and publish statistical data on economic activity in the United States, and this requires that each business enterprise be accurately identified and its type of activity properly classified. The U.S. Census Bureau used the Standard Industrial Classification (SIC) Code from the early 1940s until 1997 to categorize economic activity within the United States. For the 1997 census, the agency introduced the North American Industry Classification System (NAICS). The NAICS updated the industrial classification system of the United States, doubling the number of defined primary areas of economic activity from 10 SIC "divisions" to 20 NAICS "sectors." In addition, NAICS defined several hundred entirely new industries within the U.S. economy.[1]

The introduction of NAICS in the 1997 census was, however, incomplete; the SIC Code continued in use for industry classification in construction industries and for the island areas (Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands).[2] For the 2002 Economic Census, the NAICS was extended to cover construction industries, and the island areas—which also expanded for 2002 to include American Samoa—structural revisions for the information sector, as well as additional U.S. industry detail for the retail trade sector. In addition, the wholesale trade sector was revised to reflect production function differences between those wholesalers that take title to goods and those that do not, and to account for the growing business-to-business electronic markets.[3]

These changes placed a further premium on the accurate classification of economic activity, particularly with respect to identifying and classifying new businesses. As part of preparations for the 2002 Economic Census, the Census Bureau conducted a special classification questionnaire mailing at the end of October 2002. The agency sent classification questionnaires to businesses for which it lacked the information needed to determine the correct NAICS industrial classification. For the most part, the companies involved were small single-establishment firms that would not receive a census long form if their classification information had been complete. Two general classification forms were used—Form NC-99023, "General Classification Report," and Form NC-99026, "Classification Report." Form NC-99023 was a six-page questionnaire used for establishments for which the Census Bureau had sufficient information to identify its activity by NAICS industrial sector. The form asked for the respondent's employer identification (EI) number, physical location, and if the establishment had any leased employees, and asked the recipient to check off the establishment's principal business or activity over the previous 12 months. The two-page Form NC-99026 asked the respondent for the establishment's EI number and physical location, to check off a box indicating the major type of activity during the previous year ("Construction, Manufacturing, or Other—*Specify Activity*"), and to check off the box that best described their specific business activity.[4]

In addition, the Census Bureau included 30 separate economic sector classification forms[5] in the mailout to collect additional classification information on those establishments for which it lacked sufficient data to permit allocation to specific industries. These forms asked for physical location, kind of business or activity, and operational status.

Classification Mailouts

In late October 2002, the Census Bureau mailed classification questionnaires to 1,013,956 establishments selected from the 2002 Economic Census mail list. Individual establishments were

[1]For more information on the development and implementation of the NAICS, see Chapter 3, "Industry and Product Classification."

[2]See U.S. Census Bureau, *History of the 1997 Economic Census*, Chapter 3, "Introduction of the North American Industry Classification System (NAICS)."

[3]See the *Federal Register*, April 20, 2000 (Volume 65, Number 77), pp. 21,245–21,250.

[4]The various classification forms used in the 2002 Economic Census are accessible electronically at <http://help.econ.census.gov/econhelp/class/classforms.html>.

[5]Ibid. These forms were used primarily for establishments in the various services sectors, wholesale and retail trades, and in the trucking industry within the warehousing and transportation sector.

included in the classification mailout if the Census Bureau determined that the industrial classification information available was insufficient to firmly identify the principal economic activity of the establishment.

Although the census mail list was compiled prior to the initial mailout, the Census Bureau continued to add listings for new businesses ("births") identified from Internal Revenue Service (IRS) and Social Security Administration (SSA) administrative records throughout 2002. Thousands of new businesses identified in the third and fourth quarters of 2002 also had to be included in the census. By the time of the general census mailout the following December, the Census Bureau had identified a further 224,666 single-establishment addresses that could not be accurately classified and sent them classification questionnaires in the census mailout.[6] (Generally, these were small establishments that would not have been sent a "long" form if their classification information had been complete.)

Processing

The responses to the classification mailouts were received and processed at the Census Bureau's National Processing Center (NPC) in Jeffersonville, IN. After check-in, clerks reviewed the forms to determine the responding business's industrial classification and then referred the questionnaires for any additional processing required. The information about the primary economic activity of each establishment was used to update the Census Bureau's Business Register, while the basic business data from the long form questionnaires (receipts, payroll, employment, and NAICS classification) were keyed and added to the respective industry files.[7]

CENSUS MAILOUT

The Census Bureau mailed 2002 Economic Census questionnaires or classification questionnaires to approximately 4.4 million addresses in the second half of December 2002, with response requested by February 12, 2003.[8] In January, the National Processing Center (NPC) mailed an additional 143,138 questionnaires and 224,666 classification forms to single-establishment (SU) companies that had begun operations during the second quarter of 2002 (i.e., "second-quarter births"). Together, these initial mailouts totaled approximately 4.8 million census and/or classification questionnaires. The counts of questionnaires and classification forms mailed, including single-establishment second-quarter births, by type of trade area, are shown in Table 8-1.

[6]Memorandum from B. J. Fitzpatrick to Lawrence A. Blum, "Monthly Activity Report—October 2002," p. 1.
[7]U.S. Census Bureau, National Processing Center, "DSB Current Mailout Schedule: 2002 ECON (2003 Mailouts)," October 5, 2004, p. 1. Hereafter referred to as "DSB Current Mailout Schedule."
[8]U.S. Census Bureau, "TABLE1-1-0923.text: 2002 Economic Census Mail Counts" (September 2003).

Table 8-1.
Initial Mailout: 2002 Economic Census

Trade or geographic area	Multiestablishment questionnaires			Single-establishment questionnaires			
	Total	Long	Consolidated	Total	Classification	Long	Short
Total	**1,543,135**	**1,534,115**	**9,020**	**3,231,568**	**1,238,622***	**1,942,986**	**49,960**
Company report (Form NC-99001)	77,487	77,487	0	0	0	0	0
General classification (Form NC-99023)	0	0	0	171,843	171,843	0	0
Construction	12,391	12,391	0	540,507	423,755	116,752	0
Mining	6,087	5,444	643	10,978	3,710	4,494	2,774
Manufacturing and Annual Survey of Manufactures (ASM)	65,504	65,504	0	166,724	34,255	85,283	47,186
Wholesale trade	118,378	118,378	0	288,468	0	288,468	0
Retail/accommodations/food services	566,451	566,451	0	575,181	130,563	444,618	0
Utilities/transportation/warehousing	46,274	45,097	1,177	99,123	25,544	73,579	0
Finance/insurance/real estate	176,583	170,416	6,167	232,422	51,598	180,824	0
Service industries	465,069	464,036	1,033	1,108,513	397,354	711,159	0
Puerto Rico	7,537	7,537	0	32,683	0	32,683	0
Guam	547	547	0	2,123	0	2,123	0
Northern Mariana Islands	254	254	0	862	0	862	0
U.S. Virgin Islands	473	473	0	1,898	0	1,898	0
American Samoa	100	100	0	243	0	243	0

*Single-establishment counts include 367,804 second-quarter "births," mailed in January 2003.

ELECTRONIC REPORTING

Background Information

The 2002 Economic Census marked a major commitment toward expanding the use of electronic reporting. Businesses responding to the 2002 Economic Census could report using electronic forms obtained from the Internet, or by using the conventional paper form received in the mail. Companies could also use the software to report electronically using spreadsheets.

The Census Bureau developed a computer self-administered questionnaire (CSAQ)—an executable computerized questionnaire on the client PC—as the principal electronic data collection instrument for the 2002 census. The automated questionnaire controlled the flow of survey questions, provided instructions and help, and included edit checks performed as the data were entered by the respondents. (The Census Bureau used CSAQs on a limited basis in the 1997 Economic Census, when the agency contracted a private company to develop an electronic questionnaire on diskette.) In both cases, respondents installed and ran the program from the diskette on their personal computer and completed their responses by mailing the diskette or transmitting the data to the Census Bureau electronically. The CSAQ enabled companies to easily report similar information on each of its establishments. Respondents choosing the CSAQ were required to have computers operating with Windows 95 or higher. Internet respondents required Internet Explorer 4.0 or Netscape Communicator 4.0. (The Internet hardware infrastructure used in the 2000 Decennial Census of Population and Housing, housed at the Bowie, MD, computer center, was used for 2002 Economic Census electronic reporters.)[9]

Data Collection

All businesses selected for the economic census were mailed paper questionnaires or notices to respond electronically. The questionnaire packages included the information respondents needed to access the Census Bureau's Internet site and download the electronic questionnaire, as well as a username and password.

[9]Information on the CSAQ and electronic reporting was available at the Business Help Site established by the Census Bureau for the 2002 Economic Census at <http://help.econ.census.gov/econhelp/electronic/>. The agency's Internet help page could be accessed by entering the 2002 Economic Census Web site and clicking on the "Get help with your form" button. This page contained individual form instructions, frequently asked questions, and contact information (encrypted e-mail, telephone, and postal address) if additional assistance was needed.

Respondents who were unable to find answers to questions in the information received in the mailed questionnaire package or CSAQ had the option of visiting the Census Bureau's Internet help page, calling a toll-free number to receive assistance, e-mailing questions, and/or writing to a postal address to request assistance. Telephone and e-mail assistance was available for the 50 states, the District of Columbia, and the island areas from 8 a.m. to 8 p.m., Eastern Time. Paper correspondence was directed to the National Processing Center in Jeffersonville, IN.

Confidentiality of electronic responses to the census was ensured through encryption, the process of disguising information so that it cannot be deciphered (or decrypted) by anyone but the intended recipient. The data sent over the Internet between respondents and the Census Bureau's servers was encrypted using 128-bit encryption for Netscape Communicator 4.0 and Internet Explorer 4.0 (and above) and the Secure Sockets Layer (SSL) protocol.[10]

In the 1997 Economic Census, a total of 815 companies, representing more than 324,724 individual establishments, responded electronically. For the 2002 Economic Census, *any* company with the technical capability could respond electronically if it wanted to do so. As a result, the Census Bureau received electronic responses from approximately 14,000 companies, representing 482,346 individual business establishments.[11]

FOLLOWING UP THE CENSUS MAILOUT

Background Information

The 2002 Economic Census used separate mail follow-ups for single-establishment and multiestablishment companies. The Census Bureau remailed questionnaires to nonrespondent companies, several times in many cases, and also conducted telephone follow-ups to large multiestablishment firms that remained nonrespondent. The NPC conducted the mail follow-up operations from the end of February through the middle of August 2003. The telephone operations began prior to the requested response date for the initial census mailing (February 12, 2003) when Census Bureau staff contacted selected large companies to confirm that the census packages had been received, and continued through September 2003.

The Census Bureau established follow-up close-out dates; i.e., the latest dates at which a received response would result in the respondent's address being checked to avoid follow-up, for each major type of mailout package—classification, multiestablishment, single establishment, and second-quarter births (see Table 8-2 for mailout totals). Following each follow-up closeout date, Census Bureau headquarters staff used computerized check-in files to generate lists of nonrespondent addresses for the follow-up mailings.

The follow-up mailings were carried out in successive phases according to type of mailout package—classification; multiestablishment, single-establishment ASM; single-establishment; Manufactures/Minerals; and so on—over a period of as much as several weeks each. The NPC carried out four general follow-up mailings between the last week of February and the last week of June 2003.[12] The first closeout date for each follow-up and the final date for mailing for each follow-up were as follows:

Follow-up	Last closeout date	Last mailout date
First	03/07/03	03/21/03
Second	04/15/03	04/29/03
Third	06/04/03	06/19/03
Fourth	08/05/03	08/21/03

Large multiestablishment companies that remained delinquent after the second mail follow-up were subject to telephone follow-up, and contact listings were generated for that effort after the

[10]These specifications were given on the Business Help Page (see footnote 9).
[11]Memorandum from M. Diane Harley to Bernard J. Fitzpatrick, "Monthly Activity Report—January 2004," January 30, 2004, p. 1.
[12]"DSB Current Mailout Schedule," pp. 1–2.

second, third, and fourth follow-up close-out dates. In the last follow-up, companies that had not responded, but had requested a time extension to do so, were followed up as well.[13]

Mail Follow-Up

Single-establishment follow-up. Each type of respondent was subject to specific follow-up procedures. ASM single-establishment nonrespondents were mailed a letter requesting response in March 2003 while two questionnaire follow-ups were conducted in April and June 2003. Each questionnaire mailout package included a cover letter requesting response, the appropriate questionnaire, any instructions required, and a return envelope.[14]

A selective fourth follow-up mailing, to single-establishment nonrespondents with estimated annual payrolls of $200,000 or more, was carried out in August 2003.

Classification nonrespondent cases were followed up twice, with mailouts of questionnaires in March and April 2003. The first closeout date for the classification follow-up was March 1, and the follow-up mailing was carried out over the following week. Each packaged included a cover letter requesting response, a classification form, and a return envelope.[15]

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

	Package type	End closeout date	Packages mailed
First follow-up:			
ASM cases	Letter	03/06/03	10,248
Non-ASM, excluding classification	Questionnaire	03/07/03	922,238
Classification	Questionnaire	03/01/03	418,514
Second follow-up:			
Single establishment, except classification	Questionnaire	04/15/03	649,164
Classification	Questionnaire	04/08/03	257,202
Third follow-up:			
Single establishment	Questionnaire	06/03/03	458,215
Fourth follow-up:			
Single establishment	Questionnaire	08/06/03	38,268

Multiestablishment follow-up. The follow-up procedures for multiestablishment (MU) companies varied by the size of the company involved, whether the firm was totally or only partially delinquent, and whether the company involved had requested and been granted a time extension for response. The follow-up mailings and listings done were as follows:[16]

For large and medium size ("L" and "M" companies, respectively[17]) firms:

- Totally delinquent companies—those that had not responded at all by the cut-off date following each mailout (see Table 8-3) and had neither requested nor received a time extension were scheduled for up to four letter follow-up mailings. The first follow-up in each case was by letter only, but telephone follow-up listings were generated after the close-out dates for each of the succeeding close-out dates, and telephone calls were made to these companies following the second, third, and fourth letter follow-ups, if necessary.

[13]Memorandum from B. J. Fitzpatrick to Judith N. Petty, "2002 Economic Census, Multiunit Mail Followup Procedures, Attachment A—2002 Economic Census Follow-up Plan," February 26, 2003. Hereafter referred to as "Multiunit Mail Followup Procedures, Attachment A."

[14]Ibid.

[15]"DSB Current Mailout Schedule," pp. 1–3.

[16]"Multiunit Mailout Procedures, Attachment A."

[17]The designations "'L,' 'M,' 'N,' and 'S' companies" were not statistical data collection, tabulation, or publication categories, but were "in-house" designations used by the Census Bureau for companies based on the intensity of follow-up they would receive.

- Partially delinquent companies—those companies that had returned at least one questionnaire but with no time extension requested or received—were followed up with two letter/delinquent establishment listing mailings and by up to two telephone follow-up calls.
- Totally delinquent companies that had requested time extensions for response were followed up with by up to two letter mailings.
- Partially delinquent companies with unexpired time extensions were subject to one letter/delinquent establishment listing follow-ups.

For smaller ("N" and "S") multiestablishment companies:

- Totally delinquent "N" and "S" companies with no time extension requested were subject to three letter follow-up mailings. If a company remained delinquent after the May 15 closeout date for the third follow-up, it was sent a complete census questionnaire package.
- Totally delinquent "N" and "S" companies that had unexpired time extensions were sent two letter follow-ups after the February 26 closeout date.
- Partially delinquent "N" and "S" companies, whether they had requested time extensions or not, were sent up to two letter/delinquent establishment listing mail follow-ups.

The close-out dates and package mailout counts for the MU company mail follow-ups are shown in Table 8-3.[18]

Table 8-3.
Multiestablishment Follow-Up Mailings

	Package type	End closeout date	Packages mailed
First follow-up:			
Totally delinquent, no extension	Letter	02/26/03	77,205
Second follow-up:			
Totally delinquent, no extension	Letter	04/01/03	50,942
Third follow-up:			
Partially delinquent, no extension	Letter/listing	05/16/03	7,381
Totally delinquent, no extension	Letter	05/15/03	37,257
Totally delinquent, unexpired extension	Letter	05/15/03	4,122
Fourth follow-up:			
Partially delinquent, no extension	Letter/listing	06/19/03	4,805
Partially delinquent, unexpired extension	Letter/listing	06/19/03	748
Large companies, totally delinquent, no extension	Letter	06/17/03	1,137
Small companies, totally delinquent, no extension	Questionnaire	06/20/03	28,069
Other, totally delinquent, unexpired extension	Letter	06/17/03	2,105

Telephone Follow-Up

The Census Bureau supplemented the mail data collection and follow-up operations with telephone follow-ups targeting selected nonrespondent large and medium-sized companies. The NPC generated worksheets listing delinquent establishments (sorted by size code) and used them in conducting the telephone follow-up operation. The Census Bureau's staff conducted the telephone follow-up in three phases following the April, May, and June 2003 mail close-out dates for multiestablishment mail follow-up. An additional telephone follow-up was added for September.

The NPC telephone staff attempted to contact companies (except "L" companies, which were contacted by Census Bureau headquarters staff) referred for telephone follow-up to: (1) remind them to file their census reports, (2) determine when each nonrespondent company would be filing, and (3) provide assistance if required. Some companies were subject to more than one telephone contact, depending on their filing status.[19]

[18]"DSB Current Mailout Schedule," pp. 1–2.
[19]Memorandum from B. J. Fitzpatrick to Judith N. Petty, "2002 Economic Census, National Processing Center Telephone Unit Followup Procedures," April 2, 2003, pp. 1–3.

The first telephone referral list worksheets were generated following the April 1, 2003, mail response closeout date. Worksheets were generated for some 3,045 totally delinquent companies that had not requested a time extension. After the May 15 closeout date, the NPC generated worksheets for 2,580 totally delinquent companies—including 988 companies with unexpired time extensions—plus work sheets and establishment listings for another 1,038 nonrespondent multiestablishment companies that had not requested a time extension. The third referral to the telephone staff was made after the June 19 mail closeout date, when 1,694 totally and 820 partially delinquent firms were listed for telephone follow-up. The final telephone worksheets were generated in September. Worksheets were printed for 654 totally delinquent companies without time extensions and worksheet/delinquent establishment listings were printed for 899 partially delinquent companies without time extensions.[20]

The NPC and Census Headquarters staffs prepared folders containing the company worksheet (and establishment listings for partially delinquent companies) and forms for recording telephone calls for each company referred for telephone follow-up. Nonrespondent companies were called in descending payroll order (i.e., the largest companies were contacted first) and the interviewers tried to speak with the census contact person listed on the company's worksheet. The interviewers updated the worksheets with information on each contact (or failed attempt to contact) and noted any actions requested, such as requests for time extensions or information on electronic response. If no contact person was listed on a company worksheet, the interviewer asked for the person at the company responsible for filing government reports.[21]

PROCESSING DATA FROM ADMINISTRATIVE RECORDS

The Census Bureau sampled, at varying rates, each NAICS sector's census mail universe of nonemployer and small companies to develop estimates for specialized data (e.g., merchandise-line sales in transportation; sources of revenue for finance, insurance, and real estate). The bulk of the information on nonemployers (i.e., with no employees other than the owner) and small employers,[22] however, was drawn from the Census Bureau's Business Register and administrative records files. The Census Bureau obtained about 94 million records in electronic form from the Internal Revenue Service (IRS), 1.8 million Social Security Administration (SSA) birth (new business) records, and 1.6 million Bureau of Labor Statistics (BLS) records during 2002 Economic Census operations.[23] (See Chapter 7, "Preparations for Data Collection," for more information on the Census Bureau's acquisition of administrative records.)

The Census Bureau identified, accumulated, and edited administrative records for nonemployer firms and extracted basic data for these companies and for selected small employer companies not included in the mail sample. The agency compiled data on kind of business, sales and receipts, and geographic location for nonemployer and small-employer companies in the NAICS sectors, except Wholesale Trade, in scope of the economic census.[24] Records for businesses that did not meet the minimum criteria for census coverage, and probable duplicates of employer businesses, were deleted from the data file. Once the nonemployer files for each sector were edited and the necessary information extracted, the resulting data file was transmitted electronically to the appropriate subject-matter division staff for tabulation and analysis.

[20]"DSB Current Mailout Schedule," pp. 1–3.

[21]The Census Bureau had carried out a pre-census mailing to multiestablishment companies with a minimum of 1,000 employees—9,035 firms in all—to establish initial contact for the census, identify a contact person at the company for the census, and alert the company to the imminence of the census to permit them to plan for and allocate resources needed to respond. For more information on this program, see the "Pre-Census Contacts" section of Chapter 7, "Preparations for Data Collection," and Chapter 6, "Promoting the Census and Product Awareness."

[22]A "small" employer firm was defined slightly differently depending on the NAICS sector involved. Generally, small firms were single-establishment companies that met specified minimum annual sales and payroll levels. The number of employees varied by sector, from 1 to 3 paid employees in retail firms to as many 10 in transportation and utilities.

[23]Paul Hanczaryk, "Sources and Uses of Administrative Records Data in the Economic Area," slide 20 (n.d.).

[24]Administrative records could not be used for wholesale trade establishments because the data available for agents and brokers generally reflected commission receipts rather than gross dollar volume of business conducted.

PROCESSING THE QUESTIONNAIRES

Transmittal Tracking System

The Census Bureau used the Transmittal Tracking System (TTS) to track the movement of paper documents moving from one processing unit to another. Each processing unit created a computer-generated transmittal document for the questionnaires and associated documents (a "breaker sheet"—see below for "batching") materials prior to their referral to the next unit. The TTS retained the computerized record of the progress of the work while the paper copy accompanied the documents as they moved from unit to unit. The transmittal document showed a count of the number by type of documents and of each sending and receiving unit.[25]

Receipt and Check-In

General information. The NPC began checking in 2002 Economic Census questionnaires late in December 2002. The check-in system used 56-pocket laser sorters at the Jeffersonville, IN, office to read the barcodes on the questionnaire address labels and sort the bulk of the mail receipts. The check-in file was used to identify nonrespondent establishments and companies for further mail follow-up or for referral to the telephone follow-up operation.

Barcode check-in, sorting, and batching. Multiestablishment (MU) receipts were checked in as part of the batching for imaging operations that preceded scanning and data capture. The batching operation encompassed the following activities:[26]

- Recording the receipt of questionnaires from SU and MU companies.
- Inspecting and sorting packages and/or questionnaires for correspondence, missing census file numbers (CFN),[27] label pages (front pages), or other situations requiring analyst's review or repair (questionnaires identified for analyst's review were checked in and then referred for review).
- Inspecting questionnaires for torn pages, badly marked-up front pages, and similar situations that would cause problems at scanning (these questionnaires were flagged after check-in and sent to the Directory operation for repair).
- Transcription, if necessary, of CFNs on any classification forms returned by a respondent.
- Batching questionnaires for scanning and data capture.
- Printing the breaker sheet (a cover sheet for the batch, listing the CFNs for all the questionnaires in the batch and a batch identification number assigning processing priority).

The processing operation used the original postal containers to keep all the questionnaires for MU companies together until batching was completed.[28] MU and SU receipts were processed separately, MU receipts first, but the basic procedures used for check-in and batching were similar.

[25]U.S. Census Bureau, "Batching Single Unit Questionnaires (Flow Chart Box 1)," November 14, 2002. Hereafter referred to as "Batching Single Unit Questionnaires."

[26]U.S. Census Bureau, "Procedures for Check In and Batching of Multiunit Questionnaires Including Procedures for Screening for Analysts Review," December 20, 2002, pp. 1–2. Hereafter referred to as "Check In and Batching of Multiunit Questionnaires."

[27]For 2001 and earlier reference periods, the CFN was a 10-digit identification number used by the Census Bureau as a unique establishment identification; for single units, it consisted of the nine-digit employer identification number (EIN) and a zero prefix. For multiestablishments, the CFN consisted of the "parent" enterprise's six-digit *alpha* with a four-digit *plant number* appended as a suffix. For 2002 and later reference periods, CFNs were replaced with 10-digit serialized identifications called SURVUNIT_IDs, which did not embed any changeable ownership information. The legacy CFNs were recorded as historical data for all *establishments*.

[28]Three standard containers were used: a flat envelope with a capacity of up to 130 individual paper sheets; a large Tyvak postal envelope that could hold up to 500 sheets; and a large postal box container with space for more than 500 sheets. Once all the questionnaires in a container had been successfully batched, the container was destroyed.

Receiving area clerks slit open the envelopes or boxes containing the questionnaires and forwarded them to the check-in/batch work area; MU receipts for each company were kept together in individual containers (i.e., postal service envelopes or boxes) while SU receipts came to the batching workstations either in bundles or in postal trays.[29]

Batching clerks used the computerized processing system for checking in and batching the questionnaires. The clerks removed the questionnaires from the containers or bundles and sorted the contents; meaningful correspondence (including any with reference to contacting the President, a Senator, or member of Congress), unrelated materials (e.g., brochures), and damaged questionnaires (including questionnaires with missing pages) were referred to the Directory Unit for repair or further referral. Undamaged questionnaires were removed from the container and their identifying barcodes were read into the system. The forms for the largest MU companies (those with 400 or more individual sheets in their package) were checked in first using a template based on the barcode to maintain a count of the pages as they were batched. A screen box popped up when the template identified a questionnaire that could have optional pages and asked for a count of these pages. The batching clerk counted the number of pieces of paper without page numbers and entered this number in a screen box reading "Additional Sheets" (the front and back of a piece of paper counted as one sheet).[30]

After the barcodes for SU receipts were "wanded" or keyed into the system, the software identified each questionnaire as an SU form, and the SU batching screen appeared on the clerk's monitor. The clerk then was able to enter the questionnaire barcode ID, electronically flag any problem questionnaire for repair or analyst review and, once the batch has been assembled, forward the file appropriately, and clear the screen for the next job. The batching software maintained a running sheet count so that the clerks could monitor batch size (exceeding the 400-sheet count by a few sheets was not a problem; the maximum batch size allowed was 450 sheets). Once the batch was sent and accepted by the computer system, the clerk forwarded the batched paper questionnaires to the post-batching area, where cover sheets were attached before each batch was sent for scanning (see "Scanning the questionnaires," below).[31]

Correspondence Processing

Correspondence reading. After attached and unattached correspondence had been checked in, individual items were referred to the Directory Unit for processing. Unit clerks opened and read each item of correspondence, determined the appropriate correspondence code,[32] and annotated the paper copy and circled the CFN and the correspondence category code. Correspondence with valid CFNs were read, categorized, and then processed as follows:[33]

- Congressional correspondence (i.e., a letter from, a copy of a letter to, or a letter with a "cc" notation to a government official ranking higher than the Director of the Census Bureau; e.g., the President, Vice President, member of the Cabinet, a Congressperson, or Governor of a state or territory, or a threat to write to one of these people) were referred to supervisors for special handling.
- Correspondence making reference to the Freedom of Information Act (FOIA) was referred to the EPCD staff at Census Bureau headquarters for response.
- Time extension requests resulted in the clerks' updating the correspondence code interactively for each user ID provided, annotating the correspondence appropriately, and referring the correspondence for scanning (see below).

[29]"Check In and Batching of Multiunit Questionnaires," pp. 3–5.
[30]Ibid., p. 4.
[31]"Batching Single Unit Questionnaires," pp. 2–4.
[32]The correspondence code was a three-digit numeric code that referred to a definition that best described the subject of the correspondence. E.g., a code of "118" indicated the respondent wanted to know by what authority the census was conducted or wanted provisions for confidentiality; a code of "219" indicated the respondent wanted to know the purpose of the economic census, "228" was used for single-establishment respondents who wanted to be excused from response or who refused to respond, and so on.
[33]Memorandum from B. J. Fitzpatrick to Judith N. Petty, "2002 Economic Census: Correspondence Procedures," March 20, 2003, pp. 1–2.

- Correspondence from a multiestablishment company indicating that the company was sold, merged, reorganized, or had a change in ownership, or had gone out of business, were updated by analysts.
- Correspondence from a multiestablishment respondent who wanted to combine the data for all establishments on one form were updated interactively, annotated appropriately, and sent for scanning.
- Correspondence from SU respondent reports having more than one establishment was updated by analysts.
- Correspondence (1) requesting census publication plans, (2) wanting to know the purpose of the census, (3) wanting Title 13 quotes and by what authority the census is conducted, (4) requesting payment for response, and (5) asking to report on a fiscal year basis were updated using specified correspondence codes, and applicable CFNs were annotated appropriately and referred for scanning.
- Correspondence requesting help in completing the questionnaire(s) and all other correspondence subjects that were not specifically addressed in the problem descriptions were resolved by analysts.

Respondent-Originated Correspondence (ROC) and questionnaires without a valid CFN were researched by analysts using the Business Register's interactive "Search for ID" routine to try to identify the applicable CFN. If no CFN was found, the Unit generated an address label, and a form letter was mailed informing the respondent that a CFN was needed to process any report form or correspondence. In rare instances, analysts could call (e.g., if a company had requested a time extension and it was close to the follow-up date). The exceptions to this general procedure were Congressional and FOIA correspondence (see above).[34]

Census Bureau-originated correspondence. Census Bureau-originated correspondence was generated from two principal sources—interactive applications run against the Business Register that identified answers to incoming correspondence and records flagged during edit (see below) that required contact with the respondent to resolve a problem. The various processing units that generated correspondence requirements used interactive computer routines to identify specific problems with individual records and the kind of correspondence required to contact the respondent concerned for corrective action or additional information. Census Bureau staff keyed the CFN for the particular record, and used an interactive, generalized routine to select and enter a correspondence category that described the problem.[35]

The ESMPD generated correspondence files daily, and the NPC used its DocuPrint equipment to print the materials for the mailout packages. Mailout was done on a flow basis.

Package assembly and mailout. The Census Bureau tried to respond to correspondence or other inquiries by mail within 7 days of receipt. Typically, the correspondence packages contained one or more of the following items: (1) a cover letter responding to the particular inquiry or explaining the contents of the package; (2) questionnaire(s) as needed; (3) brochures, listings, instructions, flyers, address sheets, or other enclosures as required; (4) a return envelope; and (5) an inventory list showing the contents of multiestablishment mailing packages (if any).[36] Control and reference listings were generated to control each run of the correspondence printing program. The control listings managed the work and identified printer failures for manual correction.

Data Entry

Scanning the questionnaires. After receipt and check-in, individual paper questionnaires were scanned in order to perform key-from-image data entry.[37] Scanned images of questionnaires were

[34]Ibid.
[35]Ibid., p. 15.
[36]Ibid., pp. 12–13.
[37]A complete imaging and document management program selected by the National Processing Center as a component of the Workflow Image Processing System (WIPS) to store, manage, and retrieve images.

managed and stored in the Census Bureau's Feith system (See Chapter 4, "Technological Innovations and the Census"). The scanner operator verified that the breaker sheet on each batch was correct, and then loaded the batch into the transport tray of the scanner. Once each questionnaire was identified, an electronic image of the master questionnaire was assigned to that barcode identifier.[38]

As the equipment scanned the batch, the operators made sure the sheets were kept in the order in which they were batched and cleared any jams (always making certain the pages were kept in the order they were batched) and fed additional sheets into the scanner until the batch was completed. The operators monitored the images of the scanned sheets as they appeared and stopped the scanner when problems showed up. Problems requiring stopping the scanning included:[39]

- Streaks—whole or broken extraneous lines (indicating dirt or dust on the mirrors or imaging guides of the equipment).
- White streaks on the page (indicating a foreign object in the optical path).
- Smudges (ink smears).
- Badly skewed pages (problem with the paper guide or feed rollers).
- Folded pages or paper corners.

If the scanner had to be stopped for any of these problems, the operator removed the pages affected, electronically deleted the unsatisfactory images, and then rescanned the problem pages, making certain they were done in the correct order.[40]

Key-from-image (KFI) data entry. The Optical Mark Recognition (OMR) component of the data capture system enabled the Census Bureau to capture check box data without manually keying the individual entries. However, the bulk of the answers returned by respondents were not provided via check boxes, which meant that the non-check-box answers had to be keyed. The answers were keyed from images created when the questionnaires were scanned. Optical Character Recognition (OCR) systems were not used for processing these answers because the technology was unable to meet the Census Bureau's quality requirements.[41]

The KFI program maintained a count of the number of data fields keyed by data keyers and the number of fields identified in the batch for keying, and displayed the number of fields remaining to be keyed as keying proceeds. Keyers were provided with instructions on how to handle specific problems encountered and were instructed to "flag" data fields electronically when (1) a respondent had written a remark pertaining to the field, or (2) a respondent had changed the pre-printed questions or by using brackets to group several questions together. Detailed instructions were provided to keyers for coding respondents' remarks and for dealing with brackets or altered stubs. The system automatically saved the keyed data at regular intervals. When the last field was keyed, the system displayed an "End Batch" message. If the "Remaining fields to key" count was zero, the keyer clicked the "Batch is FINISHED" button. If fields remained to be keyed, the keyer could either suspend the batch or return to the "Next Field to Key" to complete any fields that were missed.[42]

Key-from-image (KFI) quality assurance. The Census Bureau carried out continual quality assurance checks of the data keying. The fields subject to quality assurance (QA) review were randomly selected from specified portions of the total number of fields.

[38]U.S. Census Bureau, "Procedures for Using Kodak 9500 Capture Software with ECON 2002 Processing Extension," October 29, 2002, pp. 6–8.
[39]Ibid., pp. 6–7.
[40]Ibid., pp. 7–8.
[41]B. J. Fitzpatrick, "Key From Image (KFI): 2002 Economic Census Offsite Symposium," November 4–5, 2002.
[42]Memorandum from B. J. Fitzpatrick to Judith N. Petty, "2002 Economic Census Key From Image (KFI) Procedures," June 19, 2003, pp. 3–4 and pp. 14–40.

The KFI quality assurance phase verified the accuracy of the keyed data capture. Keyers were trained on the procedures using test batches that exemplified the conditions covered by the keying procedures. The test keying was automatically compared to the known truth, and the keyer was apprised of all differences. This procedure was repeated until the keyer was proficient in the procedures.

During production keying, every keyed batch underwent independent sample verification. A random sample of 10 percent of keyed fields in a batch were selected for verification. When verification disagreed with the original keyed value, the answer was independently keyed again by a different keyer. When adjudication agreed with either of the two previous values, the accuracy of the agreed values was assumed. In cases where all three values differed, the observation from the keyer with the lowest error rate was accepted and excluded from the error calculations. If the number of keyer errors exceeded the limit specified for the sample, the unverified answers in the batch underwent verification and (if necessary) adjudication.[43]

POST-COLLECTION PROCESSING

General Information

The post-collection processing of the economic census involved the editing, tabulation, and analysis of the 2002 Economic Census data and all the other actions required to prepare the data file for publication. The data-collection effort of the census was a centralized operation, with the bulk of work carried out by the NPC in Jeffersonville, IN. The post-collection processing was more decentralized, with analysts from the subject-matter divisions (Manufacturing and Construction Division [MCD], Service Sector Statistics Division [SSD], and Company Statistics Division [CSD]) and the analytical and clerical staff at the NPC involved carrying out the work in two phases: editing and a macro analysis. The editing phase itself was carried out in two major phases, "front-end" editing (used to identify coverage issues) and "back-end" (micro—editing applied to data for individual establishments). These operations are explained in more detail below.

Data Capture Load and Enterprise Prescreening

Data captured by the data entry systems were converted into a common file format for loading into the Business Register. The Data Capture Load program read these files, updated the Business Register, and identified duplicate establishments and duplicate data elements (these were written to separate files and referred to analysts for review), converted "none" check-box responses for numeric data elements into reported "0" values, and set up various indicators in the Business Register for further processing.[44]

After the data were loaded into the Business Register, the records of MU companies that submitted data through electronic reporting were subject to a series of additional tests, collectively called Enterprise Prescreening. The tests were performed at the response unit level to identify gross errors that may have occurred during the creation of the file containing the reported data (e.g., in creating an electronic spreadsheet, a respondent may have mistakenly indicated that all operating locations were closed during the year; one of the tests in the prescreening was designed to identify and flag this situation and refer the entire response unit to an analyst for resolution).[45]

Front-End Edits

Data captured in the census must be edited to identify and correct reporting errors and other problems requiring resolution, and to impute for missing items and nonresponse prior to tabulation. The front-end edit employed for the 2002 Economic Census updated the Census Bureau's Business Register.

[43]Ibid., pp. 40–41.
[44]Brandy Yarbrough, "Front-End Edits: Context and Overview: 2002 Economic Census Off-site Symposium," November 4–5, 2002.
[45]Ibid.

The Front-End Edit System consisted of a series of automated checks and edits that:[46]

- Identified "gross" errors in electronic responses prior to editing.
- Selected records for editing and carried out various prerequisite "set-up" functions (e.g., set "Large Company" indicator).
- Identified any situations that affected the status of units in the Business Register and the linkages between them (e.g., identified new establishments, establishments that had closed, and updated names and addresses).
- Carried out an initial edit of employment, annual payroll, and first-quarter payroll (this included rounding, tolerance tests, and imputation of missing data using administrative records and prior year data when necessary).
- Completed individual record processing and updated the Business Register elements involved.
- Generated single-unit (SU) referral listings and evaluated records for Back-End Edit processing.
- Carried out a completeness table evaluation comparing reported data to administrative records data for MU enterprises and identified potentially missing establishments and generated MU completeness and referral listings.
- Assigned various geographic codes, updated the Business Register with any new geographic information, and generated referral listings for addresses that could not be coded (see "Geographic coding" below for more information).

Micro-Editing

Background information. Subject analysts in each of the subject-matter areas of the Economic Directorate conducted the Back-End, or Micro-Edit, processing for establishment responses within their subject areas. The objectives of this process were to edit the census file at the micro level (i.e., one establishment at a time), carry out detailed tolerance tests on the records, and edit the content (data) from each questionnaire as well as any corrections made to each record. Prior to the start of the editing, "good" records—i.e., individual establishment records that had passed computer checks for organization structure, coverage, and completeness—were acquired from the Business Register and brought into the MADb to undergo editing and further processing.

Geographic coding. All records received from response, administrative records updates, census-related correspondence, Web transactions, etc., that contained any update to the address elements of the records required geographic coding. The geographic coding was done in the Business Register using the freestanding geographic coding production system developed for the 2002 census,[47] which included the geographic coding software and all necessary reference files. (The SSSD used a separate module for verification of geographic coding during processing. Manufacturing, Mining, and Construction relied on the geocoding done during Business Register processing.)

The editing system ran in batch processing, so the general edit of any batch stopped when records were identified that required geographic coding and only resumed after the records identified had been updated. As part of the coding process, the address elements of the records (i.e., street, city, state abbreviation, and ZIP Code) were subjected to a software program standardizing values, which then were used to update the Business Register. Any records assigned a specified geographic summary flag during coding were referred to analysts for review. Once geographic coding was completed and the Business Register updated accordingly, general editing of the batch resumed.[48]

[46]Ibid.

[47]See Chapter 7, "Preparations for Data Collection," "Geographic Area Coding" for a description of the development and characteristics of the freestanding geographic coding system. Appendix E, "Definitions and Descriptions of Geographic Areas," provides descriptions of the geographic areas defined for the 2002 Economic Census.

[48]Yarbrough, "Front End Edits."

Editing systems and common edit flow. Micro-edit processing for the 2002 Economic Census used three individual edit systems customized by subject-matter area. The subject areas were Manufacturing and Mining (M&M), Construction (CON), and Service Sector Statistics Division (SSSD), which was further organized in three subgroups: (1) Regular,[49] (2) alternative reporting units (ARU—reporting units other than establishments), and (3) auxiliaries (AUX). Micro-edit processing flowed through a succession of edit modules for each area. The data were first retrieved from the Micro-Analytic Database (MADb) and underwent a classification edit, after which they were processed by a series of edit modules that carried out the general editing (described in more detail below).

Classification edit. The classification edit module set the North American Industry Classification System (NAICS) code for each establishment. It was based on the responses to the economic census questionnaires. Classification of each establishment was needed to determine what type of edit to perform (e.g., tolerance limits for reported data and imputation factors where required), and to enable the Census Bureau to tabulate and publish NAICS industry-level data. The edit systems employed modules developed for their specific needs, as follows:[50]

- SSSD classification modules used a generalized parameter-driven system, developed in 1997, to classify records in the trade areas covered.
- M&M used five modules to determine general industry coding (based on the mix of products reported), special industry coding (one for each trade area covered), and sub-industry coding (one for each trade area covered).
- CON used a routine embodied in a new (specified and coded in 2004) industry coding edit module to assign NAICS codes for 2002 and bridge codes to the 1997 NAICS codes.

The classification modules identified and evaluated responses to specified items by each reporting unit, such as physical location; sales, shipments, receipts, or revenues; employment and payroll; inventory; selected expenses; kind of business/type of operation; class of customer; method of selling; details of sales and shipments; type of construction; and special inquiries. If all the critical information was available for a given establishment or reporting unit, the edit module assigned the appropriate classification code. Records missing data needed to accurately classify the reporting unit were "flagged" and referred for correction before further processing.[51]

Plain Vanilla (PV) edit. The "Plain Vanilla" (PV) edit system is a set of generalized edit modules that perform edits and operations common across economic trade areas. The individual trade areas can select the appropriate pieces from this system suite to meet specific trade area edit needs. The PV edit evaluated response data for reasonableness and consistency, both with other data reported on the questionnaires and with data reported by the establishment in previous censuses. The individual edit modules included in the PV system, and their edit functions, were as follows:[52]

1. A balancing module compared detailed item responses to totals; the items subject to balancing included employment and payroll; inventories; selected expenses; class of customer; detail of sales, shipments, receipts, or revenue/revenue by business activity; type of construction; and special inquiries.
2. The verification module validated specified items (physical location and kind of business/type of operation) and passed information for setting other fields.
3. The ratio module compared data from questionnaire responses to industry information to determine if the reported data were consistent with reports from other similar operations. Ratio editing was done for responses covering sales, shipments, receipts, or revenue; employment and payroll; selected expenses; and (for manufacturing establishments only) inventories.

[49]The "regular" subgroup consisted of "normal" and "nonnormal" records; "nonnormal" records were those for establishment or businesses that did not operate year-round, such as ski lodges. A separate editing module within the SSSD edit system handled was used for nonnormal records.

[50]Sonya Curcio, "Flow of Back-End (Subject Matter) Edits: 2002 Economic Census Offsite Symposium," November 4–5, 2002.

[51]Ibid.

[52]Ibid.

4. Range editing was new for the 2002 Economic Census and was used to evaluate items that were not highly correlated with all items evaluated in ratio editing. These included data on e-commerce sales; leased employment and payroll; special inquiries; and (for the various services sectors only) inventories.
5. All edit-derived fields were subjected to a cost constraints edit that performed a combination of balance and ratio/range edits to maintain specified tolerance limits.

Analytical Processing and Tabulation

General information. The objective of the analytical processing was to tabulate the data and to review the tabulations to prepare them for publication. These activities got under way at the end of the data-collection cycle and ended with the release of the individual reports for publication. The analysis began with the tabulation of establishment records housed in the subject-area databases.

Data tabulations. Records that had passed the micro-edit processing unflagged were extracted on a nightly basis from the MADb to a Statistical Analysis System (SAS) data set.[53] Extract data sets were organized in a fashion parallel to the structure of the MADb database and then by sector. A cross-sector extract data set, Combo, was created for use in bridging tabulations. Micro establishment records were tabulated in many different ways, based on data product and analytical needs: this included data summed by NAICS industry, specified geographic areas, firm size, products produced, materials used, fuels used, and merchandise lines sold. The 2002 Economic Census followed a new paradigm in tabulation procedure—a single tabulation was to be used for both analysis and dissemination purposes. This is a departure from the previous censuses where separate tabulations were created for analysis processes and for the data products. A single tabulation for analysis and dissemination reduced the number of tabulated data sets required and increased the data integrity at publication time. The resulting tabulations were subject to primary disclosure analysis prior to macro analysis. Problems identified during the macro analysis were corrected, if necessary, and the nightly data set retabulation incorporated corrections to the micro records. The island areas data tabulations were reviewed and tabulated using the Standard Economic Processing System (StEPS).[54]

Post-tabulation processing. The tabulated data sets served as input to a batch process to reformat and correct the tabulations for use in the upstream dissemination systems. The batch post-tabulation processing system served to take the place of much of the custom coding in the dissemination tabulations that was done during previous censuses. During the post-tabulation process, units of measure were converted from collected to disseminated units, a variety of flags were introduced and various fields required for programming were set, problematic industry codes were corrected, and data fields were renamed. Perhaps of greatest importance, the input files to the automated complementary disclosure routine were created during this process, and results from that routine were written back to the tabulations.

For more information on processing the questionnaires and post-collection data processing, see Chapter 4, "Technological Innovations and the Census."

[53]The SAS provides tools for information storage and retrieval, data modification and programming, simple and advanced statistics, report writing, and file handling.

[54]The Standard Economic Processing System (StEPS) is a generalized survey processing system originally developed for processing the more than 100 current economic surveys conducted by the Census Bureau. See Chapter 9, "2002 Economic Census of Island Areas," for more detailed information on the characteristics of the StEPS.

Chapter 9.
2002 Economic Census of Island Areas

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INTRODUCTION

The U.S. Census Bureau conducted the 2002 Economic Census of Island Areas under the provisions of Title 13, U.S. Code, Section 191. The 2002 Economic Census covered the U.S. Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands (CNMI), the Commonwealth of Puerto Rico, and (for the first time) American Samoa.[1]

The Census Bureau's Company Statistics Division (CSD) had responsibility for planning, management, and coordination of the 2002 Economic Census of Island Areas.[2] The CSD oversaw several notable changes to this census, including implementation of the North American Industry Classification System (NAICS) in the island areas, the first-time inclusion of American Samoa in the census, and the integration of the island areas' census operations with those conducted for stateside establishments.

COMPANY ORGANIZATION SURVEY

The Census Bureau conducts the annual Company Organization Survey (COS) to update its Business Register, which is the principal source of business establishment addresses for the economic census mailing list. All multiestablishment companies with a payroll, except agricultural establishments, are within the COS sample universe.

[1] U.S. Census Bureau, *2002 Economic Census of Island Areas: American Samoa*. IA02-00A-SAMOA. April 2005, p. v.
[2] U.S. Census Bureau, *2002 Economic Census of Island Areas: American Samoa*, "Acknowledgments."

The Census Bureau conducted the last COS prior to the 2002 Economic Census in December 2001. The COS was a mailout/mailback survey to a sample of stateside and island areas multiestablishment companies. Establishments were added to the mailout when administrative data and probability sampling procedures indicated probable organizational changes. The COS questionnaires included a preprinted list of establishments previously identified as owned by the company, with space provided for the company to report additional establishments.[3]

Scope

For the first time, the Census Bureau used NAICS to classify establishments in the island areas, enabling the collection of data in a format nearly identical to that of the stateside enumeration.[4] The census questionnaires asked all establishments and companies in the island areas to provide the following information via a mailed questionnaire:

- Employer identification number corrections.
- Operational status (months of active operation during 2002, 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., traveler accommodations; manufactures; and construction).

Sector-specific data were collected from single- and multiestablishment establishments for the following NAICS industry sectors:

- 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

[3]U.S. Census Bureau, "Company Organization Survey," August 18, 2004.

[4]Differences between the stateside and Puerto Rico enumerations largely consisted of changes to wording as a result of language/cultural differences and the addition of some response categories or response category wording to account for area-specific traits.

- Accommodation and food services
- Other services (except public administration)[5]

CONDUCTING THE 2002 ECONOMIC CENSUS IN THE ISLAND AREAS

General Information

The Census Bureau contacted the governments of Puerto Rico, American Samoa, the U.S. Virgin Islands, Guam, and the Commonwealth of Northern Mariana Islands in late 2001 to advise them of its plans to conduct the 2002 Economic Census and to solicit the governments' support for census operations and to gain input on questionnaire design. The Census Bureau and each of the respective governments (or the government's designee) signed memoranda of agreements (MOA) that defined the roles of the Census Bureau and each government in conducting the census.[6]

The MOAs assigned the Census Bureau the tasks of designing and translating the questionnaires into Spanish (for Puerto Rico), planning and conducting the mail and follow-up operations, processing and tabulating the data, and preparing census publications. The governments of the island areas were responsible for making recommendations on questionnaire content and overseeing the publicity of the census through print, radio, and television advertisements.[7]

Preparatory Work

Printing questionnaires. The Census Bureau's Forms and Mail Management Branch[8] designed the questionnaires and accompanying cover letters for the 2002 Economic Census of Island Areas.[9]

Upon approval of the draft single- and multiestablishment questionnaires, the Census Bureau awarded the contract to produce the English and Spanish questionnaires, cover letters, and instruction sheets to a contract printer.[10] The contractor delivered the completed questionnaire packages to the Census Bureau's National Processing Center (NPC) in Jeffersonville, IN, by September 2002.[11]

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[5]U.S. Census Bureau, *2002 Economic Census of Island Areas: American Samoa*, pp. v–viii.

[6]In Puerto Rico, the Census Bureau dealt with the Puerto Rico Planning Board to conduct the 2002 Economic Census. The Planning Board was made up of representatives from industry and trade associations, consulting firms, the academic sector, and the Puerto Rico government. In the island areas, the individual governments were the points of contact. Puerto Rico and the U.S. Virgin Islands returned signed MOAs to conduct the 2002 Economic Census on December 24, 2002. U.S. Census Bureau, "Company Statistics Division: Monthly Activity Report for December," January 8, 2003, pp. 1–3.

The remaining island areas returned signed MOAs to the Census Bureau by February 2003. The MOA for Guam included the extension of the census filing deadline to March 12, 2003, due to typhoons that hit Guam in December 2002. U.S. Census Bureau, "Company Statistics Division: Monthly Activity Report for January," February 4, 2003, p. 2.

[7]U.S. Census Bureau, "Memorandum of Agreement on the Conduct of the 2002 Economic Census of Puerto Rico"; "Memorandum of Agreement on the Conduct of the 2002 Economic Census of Guam"; "Memorandum of Agreement on the Conduct of the 2002 Economic Census of the U.S. Virgin Islands"; "Memorandum of Agreement on the Conduct of the 2002 Economic Census of the Commonwealth of the Northern Mariana Islands"; and "Memorandum of Agreement on the Conduct of the 2002 Economic Census of American Samoa." November 15, 2002.

As part of the 2002 Economic Census publicity in Puerto Rico, Census Bureau staff accompanied Director Louis Kincannon to Puerto Rico to attend the presentation of a proclamation by the Governor of Puerto Rico designating February 2003 as Economic Census Month. U.S. Census Bureau, "Company Statistics Division: Monthly Activity Report for January," February 4, 2003, p. 2.

[8]A branch within the Administrative and Customer Services Division (ACSD).

[9]The questionnaires used for Puerto Rico were as follows: IA-97120 Utilities, Transportation, and Warehousing; A-97123 Construction; IA-97130 Manufacturing; IA-97142 Wholesale Trade; IA-97144 Retail Trade; IA-97152 Finance, Insurance, Real Estate, Rental and Leasing; IA-97172 Accommodation Services; IA-97180 Services; IA-97190 General Schedule; IA-97220 Utilidades, Transportación y Almacenaje; IA-97223 Industrias de Construcción; IA-97230 Manufactura; IA-97242 Comercio al Por Mayor; IA-97244 Comercio al Detal; IA-97252 Finanzas, Seguros, Bienes Raíces, Alquiler y Arrendamiento; IA-97272 Servicios de Alojamiento; IA-97280 Servicios; and IA-97290 Cuestionario General.

The questionnaires for the island areas were IA-98163 in Guam; IA-98173 in the U.S. Virgin Islands; IA-98183 in the Commonwealth of the Northern Mariana Islands; and IA-98193 in American Samoa.

[10]U.S. Census Bureau, "2002 Economic Printing Contracts," October 24, 2003, p. 1.

[11]Miller, Douglas J., Economic Planning and Coordination Division, U.S. Census Bureau, Suitland, MD. Personal correspondence. November 10, 2003.

DATA COLLECTION

Mail enumeration. For Puerto Rico, the Northern Mariana Islands, Guam, and the U.S. Virgin Islands, the 2002 Economic Census was a mailout operation conducted in concert with the mailout for the 50 states and District of Columbia. American Samoa was enumerated using a combination of mail and personal enumeration and is discussed separately below.[12]

Mailout packages consisted of the appropriate questionnaire or questionnaires, a cover letter explaining the need for the census and reminding recipients that response was required by law, an instruction sheet for completing the questionnaire(s), and a return envelope (see Table 9-1).[13]

The Census Bureau mailed the census packages for both single- and multiestablishment companies in Puerto Rico and the U.S. Virgin Islands between December 12 and December 16, 2002.[14] For American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, the NPC boxed and shipped questionnaire packages (via express mail) to the Head Postmaster of each island area for direct distribution to respondents using the mail system.[15] Recipients were asked to return completed questionnaires to the NPC by February 12, 2003.[16]

American Samoa

As noted, the American Samoa enumeration used a combination of mail and personal enumeration. Employer establishments (establishments with at least one employee and a payroll) received a report form, consistent in scope and coverage with Puerto Rico's and the other island areas', which was to be completed and returned to the Census Bureau by mail.

Data for nonemployer establishments in American Samoa were collected through personal enumeration. The government of American Samoa collected the data under the provisions in Title 13 of the U.S. Code, Section 191 (b). The chief statistician of the American Samoa Department of Commerce Statistics Division supervised the field enumeration and follow-up of nonemployer establishments as referred by the Census Bureau. All people working with census data were sworn to maintain confidentiality of census information. A census advisor trained the project leader as well as the interviewers and worked with local staff to ensure that Census Bureau standards and procedures were followed.

American Samoa was divided into four zones for enumeration: Manu'a Islands, and the Eastern, Central, and Western districts of Tutuila. Nonemployer establishments were identified from the American Samoa Government Business License List. Interviewers received assignment lists, which included the establishments assigned a personal interview, and a labeled report form for each establishment listed.

The interviewers obtained the following information:

- Months in operation
- Physical location
- Sales/receipts

[12]Personal enumeration was conducted on a limited basis in Guam and the Northern Mariana Islands, but only for establishments that requested a personal visit or for nonrespondent establishments that could not be reached by telephone during telephone follow-up operations. When personal visits were necessary, Census Bureau staff trained project leaders, supervisors, and interviewers. Staff from the Department of Commerce in the Northern Mariana Islands and the Department of Labor in Guam who worked with census data were sworn to uphold the confidentiality of the data. The Census Bureau provided the Central Statistics Division and the Department of Labor with a list of the establishments for which report forms had not been received. Interviewers were instructed to contact establishments by telephone to obtain the required information.

[13]Robert Marske and Laurie Torene, "Promoting Business Response to the 2002 Economic Census," U.S. Census Bureau, p. 2 (n.d.).

[14]U.S. Census Bureau, "Company Statistics Division: Monthly Activity Report for December," January 8, 2003, p. 1.

[15]U.S. Census Bureau, "Memorandum of Agreement on the Conduct of the 2002 Economic Census of Guam"; "Memorandum of Agreement on the Conduct of the 2002 Economic Census of the Commonwealth of the Northern Mariana Islands"; and "Memorandum of Agreement on the Conduct of the 2002 Economic Census of American Samoa," November 15, 2002.

[16]U.S. Census Bureau, "2002 Economic Census: Educational Services," ED-61101, p. 1.

- Employment and payroll
- Expenses
- Kind of business
- Sales by class of customer
- Description of merchandise sold
- Construction work done
- Products produced or services provided
- Legal form of organization
- Ownership status
- Status of establishment at the end of 2002[17]

Table 9-1.
Initial Mailout in the Island Areas[18]

Geographic area	Multiunit establishments	Single-establishment companies	Total
Total	**8,911**	**37,809**	**46,720**
Puerto Rico	7,537	32,683	40,220
Guam	547	2,123	2,670
U.S. Virgin Islands	473	1,898	2,371
Commonwealth of the Northern Mariana Islands	254	862	1,116
American Samoa	100	243	343

Follow-Up Operations

Follow-up operations for nonrespondent businesses were conducted in the island areas. These operations were consistent with stateside operation and included both mail and telephone follow-up. (See Chapter 8, "Data Collection and Processing.")

Mail follow-up.[19] The NPC conducted follow-up mailings to nonrespondent establishments in the island areas (see Table 9-2). Mailings included a cover letter requesting response, the appropriate questionnaire, instructions, and a return envelope.

Multiestablishment mail follow-up in the island areas received the same letters received by single-establishment nonrespondents. The NPC conducted multiestablishment follow-up operations between February and July 2003.

Table 9-2.
Single-Establishment Follow-Up Mailings for the Island Areas

Geographic area	First follow-up 3/10/03–3/21/03	Second follow-up 4/14/03–4/29/03	Third follow-up 6/04/03–6/17/03
Puerto Rico	21,974	18,788	12,069
Guam	1,279	1,045	343
U.S. Virgin Islands	1,111	825	243
Commonwealth of the Northern Mariana Islands	435	302	91
American Samoa	171	135	47

[17]U.S. Census Bureau, *American Samoa: 2002 Economic Census of Island Areas*, "Appendix C," IA02-00A-SAMOA. April 2005, pp. C-2–C-3.

[18]U.S. Census Bureau, "Untitled Table" (n.d.) and "Table 1-2A-1222.txt: 2002 Economic Census Response Rates (Part 1)," December 22, 2003.

[19]Information for the following section was drawn from notes and interviews with Kathy Scott, U.S. Census Bureau, Economic Planning and Coordination Division, Mailout and Data Capture Branch, December 2005.

Telephone follow-up. In addition to mail follow-up, telephone follow-up of nonrespondent large- and medium-sized companies in the island areas occurred between April and June 2003 (see below).

Island Areas Telephone Follow-Up[20]

April 2003	1st telephone follow-up	669 calls
May 2003	2nd telephone follow-up	603 calls
June 2003	3rd telephone follow-up	358 calls
	Total	**1,630**

The Census Bureau's NPC and Tucson, AZ, Call Center staffs conducted telephone follow-up operations for nonrespondent establishments in Puerto Rico and the U.S. Virgin Islands. The governments of Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands conducted telephone follow-up of their islands' nonrespondents. The Census Bureau trained staff from the Commonwealth of the Northern Mariana Islands' Department of Commerce Central Statistics Division, Guam's Department of Labor, and American Samoa's Department of Commerce, Statistics Division on how best to contact nonrespondents by telephone in order to complete a census questionnaire by telephone.[21]

Personal enumeration. Excluding American Samoa, personal enumeration was conducted on a very limited basis in Guam and the Northern Mariana Islands. Only establishments requesting a personal visit or nonresponspondent establishments unavailable by telephone during telephone follow-up operations were subject to a personal visit. In such cases, Census Bureau staff trained project leaders, supervisors, and interviewers to conduct such visits using lists of nonrespondents supplied by the Census Bureau. Enumerators visited the few nonrespondent establishments remaining following mail and telephone follow-up in an effort to obtain required information. All island areas staff working with census data were sworn to uphold its confidentiality.

Treatment of nonresponse. In cases of total nonresponse (report forms not returned) and missing items following mail, telephone, and in some cases, personal follow-up operations, the Census Bureau used administrative records information from other federal agencies, in conjunction with industry averages, prior period data, and outside reference sources, to assign a NAICS classification and estimate general and industry-specific inquiries.

Incomplete or inadequate product-line data for Puerto Rico were expanded on the premise that data for those establishments not reporting this information were similar to product-line data for those establishments in the same kind of business. At the conclusion of follow-up operations in Puerto Rico, 25,232 single- and multiestablishment companies responded to the 2002 Economic Census (approximately 80 percent). Approximately 77 percent of these establishments returned their responses via paper questionnaires, and 3 percent submitted responses electronically.[22]

The Census Bureau received 4,783 responses from the island areas (approximately 94 percent). Of these, approximately 92 percent were paper returns, and 2 percent were electronic.[23]

Receipt and Check-In

Establishments in the island areas returned their questionnaires to the NPC, which began check-in procedures in late December 2002. The process involved using optical laser scanning equipment to identify establishments by the bar code on the mailing label. NPC staff opened multiestablishment company mail receipts, placing the individual questionnaires in company folders prior to check-in using hand-held laser wand readers.

[20]Ibid.
[21]U.S. Census Bureau, *American Samoa: 2002 Economic Census of Island Areas*, "Appendix C," IA02-00A-SAMOA. April 2005, pp. C-1–C-3.
[22]U.S. Census Bureau, *American Samoa: 2002 Economic Census of Island Areas*, "Appendix C," IA02-00A-SAMOA. April 2005, pp. C-2–C-3.
[23]U.S. Census Bureau, "Table 1-2A-1222.txt: 2002 Economic Census Response Rates (Part 1)."

Sorting and Batching

After check-in, NPC staff separated single- and multiestablishment returns and inspected questionnaires for completeness, damage, and the presence of additional materials or correspondence. The questionnaires were then batched for data capture.

DATA PROCESSING

Data Capture

Questionnaires from the island areas were scanned to create images that were subsequently keyed in the same fashion as the stateside questionnaires via an internally developed key-from-image system. Like the stateside questionnaires, the Census Bureau used Optical Mark Recognition (OMR) to automatically capture check box answers on the island areas questionnaires. Responses other than check boxes were keyed from the scanned images.

Data Editing and Processing

The Census Bureau used the Standard Economic Processing System (StEPS) to edit the 2002 Economic Census questionnaires from establishments in the island areas. The StEPS is a generalized processing system that the Census Bureau's Economic Directorate developed to replace 16 of its legacy systems. In addition to reducing resources needed for system maintenance, the StEPS shifted more processing control to survey analysts and methodologists.

The StEPS contains integrated modules for data collection support; e.g., mailing label printing and questionnaire check-in; editing; data review and correction; imputation; calculation of estimates and variances; and system administration (e.g., parameter specification and the submission and monitoring of batches).[24]

The Census Bureau's Company Statistics Division (CSD) edited and tabulated data from the island areas using the StEPS. Analysts loaded island areas data into the StEPS from the Business Register. These data were then edited using the StEPS editing module to detect data values that (individually or in relationship to other data) failed to conform to expected reporting behavior. (The StEPS editing module only identified failures; it did not change data.) The editing module also permitted analysts to define edits interactively and to examine edit results.

The StEPS automatically filed flagged questionnaires for analyst intervention. Analysts electronically viewed these questionnaires in the StEPS review-and-correction modules, where they could view all data associated with flagged questionnaires, view corresponding edit failures in the rejected/flagged files, change data, and execute edits.

Through linkages with other Census Bureau databases, the edited data were downloaded from the StEPS to update the Census Bureau's Business Register and prepared for publication.[25]

PUBLICATION PROGRAM

As noted, the Census Bureau published the island areas data on a NAICS basis.[26] Data users accessed electronic data publications in portable document format (PDF) versions at the Census Bureau's Internet site <http://www.census.gov>. The Census Bureau also offered printed publications via the agency's print-on-demand service for a fee.

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[24]"Batches" are collections of 400 to 450 questionnaire pages minus any correspondence or damaged questionnaires in preparation for microfilming and data entry.

[25]For more information, see Shirin A. Ahmed and Deborah L. Tasky, "An Overview of the Standard Economic Processing System (StEPS)" and Richard Sigman, "Editing and Imputation in a Standard Economic Processing System," Proceedings of Statistics Canada Symposium 2001.

[26]Prior to the 2002 Economic Census, data for the island areas had been published according to the Standard Industry Classification System. Although NAICS was instituted in the stateside census for 1997, the island areas requested a delay in its implementation to 2002. U.S. Census Bureau, *2002 Economic Census of Island Areas: U.S. Virgin Islands*, IA02-00A-VI (RV). April 2005, p. v.

The Census Bureau offered additional electronic economic census data via its DVD-ROM subscription service and the Internet-based American FactFinder. Both the subscription and Internet offered data users additional data, tables, and added features, including user-defined tabulations and manipulation.[27] (For more information, see Chapter 14, "Publication Program.")

The following reports were available in print (except *Puerto Rico: Geographic Area Statistics*) and PDF formats for the island areas:

- Puerto Rico: Manufacturing (IA02-00I-PRM). This report presents data for manufacturing establishments by industry and metropolitan areas and municipios.[28]
- Puerto Rico: Geographic Area Statistics (IA02-00A-PRG). This report presents data for businesses engaged in sectors other than manufacturing and construction. Data are presented for Puerto Rico commercial regions and municipios. The report also includes product-line sales data for wholesale and retail trade by kind of business for Puerto Rico.[29]
- Puerto Rico: Construction (IA02-00I-PRC). This report presents data for construction establishments by industry and metropolitan areas and municipios.[30]
- Virgin Islands (IA02-00A-VI). There is one report for all covered kinds of business. The report presents data for the Virgin Islands as a whole. In addition, data are presented for St. Thomas and St. John (combined to prevent disclosure problems), St. Croix, and the towns of Charlotte Amalie, Christiansted, and Frederiksted.[31]
- Northern Mariana Islands (IA02-00A-NMI). There is one report for all covered kinds of business. The report presents data for the Northern Mariana Islands and three municipalities: Saipan, Tinian, and Rota. The Northern Islands are excluded from this publication because no business activity was reported for this municipality.[32]
- Guam (IA02-00A-GUAM). There is one report for all covered kinds of business. Tables present data for Guam and its election districts.[33]
- American Samoa (IA02-00A-AS). There is one report for all covered kinds of business. This report presents data for American Samoa, districts, and counties.[34]

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[27]U.S. Census Bureau, "Guide to the 2002 Economic Census," <http://www.census.gov/epcd/ec02/guide.html> (July 12, 2005).

[28]U.S. Census Bureau, *Puerto Rico—Manufacturing: 2002 Economic Census of Island Areas*, IA02-00I-PRM (RV). October 2006.

[29]U.S. Census Bureau, *Puerto Rico—Geographic Area Statistics: 2002 Economic Census of Island Areas*, IA02-00A-PRG. March 2006.

[30]U.S. Census Bureau, *Puerto Rico—Construction: 2002 Economic Census of Island Areas*, IA02-00I-PRC. June 2006.

[31]U.S. Census Bureau, *U.S. Virgin Islands: 2002 Economic Census of Island Areas*, IA02-00A-VI (RV). April 2005.

[32]U.S. Census Bureau, *Northern Mariana Islands: 2002 Economic Census of Island Areas*, IA02-00A-NMI. May 2004.

[33]U.S. Census Bureau, *Guam: 2002 Economic Census of Island Areas*, IA02-00A-GUAM (RV). March 2005.

[34]U.S. Census Bureau, *American Samoa: 2002 Economic Census of Island Areas*, IA02-00A-SAMOA. April 2005.

Chapter 10.
2002 Survey of Business Owners

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INTRODUCTION

The U.S. Census Bureau conducted the Survey of Business Owners (SBO) in conjunction with the 2002 Economic Census. Data from this survey, along with those from the economic census, provided valuable insight into the nation's economy by producing information otherwise not available from any other source.

The 2002 SBO, formerly known as the Surveys of Minority- and Women-Owned Business Enterprises (SMOBE/SWOBE),[1] represents the nation's principal source of data on the extent and growth of business ownership by race, Hispanic origin, and gender. These data provide a framework for assessing and directing federal, state, and local government programs designed to promote the business activities of disadvantaged groups.

The race and Hispanic components of the SBO trace their roots to a special project conducted in 1969. Subsequent surveys conducted in 1977, 1982, 1987, 1992, and 1997 were part of the economic census and provided economic data on minority-owned businesses. The women-owned business component originated as a separate program in 1972. Subsequent surveys were part of the economic census and provided economic data on businesses owned by women.[2]

[1]The Census Bureau used the terms SMOBE and SWOBE through the 1997 Economic Census, changing the names to the Survey of Business Owners in 2002.
[2]U.S. Census Bureau, Transcripts of News Conference: "Minority-Owned Firms Grow Four Times Faster Than National Average, Census Bureau Reports," July 12, 2001; <http://www.census.gov/Press-Release/www/2001/trans7_12.html> (November 29, 2005).

Uses of the Data

Government program officials, industry organization leaders, economic and social analysts, and businesses routinely use SBO data. Included among the data users are:[3]

- The Small Business Administration (SBA) and Minority Business Development Agency, which use them to assess business assistance needs and allocate available program resources.
- Local government commissions on small and disadvantaged businesses, which use them to establish and to evaluate contract procurement practices.
- Federal, state, and local government agencies, which use them as a framework for planning, directing, and assessing programs that promote business activities of disadvantaged groups.
- A national women-owned business trade association, which uses them to assess women-owned businesses by industry and area, and to educate other industry associations, corporations, and government entities.
- Consultants and researchers, who use them to analyze long-term economic and demographic shifts and to analyze differences in ownership and performance among geographic areas.
- Individual business owners, who use them to analyze their operations in comparison to similar firms, compute their market share, and to assess their growth and future prospects.[4]

Changes to the 2002 Survey of Business Owners

The 2002 SBO included a number of questions not asked in 1997. The new inquiries promoted further understanding of the characteristics of businesses and their owners. The Census Bureau incorporated some of these questions into the individual owner questions while others were asked about the entire business. The 2002 survey featured the following additions:[5]

- Owner's primary function in the business
- Owner's average number of hours worked per week
- Owner's veteran status
- Owner's disability status and whether any disability was a result of military service
- Owner's age
- Owner's education level
- Year the business was established
- Year the business was acquired or established by the current owners
- Is the business home-based?
- Is the business family-owned?
- Is the business operated as a franchise?
- Sources of capital for starting or acquiring the business
- Sources of capital for financing expansion or capital improvements
- Types of customers
- Types of workers

[3]U.S. Census Bureau, "Surveys of Minority- and Women-Owned Business Enterprises: Data Uses—Business, Government, Researchers," <http://www.census.gov/csd/mwb/www/datause.htm> (November 29, 2005).

[4]U.S. Census Bureau, "Survey of Business Owners and Self-Employed Persons (SBO) FAQs," <http://help.econ.census.gov/econhelp/sbo/sbo_FAQS.html#266> (September 20, 2005).

[5]Lee R. Wentela, "The 2002 Survey of Business Owners: Changes in Content and Tabulation," U.S. Census Bureau, October 2003.

In addition to the above changes, the 2002 SBO permitted business owners to report multiple races as a result of the Office of Management and Budget's (OMB's) *Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity*, published October 30, 1997. The new standards permit respondents to choose more than one race. Previously, respondents indicated the one race with which they most closely identified. The change in reporting from single to multiple races presented several challenges to the development of appropriate methodology for determining ownership status for businesses (see "Determining business ownership," below).[6]

The 2002 survey also marked the introduction of the use of the North American Industry Classification System (NAICS) to classify businesses for the SBO. Prior to 2002, the SBO classified businesses using the Standard Industrial Classification (SIC) Code.[7]

Determining business ownership. The 2002 SBO collected the percentage of business ownership, gender, Hispanic or Latino origin, and race(s), and ethnicity from a maximum of three of the largest percentage owners of a business. In previous surveys, a business was classified as minority-owned if the majority of the stock or equity in the business was accounted for by people who had either reported as Hispanic or Latino or a race other than White.

Business ownership in 2002 was defined as having 51 percent or more of the stock or equity in the business and was categorized by:

- Gender: Male; Female; or Equally Male-/Female-Owned.
- Ethnicity: Hispanic or Latino Origin, Not Hispanic or Latino Origin.
- Race: White; Black or African American; American Indian or Alaska Native; Asian; or Native Hawaiian or Other Pacific Islander.

However, in 2002, businesses could be tabulated in more than one racial group. This could result because:

a. The sole owner reported more than one race.

b. The majority owner reported more than one race.

c. A majority combination of owners reported more than one race.

Comparability With the 1997 Surveys of Minority- and Women-Owned Businesses

The following changes were made in survey methodology in 2002 that affect comparability with past reports:

1. The 1997 Surveys of Minority- and Women-Owned Business Enterprises (SMOBE/SWOBE) form that was mailed to sole proprietors or self-employed individuals who were single filers or who filed joint tax returns instructed the respondent to mark one box that best described the gender, Spanish/Hispanic/Latino origin, and race of the primary owner(s). The gender question included an equal male/female ownership option.

   The 2002 SBO form that was mailed to sole proprietors or self-employed individuals who were single filers or who filed a joint tax return instructed the respondent to provide the percentage of ownership for each owner and the gender of the owner(s). The equal male/female ownership option was eliminated.

   The form that corporations/partnerships received in 1997 requested the percentage of ownership by gender of the owners. In 2002, a business was asked to report the percentage of ownership and gender for each of the three largest percentage owners.

[6] *Federal Register*, 62 FR 58781–58790, October 30, 1997.
[7] For more details about the expansion of the NAICS for 2002, see Chapter 3, "Industry and Product Classification."

Male/female ownership of a business in both 1997 and 2002 was based on the gender of the person(s) owning the majority interest in the business. However, in 2002, equally male/female ownership was based on equal shares of interest reported for businesses with male and female owners. Businesses equally male/female-owned were tabulated and published as separate entities in both 1997 and 2002.

2. The Hispanic or Latino origin and racial response categories were updated in 2002 to meet the latest OMB guidelines. There were 19 check-box response categories and 4 write-in areas on the 2002 SBO questionnaire, compared with the 20 check-box response categories and 5 write-in areas on the 1997 SMOBE/SWOBE.

   The Hispanic or Latino origin of business ownership was defined as two groups:

   - Hispanic or Latino—Four Hispanic subgroups were used on the survey questionnaires: Mexican, Mexican American, Chicano; Puerto Rican; Cuban; and Other Spanish/Hispanic/Latino.
   - Not Hispanic or Latino.

   Five major race categories were used on the survey questionnaires:

   - American Indian or Alaska Native
   - Asian
   - Black or African American
   - Native Hawaiian or Other Pacific Islander
   - White

   Response check boxes were added for "Samoan" and "Guamanian or Chamorro." The check box for "Some Other Race" and the corresponding write-in area provided in 1997 were deleted.

   If the "American Indian and Alaska Native" race category was selected, the respondent was instructed to print the name of the enrolled or principal tribe.

   In 1997, sole proprietors or self-employed individuals who were single filers or who filed a joint tax return were asked to mark a box to indicate the Spanish/Hispanic/Latino origin of the primary owner(s) and to mark the one box that best described the race of the primary owner(s). In 2002, they were asked to provide the percentage of ownership for the primary owner(s), his or her Spanish/Hispanic/Latino origin, and to select one or more race categories to indicate what the owner considers himself/herself to be.

   The form that corporations/partnerships received in 1997 requested the percentage of ownership by Spanish/Hispanic/Latino origin of the owners. In 2002, a business was asked to report the percentage of ownership of Spanish/Hispanic/Latino origin for each of the three largest owners, and to mark one or more races to indicate what the owner considers himself/herself to be.

   Business ownership in both 1997 and 2002 was based on the Hispanic or Latino origin/race of the person(s) owning majority interest in the business; however, in 2002, multiple-race reporting by the owner(s) could affect where a business was classified.

   Note: In the 2000 population census, 2.4 percent of the population reported more than one race.

1. The Native Hawaiian- and Other Pacific Islander-Owned Businesses report is new for 2002. Previously, separate estimates for these businesses were included in the Asian and Pacific Islander-Owned Businesses report for some tables (U.S., state, and metropolitan area by kind of business). However, separate estimates at the county, place, and size of firm (employment, receipts) level were not provided. Therefore, particular care should be taken in comparing data for Native Hawaiian- and Other Pacific Islander-Owned Businesses from 1997 to 2002.

Scope and Content

All firms operating during 2002 with receipts of $1,000 or more are represented in this survey, except those classified in the following NAICS industries:

- Crop and Animal Production (NAICS 111, 112)
- Scheduled Air Transportation (Part of NAICS 4811)
- Rail Transportation (NAICS 482)
- Postal Service (NAICS 491)
- Funds, Trusts, and Other Financial Vehicles (NAICS 525), except Real Estate Investment Trusts (NAICS 525930)
- Religious, Grantmaking, Civic, Professional, and Similar Organizations (NAICS 813)
- Private Households (NAICS 814)
- Public Administration (NAICS 92)

The Census Bureau compiled lists of all firms (referred to as a universe) from a combination of business tax returns and data collected on other economic census reports. The Census Bureau obtains electronic files from the IRS for all companies filing IRS Form 1040, Schedule C (individual proprietorship or self-employed person); 1065 (partnership); any one of the 1120 corporation tax forms; and 941 (Employer's Quarterly Federal Tax Return). The IRS provides certain identification, classification, and measurement data for businesses filing those forms.

For most firms with paid employees, the Census Bureau also collected employment, payroll, receipts, and kind of business for each plant, store, or physical location during the 2002 Economic Census.[8]

Business unit. The Census Bureau conducted most of the economic census on an establishment or physical-location basis, individually enumerating and tabulating each establishment owned by a firm. However, in the SBO, the whole firm was the primary unit for enumeration and U.S.-level tabulations.[9]

Definitions[10]

Definitions of the survey terms for the 2002 SBO, which differed somewhat from those used for the 1997 Economic Census, were as follows:

Employees. Paid employees consist of full- and part-time employees, including salaried officers and executives of corporations, who (for all sectors except construction and manufacturing) were on the payroll during the pay period including March 12. Included are employees on paid sick leave, paid holidays, and paid vacations; not included are proprietors or partners of unincorporated businesses. The definition of paid employees is the same as that used on IRS Form 941.

Firm. A firm is a business organization or entity consisting of one domestic establishment (location) or more under common ownership or control. All establishments of subsidiary firms are included as part of the owning or controlling firm. For the economic census, the terms firm and company are synonymous.

Value of sales, shipments, receipts, revenue, or business done. Includes the total sales, shipments, receipts, revenue, or business done by domestic establishments (excludes foreign subsidiaries) within the scope of the economic census. The definition of each of these items is included in the information provided below.

[8]Ibid.

[9]Lee R. Wentela, "The 2002 Survey of Business Owners: Changes in Content and Tabulation," Census Advisory Committee of Professional Association Meeting, October 2003.

[10]The information that follows was drawn from: U.S. Census Bureau, *2002 Survey of Business Owners Advance Report on Characteristics of Employer Business Owners: 2002*, "Introductory Text," <http://www.census.gov/econ/census02/sbo/intro.htm> (November 14, 2005), pp. 2–4.

All firms. Sales and receipts of all firms include those of both nonemployer firms and firms with paid employees. In most summaries, sales and receipts of nonemployers make up a relatively small part of the total.

Nonemployer firms. Receipts of nonemployer firms include gross receipts, sales, commissions, and income from trades and businesses, as reported on annual business income tax returns. Business income consists of all payments for services rendered by nonemployer businesses, such as payments received as independent agents and contractors.

Employer firms. The total sales, shipments, receipts, revenue, or business done by establishments with paid employees, as recorded in the economic census, differs slightly from sector to sector.

Sampling and Estimation Methodologies[11]

Sampling. To design the 2002 SBO sample, the Census Bureau used the following sources of information to estimate the probability that a business was minority- or women-owned:

- Administrative data from the Social Security Administration.
- Lists of minority- and women-owned businesses published in syndicated magazines, located on the Internet, or disseminated by trade or special interest groups.
- Word strings in the company name indicating possible minority ownership (derived from 1997 survey responses).
- Racial distributions for various state-industry classes (derived from 1997 survey responses) and racial distributions for various ZIP Codes.
- Gender, race, and Hispanic or Latino origin responses of a single-owner business to an SBO previous survey or to the 2000 decennial census.

These probabilities were then used to place each firm in the SBO universe in 1 of 9 frames for sampling:

- American Indian
- Asian
- Black or African American
- Hawaiian/Other Pacific Islander
- Hispanic
- Non-Hispanic White men
- Other (a different race was supplied as a write-in to another source)
- Publicly owned
- Women

The SBO universe was stratified by state, industry, frame, and whether the company had paid employees in 2002. The Census Bureau selected large companies, including those operating in more than one state, with certainty. These companies were selected based on volume of sales, payroll, or number of paid employees. All certainty cases were sure to be selected and represented only themselves (i.e., had a selection probability of 1 and a sampling weight of 1). The certainty cutoffs varied by sampling stratum, and each stratum was sampled at varying rates, depending on the number of firms in a particular industry in a particular state. The remaining universe was subjected to stratified systematic random sampling.

[11]The information on survey methodology in this section is taken from: U.S. Census Bureau, "2002 Survey of Business Owners, Women-Owned Firms, "Appendix C, Methodology," <http://www.census.gov/prod/ec02/sb0200cswmn.pdf> (February 2006), pp. C-2–C-3.

Treatment of nonresponse. Approximately 81 percent of the 2.3 million in-scope businesses in the SBO sample responded to the survey. Data from the 1997 survey were used for businesses that were nonrespondent in both the 1997 and 2002 samples. For the remaining nonrespondents, gender, Hispanic or Latino origin, and race were imputed from donor respondents with similar characteristics (state, industry, employment status, size, and sampling frame).

For the tabulations by gender, Hispanic or Latino origin, and race, the data for each firm in the SBO sample were weighted by the reciprocal of the firm's probability of selection.

DATA COLLECTION

The Census Bureau mailed one of two questionnaires to firms in the sample. Partnerships and corporations received the SBO-1 questionnaire, which requested the percentage of ownership, gender, race, Hispanic or Latino Origin, and several characteristic questions (e.g., age, education level) for each of the largest three owners. Sole proprietors and self-employed individuals received the SBO-2 questionnaire, which requested essentially the same information as asked on the SBO-1, but limited responses to two owners.[12]

Mailout and mail follow-up. Following the design of the 2002 SBO questionnaires and cover letters by Census Bureau staff, a contractor printed, packaged, and delivered the questionnaire packages to the Census Bureau's National Processing Center (NPC) in Jeffersonville, IN, for mailout. The packages included a cover letter, applicable questionnaire, and a return envelope.[13]

The NPC conducted the SBO mailout in two phases. The first phase consisted of approximately 1.3 million questionnaires being mailed to employer businesses during the first week of September 2003. A first follow-up mailing was sent to nonrespondent establishments between October 20 and October 24 and, if there was no response, a second follow-up was sent on December 1, 2003.[14]

The second phase of the SBO mailout consisted of approximately 1.2 million SBO-2 questionnaires being mailed to corporations/partnerships and nonemployer businesses. Questionnaires were mailed between May 6 and May 14, with follow-up operations beginning in late June 2004 and concluding July 9, 2004.

The NPC conducted a follow-up mailing of 8,578 SBO-1/SBO-2 packages returned to the NPC as "Undeliverable as Addressed" on June 18, 2004.[15]

Telephone follow-up. Beginning January 30, 2004, the Census Bureau conducted a telephone follow-up of approximately 36,000 Phase 1 nonrespondent businesses from its call centers in Tucson, AZ, Hagerstown, MD, and Jeffersonville, IN. An additional 7,000 nonrespondents received an automated message urging them to complete and return their questionnaire and were given a toll-free telephone number to call with questions. A sample of nonrespondents (approximately one-half) also received a reminder message that their participation in the survey was mandatory. Phase 1 telephone follow-up operations concluded March 15, 2004. Phase 2 telephone follow-up operations concluded August 31, 2004.[16]

The combined response rate following the SBO follow-up operations as of August 31, 2004, was approximately 81 percent, comparable to the rate of the previous census.[17]

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[12]Ibid., p. 4.

[13]U.S. Census Bureau, "CSD Monthly Activity Reports (MARs): April 2003," May 7, 2003.

[14]U.S. Census Bureau, "2002 Survey of Business Owners: Supervisory Instructions for the Telephone Unit Processing of Incoming Calls—Attachment A," April 27, 2004; "CSD Monthly Activity Reports (MARs): September 2003," October 3, 2003; "CSD Monthly Activity Reports (MARs): October 2003," December 5, 2003; and "CSD Monthly Activity Reports: December 2003 (MARs)," January 6, 2004.

[15]U.S. Census Bureau, "CSD Monthly Activity Reports (MARs): May 2004," June 2, 2004; and "CSD Monthly Activity Reports (MARs): July 2004," August 9, 2004.

[16]U.S. Census Bureau, "CSD Monthly Activity Reports (MARs): January 2004," February 5, 2004; and "CSD Monthly Activity Reports (MARs): August 2004," September 8, 2004.

[17]U.S. Census Bureau, "CSD Monthly Activity Reports (MARs): August 2004," September 8, 2004. As of April 13, a total of 923,382 forms had been returned. However, 13,813 of these cases had been assigned an out-of-scope code in response to comments the establishment provided on the report form (i.e., never-in-business, out-of-business, closed). Excluding these cases brought the total number of forms received to 774,622 SBO-1

DATA PROCESSING AND TABULATION

Receipt and check-in. The NPC checked in SBO questionnaires using laser wands that scanned envelope barcodes and compiled receipt data in a check-in file used to update the survey mailing list and generate address files for mail and telephone follow-up operations.

Following check-in, the Workflow and Image Processing System (WIPS) captured digital images of the questionnaires and subjected them to a quality assurance testing. The NPC transmitted the resulting data files to Census Bureau headquarters, where staff using the Feith Document Database compared the images to data output records for verification that the WIPS was operating correctly. Census Bureau staff reviewed the images for any marks that the system detected on the form in any given check box that were blank-false positives as well as those marks the system missed or recorded as false negatives.[18]

The SBO receipt and check-in operations concluded April 13, 2004, for Phase 1 and August 31, 2004, for Phase 2 of the SBO.[19]

Data entry, editing, and tabulation. The WIPS captured questionnaire data following receipt and check-in and transmitted them in batches to Census Bureau headquarters, where they were loaded into the Census Survey Processing System (CSPro).

Census Bureau analysts edited the SBO data in the CSPro, where possible data values (individually or in relationship to other data) failing to conform to expected reporting behavior were detected automatically and flagged for review by analysts. The editing module permitted analysts to interactively define edits and to examine edit results.

Analysts electronically viewed flagged questionnaires in the CSPro, where they could view all the data associated with a flagged questionnaire and the corresponding edit failures, change data, and execute (for that particular case) edits.[20]

Use of administrative and economic census records. Once analysts completed the review of response data, the Census Bureau retrieved each business's data from the 2002 Economic Census and administrative records.[21] The following data were matched to each business's 2002 SBO data to improve understanding of business activity and ownership characteristics:

- Annual payroll (for companies with paid employees)
- Geographic code
- Organizational status (sole proprietorship, partnership, or corporation)
- Number of employees reported during the week of March 12
- Receipts
- Kind of business

PUBLICATION PROGRAM

Data compiled from the 2002 SBO were released as part of the *Company Statistics Series*. Each of the following reports included data by industrial classifications and/or geographic areas (states, metropolitan and micropolitan statistical areas, counties, and places), and size of firm (employment and receipts). The SBO reports were available at the Census Bureau's Internet site <http://www.census.gov> and American FactFinder, as well as on DVD-ROM.

(corporation/partnership) and 134,947 SBO-2 (sole proprietorship). Churches and businesses with missing or zero employment on the 2002 Business Register as well as the second-time Undeliverable As Addressed cases were excluded from the second follow-up mailing, accounting for over 7.2 percent of the initial mailout. If these cases are subtracted from the initial mailout counts, the response rate is approximately 80 percent (which is comparable to a response rate of 78.5 percent after the second follow-up mailing in 1997).

[18]U.S. Census Bureau, "CSD Monthly Activity Reports (MARs): February 2003," March 5, 2003, and "CSD Monthly Activity Reports (MARs): September 2004," October 7, 2004.

[19]U.S. Census Bureau, "CSD Monthly Activity Reports (MARs): April 2004," May 6, 2004, and "CSD Monthly Activity Reports (MARs): August 2004," September 8, 2004.

[20]For more information on data capture and entry, see: U.S. Census Bureau, "StEPS Generalized Data Entry Specifications," 3-N-900-2938, August 23, 2004.

[21]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 Data Collection."

The data in these reports were compiled by combining SBO data with data collected by the 2002 Economic Census and administrative records. Included are all nonfarm businesses filing 2002 tax forms as individual proprietorships, partnerships, and any type of corporation, and with receipts of $1,000 or more.

Ownership of a business was based on the Hispanic or Latino origin and race(s) of the person(s) owning majority interest in the business. Ownership of businesses with publicly held stock that was indeterminate relative to gender, race, or Hispanic or Latino origin was tabulated separately and published in the "other" category of the Company Summary publication.

- *Advance Report on Characteristics of Employer Business Owners*. This report details the economic and demographic characteristics of the owners of businesses with paid employees operating in the United States. These businesses were asked to report information about the characteristics of up to three individuals with the largest share of ownership; additional owners were not surveyed regarding characteristics. The data represent the characteristics of approximately 7.7 million owners.
- *Preliminary Estimates of Business Ownership by Gender, Hispanic or Latino Origin, and Race*. The data provide the number of firms, sales and receipts, employment, and annual payroll for kind of business and state by gender, Hispanic or Latino origin, and race.

The following reports provide data on both the number of employer and nonemployer firms, sales and receipts, annual payroll, and employment. Data aggregates are for the United States by NAICS industry code, state, metropolitan area, county, place, and employment and receipts size of firm.

- Women-Owned Businesses
- Hispanic-Owned Businesses
- Black-Owned Businesses
- Asian-Owned Businesses
- Native Hawaiian- and Other Pacific Islander-Owned Businesses
- American Indian- and Alaska Native-Owned Businesses
- Characteristics of Businesses and Business Owners
- Company Summary[22]

[22]For more information, see U.S. Census Bureau, "2002 SBO," <http://www.census.gov/csd/sbo/> (December 7, 2005).

Chapter 11.
2002 Business Expenses Survey

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INTRODUCTION

The 2002 Business Expenses Survey (BES) is the sole source of national business data on expenses for merchant wholesale trade, retail trade, and service industries. It is an essential tool for measuring the nation's economy as it supplements the basic economic statistics produced by the 2002 Economic Census for these sectors with estimates of operating expenses. 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).

The federal government is the primary user of BES data. The Bureau of Economic Analysis (BEA), which produces gross domestic product estimates and maintains the national economic accounts, uses BES data in the development of national income and product accounts, input/output tables, and various economic indices. Also, the Center for Medicare and Medicaid Services uses the data for the health and social services sectors to monitor business expenses.[1]

Comparability With the 2002 Economic Census

The 2002 BES added to the list of service industries covered in the 1997 survey to include the trucking and warehousing, finance, insurance, real estate, and miscellaneous transportation industries.

The 2002 survey also added inquiries for expensed computer supplies, packaging and containers, other materials, parts, and supplies for the business's own use; purchased transportation, shipping, and warehousing services, printing services, commissions expense, and cost of insurance; as well as interest paid to depositors or creditors and purchased banking services as expense items asked of banks. Discontinued inquiries included those for voluntary fringe benefits (now included in the employer's cost for fringe benefits) and details regarding depreciation and amortization of structures and machinery/equipment.[2]

[1]U.S. Census Bureau, "Business Expenses Survey," <http://www.census.gov/csd/bes> (April 25, 2006).
[2]Ibid.

Scope and Content

The Census Bureau conducted the 2002 BES under the authority of the 2002 Economic Census. 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. Only data about the United States were tabulated and released. The BES requested information about:

- Payroll
- Benefits
- Contract labor costs
- Taxes and licensing fees
- Depreciation and amortization charges
- Software and other computer expenses
- Office supplies
- Repair and maintenance expenses
- Lease and rental payments
- Utilities
- Advertising
- Accounting
- Legal services

The BES also asked companies to include data for auxiliary establishments at which the primary function was to manage, administer, service, or support the industry covered by the report.[3]

Sample Design

The Census Bureau derived the 2002 BES sample universe from the samples used to collect data in the 2002 Annual Trade Survey, the 2002 Annual Retail Trade Survey, and the 2002 Service Annual Survey. These were probability samples of firms engaged in the relevant industries. A firm was defined as a business organization comprising one or more establishments under common ownership or control. An establishment was defined as a single location where business was conducted or where services were performed.

The Census Bureau constructed the initial sample frames for the surveys from its Standard Statistical Establishment List (SSEL) as of June 1999. The frames contained two types of sampling units represented: large multiple-establishment firms and Employer Identification Numbers (EINs). Both sampling units could represent one or more establishments owned or controlled by the same firm. Firms were stratified according to kind-of-business and then by a measure-of-size based on annual receipts, revenue, or sales.

The frames included only employers, and only employers received questionnaires. Sales data for nonemployers in the retail and services industries were obtained from administrative records. Estimates of the expenses for nonemployers were derived from nonemployers' administrative records.

To reduce the variability of the estimates, sampling units with the largest measures of size were selected "with certainty," meaning they were self-representing. Each had a selection probability and a sampling weight of one. Within each kind-of-business, the substratum boundary (or cutoff) that divided the certainty from the noncertainty units was determined. Inclusion of a unit in the certainty portion ensured that the firm was the sampling unit. All firms not selected with certainty were subjected to sampling on an EIN basis.

[3]For 2002 Business Expenses Survey reporting instructions (retail trade example), see <http://help.econ.census.gov/2002instructions/sa445bi.pdf> (April 25, 2006).

Data from the 1997 Economic Census were analyzed to determine the certainty cutoffs, noncertainty stratum boundaries, and the sampling rates needed to achieve specified sampling variability objectives for each kind-of-business group. These sampling rates were applied to the 2002 sample frames to determine the total sample size for each group, which was then allocated to the size classes optimally based on the number of sampling units and the standard deviation of the units' measures of size. Within each noncertainty stratum, a simple random sample of EINs was selected. The sampling rates for the EINs varied between 1 in 3 and 1 in 1,000.

A two-phase sample selection procedure was used for births (new EINs issued after the initial frames were created). EIN births are new EINs assigned by the Internal Revenue Service (IRS) based on its latest available list of Federal Insurance Contributions Act (FICA) taxpayers. Receipts values were not available for these EINs, so a large sample was drawn and canvassed to obtain a more reliable measure of size (sales or receipts) and a more reliable kind-of-business code, if needed. Using this more reliable information, births selected were subjected to probability proportional to size sampling, with overall probabilities equivalent to those used in drawing the initial sample from the 1999 SSEL.[4]

DATA COLLECTION

The Census Bureau collected 2002 data in 2003 using questionnaires that supplemented information collected by the Annual Trade Survey (wholesale), Annual Retail Trade Survey, and the Service Annual Survey. For the first time, the 2002 BES included coverage of finance, insurance, real estate, and selected transportation industries that were not surveyed in the annual survey programs. Approximately 15,000 firms in these industries were asked to report both revenue and operating expenses.

The following sector-specific questionnaires were sent to firms in 2003:

Form description	Due date	Form number	Instruction sheet number
Merchant wholesale	March 19, 2003	SA-42(B)	SA-42(BI)
Retail trade	April 30, 2003	SA-445(B)	SA-445(BI)
Miscellaneous transportation, insurance, real estate, business/trade schools	June 4, 2003	SA-456(B)	SA-456(BI)
Trucking and warehousing	March 18, 2003	SA-4849(B)	SA-4849(BI)
Finance	June 4, 2003	SA-529(B)	SA-529BI)
Accommodation and food services	April 30, 2003	SA-5678(B)	SA-5678(BI)
Miscellaneous service industries	March 18, 2003	SA-5678(B)	SA-5578(BI)

The 2002 BES questionnaires were sent to approximately 95,000 firms and Employer Identification Numbers (EINs) selected from the Service Annual Survey; the Annual Trade Survey; the Annual Retail Trade Survey; and selected finance, insurance, real estate, and transportation industries not covered by the Service Annual Survey.[5] (EINs may represent one or more establishments, and firms may have one or more EINs.) Each of the component programs provided stratified probability samples of employer businesses drawn after the preceding economic censuses and subsequently updated with business births.

National estimates of operating expenses were developed to supplement 5-year census data on sales and revenue. They were based on summations of weighted information that were adjusted by a process to benchmark them according to the corresponding sector data in the economic census. The weights were the inverse of the probability of selection (or sampling rate) of sampling units in the survey.[6]

[4]U.S. Census Bureau, "Business Expenses Survey: Methodology," <http://www.census.gov/csd/bes/methodology-prelim.htm> (July 28, 2005).

[5]Of the approximately 95,000 mailed questionnaires, the Census Bureau's NPC recorded a 92 percent questionnaire check-in rate. U.S. Census Bureau, "CSD Monthly Activity Reports: October 2003," November 6, 2003.

[6]U.S. Census Bureau, "Business Expenditures Survey," <http://www.census.gov/csd/www/bes.htm> (November 2, 2005).

Mail follow-up. The Census Bureau conducted three follow-up mailings to businesses that had not responded to the initial mailout before being referred for telephone follow-up. The first mail follow-up occurred during the first week of April 2003 for businesses with mid-March due dates (see table above). Other follow-ups were mailed approximately 2 to 3 weeks after the questionnaires' due dates.[7]

Telephone follow-up. Beginning in July and continuing through October 2003, the NPC staff conducted telephone follow-ups with businesses that failed to respond to the initial and follow-up mailings. The NPC made approximately 20,000 calls, from which 55 percent of nonrespondents provided the data necessary to complete a questionnaire.[8]

DATA PROCESSING AND TABULATION[9]

The Census Bureau used the StEPS to process BES data.[10] In addition to reducing resources needed for system maintenance, the StEPS increased the amount of control over processing by survey analysts and methodologists. The StEPS contained integrated modules for data collection support (e.g., mailing label printing and questionnaire check-in); editing; data review and correction; imputation; calculation of estimates and variances; and system administration (e.g., parameter specification and the submission and monitoring of batches[11]). The StEPS used data access and analytical tools, terminology, and data structures that were common for the 2002 BES and the more than 100 other economic surveys conducted by the Census Bureau.

Receipt and check-in. The NPC checked in questionnaires received by mail using automated scanning equipment to read bar codes on the mailing labels. 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. In addition to handling reports received by mail, fax, and phone, NPC staff handled "unidentified as addressed" cases as well as telephone and mail inquiries and requests. Congressional correspondence and questionnaires requiring special attention not available at the NPC were referred to Census Bureau headquarters for resolution.

Data entry. After check-in, BES reports were routed to clerks for batching into work units. They then forwarded the reports to the data entry unit for keying.

Following keying and verification, the NPC sent the forms to be imaged using the Feith Imaging system and made available for research by BES analysts. The data files were electronically transmitted to the Census Bureau's Bowie, MD, computer center via dedicated telephone lines. The NPC retained backup files for possible retransmission until notified that the data had been received.

Edit and imputation. The StEPS was used for edit and imputation of the 2002 BES data. As soon as data from the Census Bureau's 2002 annual surveys of merchant wholesale, retail trade, and service industries were pronounced final, business records for selected data fields from the surveys' databases were sent to the StEPS database to be matched with records in the BES data entry output files for inclusion in the BES database. The BES database was subsequently batch edited for balance, consistency, and tolerance. Suspicious data were "flagged" for review by subject analysts.

After editing, BES records underwent imputation for missing data. The StEPS calculated imputation factors for combinations of kind-of-business and tax status for selected types of organization. Imputation rates were computed during tabulation in order to measure the extent of imputation for analysis and potential use in the suppression system.

[7]U.S. Census Bureau, "CSD Monthly Activity Reports: March 2003," April 4, 2003.

[8]U.S. Census Bureau, "CSD Monthly Activity Reports: October 2003," November 6, 2003.

[9]The information that follows was drawn from: U.S. Census Bureau, "CSD Monthly Activity Reports (MARs)," January 2003 to November 2003, and Richard Sigman, "Editing and Imputation in a Standard Economic Processing System," Proceedings of Statistics Canada Symposium 2001. See also U.S. Census Bureau, "StEPS Generalized Data Entry Specifications," 3-N-900-2938, August 23, 2004.

[10]The StEPS is a generalized processing system that the Census Bureau's Economic Directorate developed to replace 16 of its legacy systems.

[11]"Batches" are collections of 400 to 450 questionnaire pages minus any correspondence or damaged questionnaires in preparation for microfilming and data entry.

Tabulation. Census Bureau analysts used the StEPS to produce Estimation Results Files (ERFs) containing simple weighted estimates. This was done 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 results of the 2002 Economic Census. For each NAICS industry, each simple weighted estimate was multiplied by the ratio of Census Bureau-published sales (revenue) to simpleweighted BES sales. The BES sales represented the sum of weighted sales data extracted from the source annual survey record files, subject to error correction by BES analysts. The 2002 BES published estimates of sales (revenue) for retail trade and service industries included coverage for nonemployer firms, where aggregate sales (revenue) data were derived from administrative records.

Aggregate estimates that did not meet publication standards on the basis of sampling error, nonsampling error, or excessive Census Bureau adjustment, were marked for suppression in the publication tables. Next, ERFs containing the adjusted estimates of expenses data were transformed into 2-dimensional SAS data for input into the main economic census tabulation system.

Finally, tabulated data were analyzed for reasonableness and consistency and released to the Internet as HTML tables and in a PDF report. Data that did not meet publication standards on the basis of this review, sampling error, or nonsampling error were suppressed in the tables. (The Census Bureau decided not to produce dollar volume estimates associated with the finance, insurance, real estate, and selected transportation industries not covered by the Service Annual Survey due to significant data quality issues. These issues included poor response and a lack of annual survey data for sample maintenance, data editing, imputation, and data analysis.)

PUBLICATION PROGRAM

The Census Bureau released the 2002 BES data as part of the *Economic Census Industry Series*. The 2002 data were published on the internet 3 to 4 years after the census year with 3-, 4-, and 5-digit industry detail. For 2002, the Industry Series of the Economic Census includes the Business Expenses report, covering expenses data compiled in the Business Expenses Survey. For 1997, this report was published as part of the *Company Statistics Series*.[12]

[12]U.S. Census Bureau, "Business Expenditures Survey," <http://www.census.gov/csd/bes> (April 26, 2006).

Chapter 12.
2002 Vehicle Inventory and Use Survey

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INTRODUCTION

The 2002 Vehicle Inventory and Use Survey (VIUS) was conducted in conjunction with the 2002 Economic Census. Title 13, U.S. Code, Sections 193 and 195, authorizes the Secretary of Commerce to direct the Census Bureau to collect economic data, including those gathered by the 2002 VIUS. This survey provided valuable insight into the nation's economy that otherwise would have been unavailable.

Background Information

The Census Bureau conducted the first Truck Inventory and Use Survey (TIUS) as part of the 1963 Census of Transportation to fill the void in the nation's understanding about its trucking fleet. The TIUS collected detailed information from a sample of approximately 100,000 private and commercial truck and truck-tractor owners selected from state motor vehicle registration records. The data included the numbers of trucks classified by physical characteristics, occupational use, intensity of use, and geographic distribution.[1]

The Census Bureau renamed the TIUS as the Vehicle Inventory and Use Survey (VIUS) in 1997 to reflect the survey's expanded scope (see below).[2] As it did in 1997, and as did its predecessor, the TIUS, the 2002 VIUS collected data on the characteristics of the nation's trucking fleet, based on a stratified random sample of private and commercial trucks registered in each state and in the District of Columbia.[3]

[1] U.S. Census Bureau, 1992 Census of Transportation: *Truck Inventory and Use Survey—United States*, TC92-T-52. May 1995, pp. iii–iv.
[2] For more information on the expansion of the scope of the 1997 VIUS, see U.S. Census Bureau, *History of the 1997 Economic Census*, POL/00-HEC, Washington, DC, July 2000, pp. 96–97.
[3] U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, EC02TV-US. December 2004, p. 1.

Scope and Content

The Census Bureau used two questionnaires—forms TC-9501 and TC-9502—to collect data on the characteristics of the nation's trucking fleet. Owners of trucks in the pickup, mini van, light van, and sport utility vehicle strata (about 25 percent of the sample) received questionnaire TC-9501. Owners of all other trucks in the sample (about 75 percent) received questionnaire TC-9502.

As noted, the VIUS survey sampled private and commercial trucks. Exclusions included vehicles owned by federal, state, and local government agencies, as well as ambulances, buses, motor homes, and some privately or commercially owned vehicles that were not licensed (such as farm equipment). The Census Bureau classified other vehicles such as trucks disposed of prior to January 1, 2002; farm tractors; unpowered trailer units or converted dollies; and trucks reported to have been wrecked prior to the 2002 registration year, as out-ofscope of the VIUS after receiving the completed questionnaire.

Many states allowed pickups, minivans, and sport utility vehicles to be registered as either cars or trucks. For this reason, the Census Bureau conducted a search of state passenger car files and moved pickups, small vans, and sport utility vehicles found in these files into the VIUS sample universe.

Annual vehicle registration dates 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 vehicle registrations. Regardless of individual states' respective registration deadlines, vehicle registration data in the survey were reported as of July 1, 2002.[4]

The VIUS questionnaires (TC-9501 and TC-9502) collected physical and operational characteristics of in-sample vehicles as follows:[5]

1. Physical characteristics:
   - Vehicle type
   - Average weight
   - Type of transmission
   - Overall length
   - Type of braking system
   - Type of equipment
   - Type of fuel used
   - Type and size of body
   - Number of axles
   - Axle arrangement of trailer units
   - Cab type
2. Operational characteristics:
   - Base of operation
   - Truck-tractors and trailers operated from the base of operation
   - Area of operation
   - Vehicle miles
   - Months operated

[4]Ibid.
[5]U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey*, Forms TC-9501 and TC-9502. November 18, 2002.

- Miles per gallon
- Use of vehicle
- Types of commodities carried

Uses of the Data[6]

The U.S. Department of Transportation, federal and state agencies, academic researchers, trade organizations, and others use VIUS data for a variety of purposes, including:

- Planning road improvements and highway cost allocations.
- Determining truck size and weight regulations.
- Determining types and consumption of fuels used by commercial and private vehicles
- Improving transportation services for shippers and carriers.
- Conducting marketing studies.

Definitions[7]

The 2002 VIUS employed the following definitions:

Annual miles. The number of miles traveled annually; number adjusted to reflect miles traveled prior to a respondent ownership of the vehicle.

Body type. The type of body that is permanently attached to the power unit (i.e., straight or single-unit truck). For truck-tractors, the body type was defined as the type of trailer most often pulled.

Business. The business or the part of the business using the vehicle.

Hazardous materials. This item identifies those trucks transporting hazardous materials in quantities large enough to require a Code of Federal Regulations, Title 49, Part 172, Subpart F placard.[8]

Kind of business (formerly "Major use"). Based on respondents' response to the question, "Which of the following best describes your business (or part of your business) in which this vehicle or vehicle/trailer combination was most often used during 2002?" (Question M-3, questionnaire TC-9501 and question M-1, questionnaire TC-9502.) The 15 Kind of Business categories are roughly based on North American Industry Classification System (NAICS) sectors (including "Other") and conformed to the generally accepted meaning of the term. If possible, Census Bureau 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 or special trades

[6]Information for the following section was drawn from: U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, p. 1.

[7]Information in the following section was drawn from: U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, pp. 1–6. See also *History of the 1997 Economic Census*, POL/00-HEC. July 2000, pp. 97–98.

[8]Title 49, Part 172, Subpart F lists and classifies materials that the Department of Transportation designates as hazardous materials for purposes of transportation and prescribes the requirements for shipping papers, package marking, labeling, and transport vehicle placarding applicable to the shipment and transportation of those hazardous materials.

The Census Bureau also recorded U.S. mail service trucks on a for-hire, contract basis, antique trucks (when used as exhibits), and yard tractors to conform with the major use consistent with the company's name and other responses to the survey.

Minivans. Category includes minivans using either a truck or a passenger car chassis.

Primary operator classification. The VIUS classified five primary operator classifications:

1. Personal transportation—a vehicle operated for personal use, such as travel to work, car pooling, pleasure driving, etc.
2. Rental—a vehicle operated for daily or short-term rental.
3. Private—a vehicle operated to carry goods owned by the respondent, or for internal company business.
4. Motor carrier—a vehicle operated by a company and hired to carry other people's goods.
5. Owner operator—a vehicle operated by an independent trucker hired to carry other people's goods.

Products, equipment, or materials carried. The VIUS 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" product category to one of 49 other specific 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 101 and 200 miles.
- Long range-medium—between 201 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 home base location.
- Off-road—minimal use of public roads; usually associated with construction and farming activities.

Primary Operator Classification. Limited to "for hire" interstate operators as follows:

- Contract—offering transportation services to certain shippers under contracts.
- Common—offering transportation services to the general public over regular and irregular routes.

Vehicle size. Determined by average weight (empty vehicle weight plus cargo weight) during 2002. The VIUS recognized the following four size classes:

1. Light—10,000 pounds or less.
2. Medium—10,001 to 19,500 pounds.
3. Light-heavy—19,501 to 26,000 pounds.
4. Heavy-heavy—26,001 pounds or more.

Sample Design

The VIUS sampling frame was drawn from state registration records and consisted of 136,113 trucks identified as being active as of July 1, 2002.[9] The Census Bureau stratified the sample frame by geography (the 50 states and the District of Columbia) and truck characteristics. Body type and gross vehicle weight (GVW) determined the following truck classifications:

- Pickups
- Minivans, other light vans, and sport utilities
- Light single-unit trucks (GVW less than 26,000 lbs)
- Heavy single-unit trucks (GVW greater than 26,000 lbs)
- Truck tractors

The combination of geography and truck characteristics created 255 geographic-bytruck strata. Within each stratum, the Census Bureau selected a simple random sample of truck registrations without replacement to produce the probability sample of 136,113 truck registrations.[10]

VEHICLE INVENTORY AND USE PROCESSING SYSTEM (VIPS)

For the first time, the Census Bureau used the VIUS Interactive Processing System (VIPS) to prepare questionnaire packages for mailout and process 2002 VIUS returns.[11] The VIPS, a browser-based processing system, used Windows technologies, including point-and-click, pop-up menus, toolbars, and multitasking to aid in the processing of surveys.

DATA COLLECTION

The VIPS created mailing lists and labels (that included Census File Numbers and barcodes) for the mailout of questionnaires to the registered owner of each of the 136,113 truck registrations in the sample.[12] The Census Bureau's National Processing Center (NPC) in Jeffersonville, IN, mailed questionnaires (TC-9501 and TC-9502) between April 11 and April 15, 2003.[13] Truck registrants provided data about the truck identified by the vehicle registration information printed on their questionnaire.

Each mailout package consisted of the appropriate questionnaire, cover letter, and a return envelope. The Census Bureau sent questionnaire TC-9501 to registrants of pickups, minivans, other light vans, and sport utility vehicles. Registrants of all other truck types received questionnaire TC-9502. Census Bureau staff identified vehicles to be enumerated on the questionnaire (vehicle make, model year, license number, and vehicle identification number). Owners supplied data for only the identified truck, regardless of other vehicles they owned or operated.[14]

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[9]For New Hampshire, the sampling frame included trucks registered as of September 1, 2001.

[10]U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, p. 6.

[11]In 1997, the VIUS questionnaires were processed using the Transportation Automated Control System (TRACS). For more information, see: U.S. Census Bureau, *History of the 1997 Economic Census*, POL-00-HEC. Washington DC, July 2000, pp. 100–101.

[12]The 2002 VIUS was a probability sample of private and commercial trucks registered (or licensed) in the United States as of July 1, 2002. A sample of 136,113 trucks was surveyed to measure the characteristics of nearly 89 million trucks registered in the United States (excluding vehicles owned by federal, state, and local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been disposed of prior to January 1, 2002).

[13]Mailout to Georgia and New Hampshire was delayed. New Hampshire questionnaires were mailed approximately 1 month later and Georgia questionnaires were mailed in November 2003. U.S. Census Bureau, "Monthly Activity Report: Mailout and Data Capture Branch," May 1, 2003, and November 28, 2003.

[14]U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, p. 1.

Follow-Up Activities

The NPC conducted two follow-up mailings to nonrespondents in June and July (see Table 12-1). Approximately 16,000 nonrespondents to the follow-up operations received telephone follow-up calls in August 2003.[15]

Upon completion of the telephone follow-up operation, the response rate for the 2002 VIUS was 76.9 percent.[16]

Table 12-1.
Mail Follow-Up Operations

Establishment	Questionnaire	Mailout	Date
First mail follow-up:			
Single unit	TC-9501	13,862	June 4–June 9, 2003
Multiunit	TC-9501	9,481	June 4–June 9, 2003
Multiunit	TC-9502	32,549	June 10–June 16, 2003
Second mail follow-up:			
Single unit	TC-9501	8,746	July 10–July 11, 2003
Multiunit	TC-9501	9,481	July 10–July 11, 2003
Single unit	TC-9502	24,236	July 14–July 16, 2003

DATA PROCESSING[17]

Receipt and check-in. Clerks at the NPC recorded the receipt of questionnaires as they arrived using laser scanners to read barcoded Census File Numbers on each address label. This initial check-in acknowledged the questionnaires' receipt in the VIPS and allowed ongoing monitoring of processing progress.

The NPC received two types of survey-related correspondence: questionnaires and correspondence. Clerks assigned the following check-in (source) codes for the type of correspondence: mail, telephone, fax, undeliverable as addressed, received in Washington, DC, delinquent, telephone follow-up, congressional, and other. After check-in, clerks supplied the appropriate status code for each questionnaire into the VIPS, and referred the questionnaires to the appropriate processing unit. If a single package contained more than one questionnaire, clerks kept the questionnaires together through all stages of processing so that one contact could be made for all questions.

Data screening and entry. Clerks screened questionnaires for completeness and to ensure that the information provided could be keyed. They also:

1. Looked for "must items" requiring completion.
2. Converted responses (e.g., pounds to tons).
3. Transcribed respondent remarks.
4. Clarified illegible responses.
5. Rounded figures.

If information for any of the "must items" was missing, clerks sent the questionnaire to the NPC's telephone unit, where staff contacted the truck owner to obtain complete information. Statistical assistants at the NPC resolved questionnaire items that could not be completed satisfactorily through screening or by telephone.

[15]Telephone follow-up for New Hampshire, consisting of 869 cases, was conducted in October 2003 as a result of that state's delayed initial mailout. Information on the mail and telephone follow-up operations was drawn from U.S. Census Bureau, "Monthly Activity Report: Mailout and Data Capture Branch," June 30, 2003, July 31, 2003, and August 29, 2003.

[16]U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, p. 8.

[17]Information for the following section was drawn from: U.S. Census Bureau, "2002 Vehicle Inventory and Use Survey (VIUS): Key From Image (KFI) Procedure for Keying Forms TC-9501 and TC-9502," June 30, 2003; and Howard R. Hogan, "Memorandum to Mark E. Wallace: Transmittal of Specification/Procedures," May 26, 2005.

The NPC microfilmed questionnaires after screening and problem resolution. The microfilming process recorded the questionnaire's barcode and microfilm frame and reel numbers. The NPC sent the file containing these identifiers, along with copies of the microfilm reels, to the Census Bureau's headquarters for data review and analysis.

Questionnaire keying followed microfilming. 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 keyed information to the Census Bureau's computer center in Bowie, MD, via dedicated telephone lines. Data tapes were retained for possible retransmission until the Bowie, MD, computer center notified the NPC that it received the data.

Data edits. Each VIUS data record underwent a detailed computer edit for inconsistencies and reasonableness at Census Bureau headquarters. During this stage, analysts used the VIPS to insert information—based on administrative records—that completed blank, or obviously incorrect, responses. The VIPS flagged items that failed edits, and displayed each failed record for review and correction by an analyst. In addition to making corrections, analysts deleted records that preset criteria determined to be out of scope of the survey.

When necessary, the Census Bureau imputed miles and lifetime miles based on averages calculated from responses to the five characteristics most closely correlated with annual and lifetime miles: (1) model year; (2) vehicle type; (3) acquisition; (4) disposal; and (5) months operated. Analysts used administrative records from each state to derive cubic-inch displacement and number-of-cylinders data. Analysts imputed missing length and average weight data based on responses from records with similar characteristics.

PUBLICATION PROGRAM

The Census Bureau tabulated data using unweighted and weighted estimates of the number of trucks and their characteristics. Analysts computed corresponding sampling variability, checked tabulations for consistency and logic, and made comparisons between 1997 and 2002 data. Analysts suppressed data if they did not meet publication standards (i.e., the response rate was too low, or the associated or relative standard error was too high).

In addition to the Internet release of the United States Summary and state-level data, the 2002 VIUS produced microdata information for each truck body type in the sample. Analysts modified these records to prevent identification of individual trucks or operating establishments.[18]

The Census Bureau made the following reports available in electronic formats:[19]

- *Vehicle Inventory and Use Survey: Geographic Area Series*. The Geographic Area Series consisted of 52 reports (United States, each state, and Washington, DC) available on a flow basis from 16 to 22 months after the census year. The Census Bureau made all publications available on the Internet via portable document format (PDF) files. Additionally, the agency released a microdata CD-ROM containing unaggregated records for individual trucks by state approximately 2 years after the census. The unaggregated records are masked to avoid possible disclosure of individual vehicles or owners.
- *Vehicle Inventory and Use Survey: Fast Facts*. "Fast Facts" were available from the Census Bureau's Internet site and provided fast access to some of the most widely used data from the VIUS.

[18]U.S. Census Bureau, 2002 Economic Census: *Vehicle Inventory and Use Survey, Geographic Area Series—United States*, pp. 7–9.

[19]The information for this section was drawn from: U.S. Census Bureau, "2002 VIUS Data Releases," <http://www.census.gov/svsd/www/vius/2002.html> (September 15, 2005).

Chapter 13.
2002 Commodity Flow Survey

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INTRODUCTION

The 2002 Commodity Flow Survey (CFS) was conducted in conjunction with the 2002 Economic Census. Title 13, U.S. Code, Sections 193 and 195, authorizes the Secretary of Commerce to direct the Census Bureau to collect economic data, including those gathered by the 2002 CFS. This survey provided valuable insight into the nation's economy that otherwise would have been unavailable.

Background Information[1]

From 1963 through 1977, the Census Bureau produced measures on the flow of goods and materials according to mode of transportation via the Commodity Transportation Survey (CTS). An evaluation of the 1977 CTS showed that both the methodology for collecting the shipment samples and the small sample size were problematic. In 1983, the Census Bureau conducted an abbreviated CTS that collected summary data from participants. However, an evaluation of the 1983 survey found that the summary data were of poor quality. As a result, the Census Bureau did not publish the data and ended the survey.

In 1990, the Department of Transportation recognized the need for restoring a commodity-based survey in its 1990 "Statement of National Transportation Policy." Congress reinforced the need for these data when it enacted the 1991 Intermodal Surface Transportation Efficiency Act. In response, the U.S. Bureau of Transportation Statistics and the Census Bureau formed a partnership

[1]Information for the following section was drawn from: U.S. Census Bureau, *2002 Commodity Flow Survey: United States*, EC02TCF-US. December 2004, pp. v–viii.

to design the Commodity Flow Survey (CFS) to collect and publish statistics that had previously been produced by the CTS. In 1993, with funding from the U.S. Bureau of Transportation Statistics, the Census Bureau conducted the first CFS.[2]

Scope[3]

The 2002 CFS covered U.S. establishments with paid employees classified (using the 1997 North American Industry Classification System [NAICS]) in mining, manufacturing, wholesale trade, and select retail trade industries—specifically electronic shopping and mail-order houses.[4] The survey excluded establishments classified in services, transportation, construction, and most retail industries, as well as farms, fisheries, foreign establishments, and most government-owned establishments (see Table 13-1).

Table 13-1.
NAICS Industries Covered in the 2002 CFS

NAICS code	Description
212	Mining (except Oil and Gas)
311	Food Manufacturing
312	Beverage and Tobacco Product Manufacturing
313	Textile Mills
314	Textile Product Mills
315	Apparel Manufacturing
316	Leather and Allied Product Manufacturing
321	Wood Product Manufacturing
322	Paper Manufacturing
323	Printing and Related Support Activities
324	Petroleum and Coal Products Manufacturing
325	Chemical Manufacturing
326	Plastics and Rubber Products Manufacturing
327	Nonmetallic Mineral Product Manufacturing
331	Primary Metal Manufacturing
332	Fabricated Metal Product Manufacturing
333	Machinery Manufacturing
334	Computer and Electronic Product Manufacturing
335	Electrical Equipment, Appliance, and Component Manufacturing
336	Transportation Equipment Manufacturing
337	Furniture and Related Product Manufacturing
339	Miscellaneous Manufacturing
421	Wholesale Trade, Durable Goods
422	Wholesale Trade, Nondurable Goods
4541	Electronic Shopping and Mail-Order Houses
49310*	Warehousing and Storage
551114*	Corporate, Subsidiary, and Regional Managing Offices

* Auxiliary establishments only (see footnote 23).

Changes Made From the Previous Commodity Flow Survey

In addition to the reduced sample size of the 2002 CFS (50,000) when compared to the 1997 survey (100,000), there were several changes and expansions of coverage. For example, the coverage of managing offices was expanded in the 2002 CFS compared to the 1997 CFS. The 2002 CFS covered auxiliary establishments (i.e., warehouses and managing offices) of multiestablishment companies with nonauxiliary establishments within the scope of the CFS and those classified as retail trade. Research conducted prior to the 2002 CFS showed that not all managing offices with

[2]For more information, see U.S. Bureau of Transportation Statistics, "Intermodal Surface Transportation Efficiency Act of 1991—Summary," <http://ntl.bts.gov/DOCS/ste.html> (November 21, 2005).

[3]Information for the following section was drawn from: U.S. Census Bureau, *2002 Commodity Flow Survey: United States*, EC02TCF-US. December 2004, pp. v–vi.

[4]The survey also covered auxiliary establishments (i.e., warehousing and management offices) of multiestablishment companies that have nonauxiliary establishments in-scope of the CFS or are classified in retail trade.

shipping activity in the 1997 CFS indicated sales or inventories in the 1997 Economic Census. Therefore, the determination of scope for managing office in the 2002 CFS did not rely upon 1997 CFS results.[5]

In 1993 and 1997, the Census Bureau classified establishments using the Standard Industrial Classification (SIC) System. In 2002, it classified establishments using NAICS, which resulted in some changes in industry coverage.[6]

Uses of the Data

Numerous federal agencies and private establishments use CFS data for policy and programmatic purposes.

- The U.S. Department of Transportation uses them for policy development, assessing infrastructure needs, and in evaluating transportation safety issues.
- State departments of transportation use them in combination with other data sources to evaluate existing uses/needs of their transportation infrastructure.
- Business owners, private researchers, and analysts use them to analyze trends in the movement of goods over time, mapping spatial patterns of commodity and vehicle flows, and forecasting future demands for the movement of goods and associated infrastructure and equipment needs.[7]

Sample Design

The CFS sample design began with a review and selection of in-scope establishments found in the Census Bureau's Business Register (see Chapter 4, "Technological Innovations and the Census"). The Business Register contained approximately 6 million employer establishments, of which 750,000 were in industries considered in-scope for the 2002 CFS. From this universe, the Census Bureau collected data from a sample of approximately 50,000 establishments. As noted in Table 13-1, sample establishments included those engaged in mining, manufacturing, wholesale trade, and selected retail trade establishments (including electronic shopping and mail order businesses), as well as auxiliary establishments of multiestablishment companies that had retail or in-scope operating establishments.

The Census Bureau selected the sample for the 2002 CFS 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 units were shipments.[8]

Standard Classification of Transported Goods[9]

The Census Bureau used the product classifications found in the Standard Transportation Commodity Classification (STCC) system to classify CTS and CFS data from 1963 to 1993. Created by the Association of American Railroads (AAR) in the early 1960s to analyze commodity movements by rail, the STCC codes were useful for analyzing most important aspects of the U.S. transportation system for the 1963 CTS.

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[5]The Census Bureau reduced the number of in-scope managing offices in 1997 based on the results of the 1992 Economic Census. A managing office was in-scope for the 1997 CFS only if it had sales or end-of-year inventories in the 1992 census.

[6]The most notable changes in coverage included the following: coverage of the logging industry changed from an in-scope Manufacturing SIC code (SIC 2411) to an out-of-scope Agriculture, Forestry, Fishing, and Hunting NAICS code (NAICS 1133). Also, coverage of the publishing industry changed from in-scope Manufacturing SIC codes (SIC 2711, 2721, 2731, 2741, and part of 2771) to out-of-scope NAICS Information codes (NAICS 5111 and 51223). For more information, see U.S. Census Bureau, "Appendix A: Comparability With the 1993 and 1997 Commodity Flow Surveys," and "Appendix C: Sample Design, Data Collection and Estimation" in *Transportation—Commodity Flow Survey*, EC02TCF-AL. December 2004.

[7]U.S. Census Bureau, *2002 Commodity Flow Survey: United States*, EC02TCF-US. December 2004, p. v.

[8]For more information, see U.S. Census Bureau, "Appendix C: Sample Design, Data Collection, and Estimation" in *Transportation—Commodity Flow Survey*, EC02TCF-AL. December 2004, p. C-1. See also "Background Materials for Commodity Flow Survey Conference," July 8–9, 2005, <http://trb.org/conferences/cfs/> (November 21, 2005).

[9]Information for the following section was drawn from: U.S. Bureau of Transportation Statistics, "Commodity Flow Survey," <http://www.bts.gov/programs/commodity_flow_survey/> (September 28, 2005).

Deficiencies in the STCC system arose because the CFS is a shipper survey and collects information about shipments moving by all modes of transportation (i.e., not just shipments by rail). The STCC system frequently provided inadequate detail for identifying products that were significant for modes, such as truck and air. The codes became increasingly inappropriate for tracking domestic product movements across all modes as a result of changes, including the deregulation of trucking;[10] the enactment of the 1994 North American Free Trade Agreement (NAFTA); changes in logistics practices; the emergence of plastics and composite materials to replace metals and glass; the obsolescence of many categories of wood products; and the rapid development of high-tech electronic goods.[11]

For these reasons, the Bureau of Transportation Statistics (BTS) sponsored the development of a new product code—the Standard Classification of Transported Goods (SCTG)—to collect and report CFS data. Created jointly by agencies of the United States and Canadian governments and based on the Harmonized System of product classification, the SCTG coding system specifically addresses the statistical needs concerning transported products.

The Census Bureau began classifying commodities shipped using the SCTG coding system in 1997. In 2002, as in 1997, the CFS survey materials included a listing of SCTG codes and descriptions at the five-digit level to assist respondents with assigning a commodity code to each shipment. For shipments of more than one commodity, respondents used the five-digit code for the major commodity—the commodity of greatest total weight in the shipment.

Shipment Coverage

The CFS captured data on shipments originating from select types of business establishments (see Table 13-1) located in the 50 states and the District of Columbia. It did not cover shipments originating from business establishments located in the island areas.[12] The CFS did not include shipments traversing the United States from a foreign location to another foreign location (e.g., from Canada to Mexico) or shipments from a foreign location to a U.S. location. It did include imported products at the point that they left the importer's domestic location for shipment to another location and shipments transported through a foreign territory with both the origin and destination being in the United States. The mileages calculated for these shipments excluded the international segments (e.g., shipments from New York to Michigan through Canada did not include any mileages for Canada). The survey included export shipments, with the domestic destination defined as the U.S. port, airport, or border crossing of exit from the United States.

The 2002 CFS also did not cover industry areas with significant shipping activity, like agriculture and government. As a result, the CFS did not cover shipments of agricultural products from the farm site to processing centers or terminal elevators (most likely shortdistance local movements); however, it did cover the shipments of these products from the initial processing centers or terminal elevators onward.[13]

Mileage Calculations

A BTS mileage calculation team working at a secure data site within the Census Bureau estimated the distance traveled by each freight shipment sampled for the 2002 CFS using algorithms and an integrated, intermodal transportation network developed and updated expressly for this purpose by the Oak Ridge National Laboratory (ORNL) in Oak Ridge, TN.[14]

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[10]Although calls to lessen federal oversight of the trucking industry began in 1962, during the Kennedy Administration, it was not until strong anti-regulatory pressure was applied by the Carter Administrations that the Interstate Commerce Commission began noticeably lessening its regulatory hold on the industry, culminating in the 1980 Motor Carrier Act.

[11]The AAR continues to use the STCC system as a tariff mechanism, and the codes remain functional for tracking rail-only movement of goods.

[12]Although the 2002 CFS did not include Puerto Rico or the U.S. territories and possessions, the 2002 Economic Census did include Puerto Rico, American Samoa, Guam, the Commonwealth of Northern Mariana Islands, and the U.S. Virgin Islands. See Chapter 9, "2002 Economic Census of Island Areas," for more information.

[13]U.S. Census Bureau, "Appendix C: Sample Design, Data Collection and Estimation," *2002 Commodity Flow Survey: United States*, EC02TCF-US. December 2004, pp. C-1–C-4.

[14]U.S. Census Bureau, *2002 Commodity Flow Survey: United States*, EC02TCF-US. December 2004, pp. ix–x.

Mileage Data for Pipeline Shipments

The CFS did not publish ton-miles and average miles per shipment for pipelines. For most of these shipments, respondents reported the shipment destination as a pipeline facility on the main pipeline network. Therefore, for the majority of these shipments, the resulting mileage represented only the access distance through feeder pipelines to the main pipeline network, and not the actual distance through the main pipeline network. Pipeline shipments are included in the U.S. totals for ton-miles and average miles per shipment. For security purposes, there are no pipeline networks available in the public domain with which to route petroleum-based products. Hence, any distance involving a pipeline was considered as solely pipeline mileage from origin ZIP Code to destination ZIP Code and calculated to equal great circle distance (i.e., the shortest distance between two points on the earth's surface, taking into account the earth's curvature).[15]

DATA COLLECTION[16]

The NPC conducted the 2002 CFS mailout and data collection. Data collection took place on a flow basis as establishments returned their 1-week data for each of their four assigned quarters of 2002. Mailout began prior to the start of first-quarter reporting week, beginning January 6, 2002, and ended January 4, 2003.

Each establishment in the CFS sample received questionnaire CFS-1000 by mail for each of its reporting weeks during the four quarters of 2002. By assigning different reporting periods to different establishments, the mailout covered all 52 weeks of the year. For a given establishment, the Census Bureau requested that the respondent provide the following information about each of its reported shipments:

- Shipment identification number.
- Date on which the shipment was made.
- Value.
- Weight.
- Commodity code from SCTG list and description.
- Mode(s) of transportation (all that apply in order of their use).
- Domestic destination or port of exit.
- An indication of whether the shipment was an export.
- If applicable, the United Nations or North America (UN/NA) number for hazardous material shipments.
- For export shipments, respondents provided the export mode of shipment and the export city and country of foreign destination.

For a shipment including more than one commodity, the Census Bureau instructed the establishment to report the commodity that made up the greatest percentage of the shipment's weight.

Mail and telephone follow-up. The NPC also conducted mail and telephone follow-up operations. Mail follow-up consisted of a reminder mailed to nonrespondents. The NPC conducted telephone follow-up only for the largest nonrespondent establishments. During telephone follow-up, NPC staff did not attempt to complete a questionnaire by telephone because of the large amount of data requested. At the conclusion of the follow-up operations, 63 percent of establishments had supplied data that contributed to tabulation.[17]

[15]Ibid., p. x.

[16]Information for the following section was drawn from: U.S. Census Bureau, "Commodity Flow Survey," <http://www.census.gov/svsd/www.cfsmain.html (October 8, 2004).

[17]The response rate is based on the number of establishments providing at least one-quarter of the information requested by the questionnaire. U.S. Census Bureau, "Appendix B: Reliability of the Estimates," *2002 Commodity Flow Survey: United States*, EC02TCF-US. December 2004, p. B-2.

DATA PROCESSING[18]

In addition to the mailout and follow-up operations, the NPC conducted the 2002 CFS check-in, screening, and data capture. Analysts at both the NPC and Census Bureau headquarters resolved edit problems.

Editing. Census Bureau headquarters staff created a flow-processing edit program to identify inconsistencies, errors, and critical omissions following the transmission of data entry files from the NPC. The edit program assigned a series of flags for missing or incorrect data, requiring analyst intervention.[19]

Imputation of missing data. Item nonresponse occurred when a data variable (either value or weight) was not reported or was determined to be invalid during the edit process. Establishment nonresponse, in turn, took place when an establishment failed to report shipment data for at least one quarter. Analysts used imputation procedures to resolve item nonresponse and an adjustment of statistical weights for establishment nonresponse.

Disclosure review. The Census Bureau subjected CFS data to disclosure analysis to prevent the disclosure of information about individual companies. In conformance with the Census Bureau's confidentiality rules, a computerized disclosure analysis system identified (and withheld from publication) data that might reveal 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

The Census Bureau published the 2002 CFS data in print and electronic formats beginning with a preliminary report in December 2003 containing national-level estimates and ending with a final summary report in December 2004. The Census Bureau released the 2002 CFS data for the United States, census divisions and regions, individual states, and selected sub-state categories.

In addition to these reports, the Census Bureau published numerous electronically available tables online. The CFS data 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 two-, three-, and four-digit SCTG levels. Data were at the two- and, where possible, three-digit SCTG level for state reports.[20]

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[18]Information for the following section was drawn from: U.S. Census Bureau, "Procedures for Check In and Batching of Multiunit Questionnaires Including Procedures for Screening for Analysts' Review," December 20, 2002; and U.S. Census Bureau, "Appendix C: Sample Design, Data Collection and Estimation" in *Transportation—Commodity Flow Survey*, EC02TCF-AL. December 2004.

[19]For more information, see Chapter 8, "Data Collection and Processing."

[20]For more information on 2002 Commodity Flow Survey publications, see U.S. Bureau of Transportation Statistics, "Commodity Flow Survey," <http://www.bts.gov/publications/commodity_flow_survey/index.html> (September 28, 2005).

Chapter 14.
Publication Program

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INTRODUCTION

The U.S. Census Bureau published data for all sectors covered by the 2002 Economic Census, as well as data from the 2002 Commodity Flow Survey (CFS), 2002 Vehicle Inventory and Use Survey (VIUS), 2002 Survey of Business Owners (SBO), 2002 Business Expenses Survey (BES), and the 2002 Economic Census of Island Areas (the Northern Mariana Islands, Guam, the U.S. Virgin Islands, and for the first time, American Samoa).

The Census Bureau published 2002 Economic Census data electronically via its Web site <http://www.census.gov>; packaged with tabulation and data-manipulation software contained on DVD-ROM; and through the Census Bureau's online American FactFinder.[1] For 2002, the Census Bureau published the majority of data products electronically, with only a few reports also being released in printed volumes.[2]

PUBLICATION PLANNING

2002 Economic Products Team

In anticipation of the release of 2002 Economic Census data products, the Census Bureau established several planning teams to study the various aspects of dissemination and product planning. The Census Bureau's Economic Planning and Coordination Division's (EPCD's) Tables and Dissemination Branch led the Economic Products Team, which included representatives from the subject matter, programming, Internet technology, and administrative divisions responsible for the overall dissemination of data from the 2002 Economic Census data and related programs. Tasks of the EPT included:

- Organization and development of plans, strategies, and time frames for publishing the 2002 data in electronic reports.
- Finalizing the production flowchart.
- Initiating and monitoring the subject divisions' specification preparations.
- Setting publication standards applied to every publication series.[3]

Four subgroups of the EPT oversaw specific technical aspects concerning the 2002 Economic Census products planning and dissemination. These subgroups were the: (1) Final Data Review Tool (FDRT) Requirements Subgroup; (2) Metadata Review and Requirements and Publication Text Coordination (Metadata) Subgroup; (3) Dissemination Media (Media) Subgroup; and (4) Publication Source File/Interactive Parameter System (PSF/IPS) Subgroup.

Final Data Review Tool (FDRT) Requirements Subgroup. The FDRT Subgroup developed the functional requirements and participated in testing of the FDRT. The EPCD and Economic Statistical Methods and Programming Division (ESMPD) coordinated the FDRT's programming, testing, and implementation.

Subject-matter area analysts used the FDRT (which replaced the separate systems used to review all final 1997 Economic Census data). This tool enabled analysts to add, modify, and delete symbols and footnotes to the summary data in reports and to remove rows of data from the disseminated data products. It also permitted review of other data not publicly released.[4]

Metadata Review and Requirements and Publication Text Coordination (Metadata) Subgroup. The Metadata Subgroup reviewed the 1997 Economic Census metadata database and made suggestions for improving the database for the 2002 economic data.[5]

Dissemination Media (Media) Subgroup. The Media Subgroup made recommendations to the EPT about the types and format of 2002 Economic Census data tables, publications, and formats for dissemination.[6]

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[1]A single DVD-ROM holds up to 17,000 megabytes of data.

[2]Only selected island areas reports were printed. All publications were created as portable document format (PDF) files and made available on the Census Bureau's Web site <http://www.census.gov>.

[3]U.S. Census Bureau, "Glossary of Terms Used in Processing The 2002 Economic Census," October 11, 2002, p. 9.

[4]U.S. Census Bureau, "Economic Products Team—Final Data Review Tool Sub-Group: Sub-Group Charter, Goals, Members, and Assumptions," October 2, 2001.

[5]U.S. Census Bureau, "2002 Economic Products Team—Metadata Sub-Group: Minutes to 9/5/2001 Meeting," September 11, 2001.

[6]U.S. Census Bureau, "2002 Economic Products Team—Dissemination Media Sub-Group: Minutes to 8/30/2001 Meeting," September 11, 2001.

Publication Source File/Interactive Parameter System (PSF/IPS) Subgroup. The PSF/IPS Subgroup identified and defined the functional requirements for, and participated in the testing of, the Publication Source File (PSF) and Disclosure Source File (DSF) creation systems, as well as the Interactive Parameter Systems (IPS). The EPCD and the ESMPD coordinated the programming, testing, and implementation of these systems. These systems created and extracted files used to build all 2002 Economic Census and related programs' data products.[7]

2002 ECONOMIC CENSUS DATA DISSEMINATION

Background Information

Prior to the 1997 Economic Census, the Census Bureau published reports in both printed and electronic formats; however, the 1997 census introduced the marked shift from dual publication to a dissemination program based primarily upon electronic publication. The increasing use of computers by private and public data users led the Census Bureau to increasingly expand the publication of its data to electronically readable formats. Initially, the Census Bureau published data on reels of magnetic computer tape. As technology developed, data were available on diskettes, the Internet, CD-ROMs, and DVD-ROMs[8] (see Table 14-2). The shift away from reliance upon printed reports continued in 2002, allowing data users the ability to personalize and manipulate data easily. Without the hindrance of print publication costs, the Census Bureau produced a greater number of more detailed data electronically. Furthermore, without the delays involved with preparing text and data for printing and binding paper publications, the agency was able to release data on a flow basis (i.e., as the data became available).

Many of the 2002 Economic Census data and publications were available from the Census Bureau's Internet site <http://www.census.gov> via portable document format (PDF) and hypertext markup language (HTML)[9] tables, as well as the agency's American FactFinder. In addition to Internet dissemination, publications also were available on DVD-ROM.

Although the Census Bureau encouraged data users to download and print reports, some printed and bound publications were available. Printed volumes could be purchased from the U.S. Government Printing Office (GPO) or through the Census Bureau's Customer Services Center (see the section "Custom print service" below).[10]

DVD-ROMs. Most 2002 Economic Census reports were available via DVD-ROMs. The Census Bureau sold DVD-ROMs by subscription only, with subscribers receiving updated discs on a quarterly basis.

Data users accessed data on the DVD-ROM using IBM-compatible computers running Windows 2000 or later operating systems. In addition to the data files and reports, subscribers also had access to software included with each DVD-ROM that allowed users to select, reformat, merge, and rank data, and export them to a spreadsheet or other application for further manipulation.[11] The DVD-ROMs require software to be installed on the user's computer and are self-documenting (including all information for the user to operate the software).[12]

American FactFinder. The Census Bureau used its American FactFinder (AFF),[13] accessible at the agency's Web site, to disseminate data electronically. The AFF offered prepackaged data products and user-selected data tables and maps from Census 2000, the 1990 Census of Population and Housing, selected historical population and housing census data, the 2002 and 1997 Economic Censuses, and the American Community Survey.

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[7]U.S. Census Bureau, "2002 Economic Products Team—PSF/IPS Sub-Group: Minutes to 12/12/2001 Meeting," December 24, 2001.

[8]U.S. Census Bureau, *History of the 1997 Economic Census*. POL-00-HEC, Government Printing Office, Washington, DC, 2000, p. 118.

[9]Hypertext is a type of database system, invented in the 1960s, in which objects (text, pictures, music, programs, etc.) can be linked to each other. When an object is selected, the data user can view all the other objects that are linked to it.

[10]U.S. Census Bureau, "Guide to the 2002 Economic Census," <http://www.census.gov/epcd/ec02/guide.html> (July 12, 2005).

[11]Data from previous censuses back to 1987 also were available on CD-ROM, though CD-ROMS for 1992 and earlier used different access software.

[12]U.S. Census Bureau, "Guide to the 2002 Economic Census."

[13]Formerly known as the Data Access and Dissemination System (DADS).

The AFF offered functions, including the ability to manipulate, format, and create custom queries, similar to those found on the 2002 Economic Census DVD-ROMs. The AFF also included the ability to export data to other applications.[14]

Drill down tables. The Census Bureau's Web site contained drill down tables for data users seeking the most frequently requested economic data. These tables provided basic, "at-aglance" data about an industry, with a link to more detailed industry data. For example, a data user studying the mining industry would first view a drill down table showing the number of mining establishments nationwide. "Drilling down" from the initial table provided increasingly detailed views of the number of mining establishments by geographic area or type of mineral mined.[15]

Hypertext (HTML). The Census Bureau's Internet site uses HTML to organize and link reports, data, definitions, and tables. Visitors to the Web site can navigate the site by "clicking" on a link for the economic census. This link displayed a page with additional links, definitions, and menus allowing users to further narrow their search for the economic data available at the agency's Web site.[16]

Portable document format (PDF). The use of portable document format (PDF) files was the simplest method available to obtain 2002 Economic Census reports. Using the PDF format, the Census Bureau loaded nearly all of its reports onto the agency's Internet site on a flow basis. Data users could download the reports (using Adobe Acrobat® software, available online free of charge), view, and print the reports they wanted. Reports printed by data users were identical to those available as bound copies for a fee from the Census Bureau and the GPO (see "Custom Print Service" below).[17]

Custom print service. For users who may not have been prepared to use data in electronic formats, the Census Bureau developed a custom print service. This service, provided by the agency's Customer Services Branch, printed publications from the PDF files on the Internet and bound them using heavy paper stock covers. The cost (at least $25 per report) and ease of using electronic dissemination combined to keep custom print services relatively low.[18]

2002 ECONOMIC CENSUS PUBLICATIONS

The 2002 Economic Census data publications were released to the public on a flow basis beginning with the *Advance Report* during the first quarter of 2004. All publications were scheduled for release by October 2006[19] (see Table 14-1).

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[14]U.S. Census Bureau, "Glossary of Terms Used in Processing The 2002 Economic Census," p. 1, and "Question and Answer Center: What is American FactFinder?"

[15]U.S. Census Bureau, "Guide to the 2002 Economic Census."

[16]Christopher Keep, Tim McLaughlin, and Robin Parmar, *The Electronic Labryrinth*, "Hypertext," 1993–2000. On a weekly basis, the AFF received text files used on the economic census Web site to provide the explanations and definitions of data terms, etc.

[17]U.S. Census Bureau, "Guide to the 2002 Economic Census."

[18]Ibid.

[19]Unless otherwise noted, the information contained in Table 14-1 and the product descriptions in this section are drawn from U.S. Census Bureau, "Guide to the 2002 Economic Census," <http://www.census.gov/epcd/ec02/guide.html> (July 12, 2005). These dates were updated in a memorandum from Douglas J. Miller to Michael A. Hovland, "Re: Fw: 2002 History Review," December 13, 2005.

Table 14-1.
2002 Economic Census Publication Schedule (By Quarter)

Publication	Quarter of publication										
	2004				2005				2006		
	1	2	3	4	1	2	3	4	1	2	3
Advance Report	X										
Industry Series		X	X	X							
Geographic Area Series				X	X	X	X	X			
Comparative Statistics										X	
Bridge Between 1997 NAICS and 2002 NAICS										X	
Subject reports					X	X	X	X	X	X	X
ZIP Code Statistics										X	
Nonemployer Statistics				X							
Island Areas		X	X				X	X	X		X
Business Expenses									X		
Survey of Business Owners											X

Table 14-2.
2002 Economic Census Publication Schedule and Dissemination Plans (By North American Industry Classification System Sector or Title, Geography, Media, and Release Date)

[Geography: **U**nited States, **S**tates, **M**etropolitan Areas, **C**ounties, **P**laces, **Z**ip Codes. Media: **A**merican FactFinder (Internet), **D**VD-ROM, Drill-Down **H**ypertext, **P**DF, **Pr**inted]

Sector and title	Geography	Media	Quarterly (Q) release date (as of June 2006)
Economy-Wide			
Core Business Statistics:			
Advance Report	U		Q1 2004
Comparative Statistics	U S	A D H P	Q2 2006
Bridge Between 1997 NAICS and 2002 NAICS	U	A D H P	Q2 2006
Nonemployer Statistics	U S M C	A D H P	Q4 2004
Survey of Business Owners:			
Advance Report on Characteristics of Employer Business Owners	U	H	Q1 2005
Preliminary Summary of Business Ownership by Gender, Ethnicity, and Race	U	H	Q3 2005
Women-Owned Businesses	U S M C P	A D H P	Q1 2006
Hispanic-Owned Businesses	U S M C P	A D H P	Q1 2006
Black-Owned Businesses	U S M C P	A D H P	Q2 2006
Asian-Owned Businesses	U S M C P	A D H P	Q2 2006
Native Hawaiian- and Other Pacific Islander-Owned Businesses	U S M C P	A D H P	Q2 2006
American Indian- and Alaska Native-Owned Businesses	U S M C P	A D H P	Q2 2006
Characteristics of Business Owners	U S	A D H P	Q3 2006
Company Summary	U S M C P	A D H P	Q3 2006
Business Expenses:			
Advance Business Expenses	U	H	Q2 2005
Business Expenses	U	A D H P	Q1 2006
Island Areas:			
Guam, Northern Mariana Islands, American Samoa, U.S. Virgin Islands	area	A D P Pr	Q2 2004–Q2 2005
Puerto Rico	area M C P	A D P	Q4 2005–Q3 2006

Table 14-2.
2002 Economic Census Publication Schedule and Dissemination Plans (By North American Industry Classification System Sector or Title, Geography, Media, and Release Date)—Con.

[Geography: **U**nited States, **S**tates, **M**etropolitan Areas, **C**ounties, **P**laces, **Z**ip Codes. Media: **A**merican FactFinder (Internet), **D**VD-ROM, Drill-Down **H**ypertext, **P**DF, **P**rinted]

Sector and title	Geography							Media				Quarterly (Q) release date (as of June 2006)
Mining:												
Industry Series	U	S						A	D		P	Q3 2004–Q1 2005
Geographic Area Series	U	S						A	D	H	P	Q2 2005
Numerical List of Manufactured/Mineral Products	N/A							A	D		P	Q1 2004
Subject Series: Industry-Product Analysis Summary	U							A	D		P	Q1 2005
Subject Series: General Summary	U	S						A	D		P	Q4 2005
Subject Series: Product Summary	U							A	D		P	Q1 2006
Subject Series: Materials Consumed Summary	U							A	D		P	Q4 2005
Subject Series: Location of Mining Summary	U	S						A	D			Q1 2006
Utilities:												
Industry Series	U							A	D		P	Q4 2004
Geographic Area Series	U	S	M					A	D	H	P	Q3 2005
Subject Series: Product Lines	U							A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U							A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U							A	D		P	Q1 2006
Construction:												
Industry Series	U							A	D		P	Q4 2004–Q4 2005
Geographic Area Series	U	S						A	D	H	P	Q3 2005
Subject Series: Industry General Summary	U							A	D		P	Q4 2005
Subject Series: Geographic Area Summary	U	S						A	D		P	Q4 2005
Subject Series: Industry Kind-of-Business and Type of Construction Summary	U	S						A	D		P	Q1 2006
Manufacturing:												
Industry Series	U	S						A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P			A	D	H	P	Q3 2005
Numerical List of Manufactured/Mineral Products	N/A							A	D		P	Q1 2004
Subject Series: Industry-Product Analysis Summary	U							A	D		P	Q4 2005
Subject Series: General Summary	U	S	M					A	D		P	Q1 2006
Subject Series: Product Summary	U							A	D		P	Q2 2006
Subject Series: Materials Consumed Summary	U							A	D		P	Q2 2006
Subject Series: Concentration Ratios	U							A	D		P	Q2 2006
Subject Series: Location of Manufacturing Summary	U	S		C	P			A	D			Q3 2006
Wholesale Trade:												
Industry Series	U	S						A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P			A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S						A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U							A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S						A	D		P	Q4 2005
Retail Trade:												
Industry Series	U							A	D		P	Q2–Q4 2004
Geographic Area Series	U	S	M	C	P			A	D	H	P	Q4 2004–Q3 2005
Subject Series: Product Lines	U	S	M					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U							A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S						A	D		P	Q4 2005
ZIP Code Statistics	U	S					Z		D			Q3 2006
Transportation and Warehousing:												
Industry Series	U							A	D		P	Q2–Q4 2004
Geographic Area Series	U	S	M					A	D	H	P	Q3 2005
Subject Series: Product Lines	U							A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U							A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S						A	D		P	Q1 2006
Vehicle Inventory and Use Survey	U	S							D		P	Q3–Q4 2004
Commodity Flow Survey	U	S	M						D		P	Q4 2004–Q1 2005

Table 14-2.
2002 Economic Census Publication Schedule and Dissemination Plans (By North American Industry Classification System Sector or Title, Geography, Media, and Release Date)—Con.

[Geography: **U**nited States, **S**tates, **M**etropolitan Areas, **C**ounties, **P**laces, **Z**ip Codes. Media: **A**merican FactFinder (Internet), **D**VD-ROM, Drill-Down **H**ypertext, **P**DF, **P**rinted]

Sector and title	Geography						Media				Quarterly (Q) release date (as of June 2006)
Information:											
Industry Series	U						A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
ZIP Code Statistics	U	S				Z		D			Q3 2006
Finance and Insurance:											
Industry Series	U						A	D		P	Q2–Q4 2004
Geographic Area Series	U	S	M				A	D	H	P	Q3 2005
Subject Series: Product Lines	U						A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
Real Estate and Rental and Leasing:											
Industry Series	U						A	D		P	Q2–Q3 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q4 2004–Q3 2005
Subject Series: Product Lines	U						A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
Professional, Scientific, and Technical Services:											
Industry Series	U						A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
ZIP Code Statistics	U	S				Z		D			Q3 2006
Management of Companies and Enterprises:											
Product Lines	U						A	D		P	Q4 2005
Industry Series	U						A	D		P	Q4 2004
Geographic Area Series	U	S					A	D	H	P	Q3 2005
Subject Series: Miscellaneous Subjects	U						A	D		P	Q1 2006
Administrative and Support and Waste Management and Remediation Services:											
Industry Series	U						A	D		P	Q2–Q4 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
ZIP Code Statistics	U	S				Z		D			Q3 2006
Educational Services:											
Industry Series	U						A	D		P	Q3 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
ZIP Code Statistics	U	S				Z		D			Q3 2006
Health Care and Social Assistance:											
Industry Series	U						A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
ZIP Code Statistics	U	S				Z		D			Q3 2006

Table 14-2.
2002 Economic Census Publication Schedule and Dissemination Plans (By North American Industry Classification System Sector or Title, Geography, Media, and Release Date)—Con.

[Geography: **U**nited States, **S**tates, **M**etropolitan Areas, **C**ounties, **P**laces, **Z**ip Codes. Media: **A**merican FactFinder (Internet), **D**VD-ROM, Drill-Down **H**ypertext, **P**DF, **Pr**inted]

Sector and title	Geography						Media				Quarterly (Q) release date (as of June 2006)
Arts, Entertainment, and Recreation:											
Industry Series	U						A	D		P	Q3 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q1 2006
ZIP Code Statistics	U	S				Z		D			Q3 2006
Accommodation and Food Services:											
Industry Series	U	S					A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q4 2004–Q3 2005
Subject Series: Product Lines	U	S	M				A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S					A	D		P	Q4 2005
ZIP Code Statistics	U	S				Z		D			Q3 2006
Other Services (Except Public Administration):											
Industry Series	U	S					A	D		P	Q3–Q4 2004
Geographic Area Series	U	S	M	C	P		A	D	H	P	Q1–Q3 2005
Subject Series: Product Lines	U	S					A	D		P	Q4 2005
Subject Series: Establishment and Firm Size	U						A	D		P	Q4 2005
Subject Series: Miscellaneous Subjects	U	S	M				A	D		P	Q1 2006
ZIP Code Statistics	U	S				Z		D			Q3 2006

Core Business Statistics

The Census Bureau published 2002 Economic Census data in the following national, economy-wide reports between 2004 and 2006 (see Table 14-2):

Advance Report. The *Advance Report*, released March 29, 2004, initiated the publication program with a preliminary look at 2002 census data. Information contained in this report provided data at the national level only, by sector and subsector.

Comparative Statistics. This report presented general statistics for establishments of firms with payroll for both 2002 and 1997, and is classified according to NAICS 1997 so as to facilitate comparisons. Data were available for the United States and states.

Bridge Between NAICS and SIC. This report presented general statistics for establishments of firms with payroll for 2002, and was classified according to the lowest common denominator categories between NAICS 2002 and NAICS 1997. Statistics shown included the number of establishments; employment; payroll; and value of sales, receipts, revenue, or shipments.

Nonemployer Statistics. This report presented counts of establishments and receipts for nonemployers (i.e., firms not subject to payroll tax and typically consisted of self-employed individuals). The report contained data for the United States, states, counties, and core based statistical areas (CBSAs).

Sector Report Series

Industry series. Separate Industry Series reports covering each industry or group of related industries presented general statistics (by kind of business[20] for the United States) for establishments of firms with payroll on number of establishments; sales, receipts, revenue, or shipments; payroll; and employment.

[20]The Census Bureau used an 8-digit "kind of business" classification code that identified the principle business activity of an establishment. The code provided finer details on the activities within certain industries.

Geographic area series. A separate sector-specific report was prepared for each state, the District of Columbia, and in most cases, the United States for establishments of firms with payroll. State reports presented general statistics for the state. Metropolitan and micropolitan statistical areas, counties, and places with 2,500 inhabitants or more also were available for most sectors. Greater kind-of-business detail was shown for larger areas.

ZIP Code statistics. These reports presented data for establishments of firms with payroll by United States ZIP Code for nine sectors (Manufacturing; Retail Trade; Information; Professional, Scientific, and Technical Services; Administrative and Support and Waste Management and Remediation Services; Education Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; Accommodation and Food Services; and Other Services [Except Public Administration]).

Summary series. The "Area Series" included a *U.S. Summary* for most sectors. For other sectors, the Census Bureau published a summary volume with data at the U.S. level. These reports are considered part of the subject series reports for these sectors. A cross-sector file, compiled from all the publications, was available on the AFF. This economic-wide file was created as an accumulation of data as they were released. It is the single source of economic data from the Census Bureau summarizing the most widely used statistics about that sector from all the previously issued reports.

Survey of Business Owners

The Census Bureau prepared a separate report for businesses owned by Blacks, Hispanics, Asians and Pacific Islanders, American Indians and Alaska Natives, and women, along with a company summary that included businesses owned by Whites and males. The report presented data for all firms, including nonemployers. General statistics covered the United States, states, CBSAs, counties, and places with 2,500 or more inhabitants. Additional characteristics shown for the United States and states included owner characteristics, such as age, education level, and disability status. Business characteristics included sources of financing and whether the business is home-based or family-owned.[21]

Business Expenses Survey

The Census Bureau published Business Expenses Survey data in HTML, PDF, DVDROM, and the AFF. The data were released as PDF files and via AFF in the first quarter of 2006. The data were available for selected NAICS at the three-, four-, and five-digit NAICS industry detail. For 2002, the Industry Series included the Business Expenses report, which covered expenses data compiled in the Business Expenses Survey and other Census Bureau programs.[22]

Vehicle Inventory and Use Survey

The Census Bureau published Vehicle Inventory and Use Survey (VIUS) microdata via DVD-ROM. It published tables for the United States, states, and the District of Columbia via the Census Bureau's Web site.

The VIUS DVD-ROM contained the state and United States tables found on the Internet as well as microdata on the physical and operational characteristics of the nation's private and commercial truck population, including approximately 100,000 individual truck records (modified to avoid identifying specific vehicles or owners).[23] For more information on the VIUS, see Chapter 12, "2002 Vehicle Inventory and Use Survey."

Commodity Flow Survey

The Census Bureau released data from the 2002 Commodity Flow Survey (CFS) in electronic format via its Web site at the following geographic levels: United States, census regions and divisions, states and selected CBSAs, and remainder of states. Tables provided information on commodities shipped, their value, weight, and mode of transportation. The Census Bureau also made

[21]U.S. Census Bureau, "2002 Survey of Business Owners and Self-Employed Persons," May 6, 2005.

[22]U.S. Census Bureau, "Business Expenses Survey," <http://www.census.gov/epcd/www/bes2002.htm> (October 4, 2004).

[23]Although these data were available on the Internet in text and Microsoft Access formats, Internet data users could only access the tabulation software to manipulate these data by purchasing a CD-ROM subscription.

available select data on hazardous material shipments and exports. Commodity data for national tables are at the four-digit Standard Classification of Transported Goods (SCTG) level. The data were available at the two-, and where possible, three-digit SCTG level for state reports.[24]

2002 Economic Census of Island Areas

As noted earlier, the 2002 Economic Census marked the introduction of the North American Industry Classification System (NAICS) in the island areas, replacing the Standard Industry Classification (SIC) that had been used through the 1997 Economic Census (see Chapter 9, "2002 Economic Census of Island Areas"). As a result, the Census Bureau published island areas data (when applicable) for the following NAICS sectors:

- Mining
- Utilities
- Construction
- Manufacturing
- Wholesale trade
- Retail trade
- Transportation and warehousing
- Information
- Finance and insurance
- Real estate and rental leasing
- Professional, scientific, and technical services
- Management of companies and enterprises
- Administrative and support and 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)

Data publications from the 2002 Economic Census of Island Areas were available in printed and electronic format.[25] The principal reports for each area are described below.

Puerto Rico. The Census Bureau published the 2002 Economic Census data for Puerto Rico in the following reports:

- *Puerto Rico: Geographic Area Series*. Presented data for businesses engaged in sectors other than manufacturing and construction. Data were for Puerto Rico commercial regions and municipios. The report also included commodity and merchandise line sales data for wholesale and retail trade by kind of business.[26]

[24]U.S. Census Bureau, "Commodity Flow Survey (CFS)," <http://www.census.gov/svsd/www/cfsmain.html> (April 21, 2005).
[25]U.S. Census Bureau, *Guam: 2002 Economic Census of Island Areas*. IA02-00A-GUAM (RV), March 2005, pp. v–viii.
[26]U.S. Census Bureau, *Puerto Rico—Geographic Area Series: 2002 Economic Census of Island Areas*. IA02-00A-PRG, November 2005.

- *Puerto Rico: Manufacturing*. Presented data for manufacturing establishments by industry and metropolitan areas and municipios.[27]
- *Puerto Rico: Construction*. Presented data for construction establishments by industry and metropolitan areas and municipios.[28]

Guam. One published report covered all businesses. Tables presented data for Guam and its election districts.[29]

Northern Mariana Islands. One report covered all businesses. This report presented data for the Northern Mariana Islands and three municipalities: Saipan, Tinian, and Rota. No business activity was reported for the Northern Islands, so the Census Bureau excluded this municipality from the report.[30]

American Samoa. One report covered all businesses. The report presented data for American Samoa and its districts and counties.[31]

U.S. Virgin Islands. One report covered all businesses. The report presented data for the Virgin Islands as a whole. As in previous censuses, the Census Bureau published additional data for St. Thomas and St. John (combined to prevent disclosure problems), St. Croix, and the towns of Charlotte Amalie, Chistiansted, and Frederiksted.[32]

REFERENCE SERIES

Guides and Other Sources for the Data User

In addition to the above reports, the Census Bureau offers a number of reference publications to help data users locate data for specific industry, product, or geographic categories, or for additional information about the economic census.

Preview to the 2002 Economic Census. This publication provided an overview of the content and dissemination of products containing data collected in the 2002 Economic Census. The booklet contained a number of key reference charts (organized by NAICS sector) that included coverage of the economic census, data items (e.g., employment sales/receipts), geographic coverage, and data products. The publication also described several special programs (i.e., minority- and women-owned businesses and transportation surveys).

Guide to the 2002 Economic Census. This Internet-only reference described the content and products of the economic census in much greater detail than possible in the printed *Preview to the 2002 Economic Census*. Its content was amended as new information became available. The *Guide to the 2002 Economic Census*, <http://www.census.gov/econ/census02/guide/g02dvd.htm>, included descriptions of related monthly, quarterly, and annual data.

2002 North American Industry Classification System. The U.S. Department of Commerce's National Technical Information Service published print and electronic (CD-ROM) versions of the *2002 NAICS Manual* electronically (CD-ROM). The manual included:

- Detailed industry definitions.
- Tables showing correspondence between 2002 and 1997 NAICS, 2002 NAICS and 1987 SIC, and 1997 NAICS and 1987 SIC codes.

[27]U.S. Census Bureau, *Puerto Rico—Manufacturing: 2002 Economic Census of Island Areas*. IA02-00I-PRM, July 2005.
[28]U.S. Census Bureau, *Puerto Rico—Construction: 2002 Economic Census of Island Areas*. IA02-00I-PRC, December 2005.
[29]U.S. Census Bureau, *Guam: 2002 Economic Census of Island Areas*. IA02-00A-GUAM (RV), March 2005.
[30]U.S. Census Bureau, *Northern Mariana Islands: 2002 Economic Census of Island Areas*. IA02-00A-NMI, May 2004.
[31]U.S. Census Bureau, *American Samoa: 2002 Economic Census of Island Areas*. IA02-00A-ASAMOA, April 2005.
[32]U.S. Census Bureau, *U.S. Virgin Islands: 2002 Economic Census of Island Areas*. IA02-00A-VI (RV), April 2005.

- An alphabetical list of more than 18,000 types of business activities and their corresponding NAICS codes.[33]

Numerical List of Manufactured and Mineral Products. This publication listed the detailed product classes and products published for the manufacturing and mining sectors in the Industry Series reports.

[33]U.S. Office of Management and Budget, *North American Industry Classification System: United States 2002*. PB2002-101430, 2002.

Appendix A.
Provisions of Title 13, United States Code, Relating to the 2002 Economic Census

TITLE 13, UNITED STATES CODE—CENSUS

CHAPTER 1. ADMINISTRATION

Subchapter I—General Provisions

Section 1. Definitions

As used in this title, unless the context requires another meaning or unless it is otherwise provided—

(1) "Bureau" means the Bureau of the Census;

(2) "Secretary" means the Secretary of Commerce; and

(3) "respondent" includes a corporation, company, association, firm, partnership, proprietorship, society, joint stock company, individual, or other organization or entity which reported information, or on behalf of which information was reported, in response to a questionnaire, inquiry, or other request of the Bureau.

Section 2. Bureau of the Census

The Bureau is continued as an agency within, and under the jurisdiction of, the Department of Commerce.

Section 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.

Section 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.

Section 7. Printing; requisitions upon Public Printer; publication of bulletins and reports

The Secretary may make requisition 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.

Section 8. Authenticated transcripts or copies of certain returns; other data; restrictions 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 are otherwise authorized by law, but only if the cost of such projects are 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.

Section 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.

(b) The provisions of subsection (a) of this section relating to the confidential treatment of data for particular individuals and establishments, shall not apply to the censuses of governments provided for by subchapter III of chapter 5 of this title, nor to interim current data provided for by subchapter IV of chapter 5 of this title as to the subjects covered by censuses of governments, with respect to any information obtained therefor that is compiled from, or customarily provided in, public records.

Section 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

Section 21. Director of the Census; duties

The Bureau shall be headed by a Director of the Census, appointed by the President, by and with the advice and consent of the Senate. The Director shall perform such duties as may be imposed upon him by law, regulations, or orders of the Secretary.

Section 22. Qualifications of permanent personnel

All permanent officers and employees of the Bureau shall be citizens of the United States.

Section 23. Additional officers and employees

(a) The Secretary may establish, at rates of compensation to be fixed by him without regard to the Classification Act of 1949, as many temporary positions as may be necessary to meet the requirements of the work provided for by law. Bureau employees who are transferred to any such temporary positions shall not lose their permanent civil service status by reason of the transfer.

The Secretary may make appointments to such temporary positions in conformity with the civil service laws and rules.

(b) In addition to employees of the Department of Commerce, employees of other departments and independent offices of the Government may, with the consent of the head of the respective department or office, be employed and compensated for field work in connection with the work provided for by law without regard to section 301 of the Dual Compensation Act.

(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.

Section 24. Special employment provisions

(a) The Secretary may utilize the services of nontemporary 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.

(c) The enlisted men and officers of the uniformed services may be appointed and compensated for service in temporary enumerator positions for the enumeration of personnel of the uniformed services.

(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.

(f) Notwithstanding any other provision of law prohibiting the expenditure of public money for telephone service, the Secretary, under such regulations as he shall prescribe, may authorize reimbursement for tolls or charges for telephone service from private residences or private apartments to the extent such charges are determined by the Secretary to have been incurred to facilitate the collection of information in connection with the censuses and surveys authorized by this title.

Section 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.

Section 26. Transportation by contract

The Secretary may contract with field employees for the rental and use within the continental limits of the United States of means of transportation, other than motorcycle, automobile, or airplane, and for the rental and use outside of the continental United States of any means of transportation, which means may be owned by the field employee. Such rental contracts shall be made without regard to section 4 of the Travel Expense Act of 1949, as amended (5 U.S.C. 837). The rentals shall be at rates equivalent to the prevailing rental rates of the locality. The rental contracts within the continental United States may be entered into only when the use by the field employee of such other means of transportation is safer, more economical, or more advantageous to the Government than use of his motorcycle, automobile, or airplane in conducting the census.

CHAPTER 5. CENSUSES

Subchapter I—Manufactures, Mineral Industries, and Other

Section 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.

Section 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

Section 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

Section 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.

Section 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.

Section 195. Use of sampling

Except for the determination of population for purposes of apportionment of Representatives in 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.

Section 196. Special censuses

The Secretary may conduct special censuses for the government of any State, or of any county, city, or other political subdivision within a State, for the government of the District of Columbia, and for the government of any possession or area (including political subdivisions thereof) referred to in section 191(a) of this title, on subjects covered by the censuses provided for in this title, upon payment to the Secretary of the actual or estimated cost of each such special census. The results of each special census shall be designated “Official Census Statistics.” These statistics may be used in the manner provided by applicable law.

CHAPTER 7. OFFENSES AND PENALTIES

Subchapter I—Officers and Employees

Section 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 1 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.

Section 212. Refusal or neglect of employees to perform duties

Whoever, being an employee referred to in subchapter II of chapter 1 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.

Section 213. False statements, certificates, and information

(a) Whoever, being an officer or employee referred to in subchapter II of chapter 1 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 1 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.

Section 214. Wrongful disclosure of information

Whoever, being or having been an employee or staff member referred to in subchapter II of chapter 1 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 five years, or both.

Subchapter II—Other Persons

Section 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.

(c) Notwithstanding any other provision of this title, no person shall be compelled to disclose information relative to his religious beliefs or to membership in a religious body.

Section 222. Giving suggestions or information with intent to cause inaccurate enumeration of population

Whoever, either directly or indirectly, offers or renders to an officer or employee of the Department of Commerce or bureau or agency thereof engaged in making an enumeration of population under subchapter II, IV, or V of chapter 5 of this title, any suggestion, advice, information, or assistance of any kind, with the intent or purpose of causing an inaccurate enumeration of population to be made, shall be fined not more than $1,000 or imprisoned not more than one year, or both.

Section 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.

Section 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 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.

Section 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.

(c) The provisions of sections 221, 222, 223, and 224 of this title shall not apply to any censuses or surveys of governments provided for by subchapters III and IV of chapter 5 of this title, nor to other surveys provided for by subchapter IV of such chapter which are taken more frequently than annually.

(d) Where the doctrine, teaching, or discipline of any religious denomination or church prohibits the disclosure of information relative to membership, a refusal, in such circumstances, to furnish such information shall not be an offense under this chapter.

Subchapter III—Procedure

Section 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.

Appendix B.
Historical Development of the Economic Census of the United States

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ECONOMIC CENSUSES IN THE NINETEENTH CENTURY

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, 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 specific questions or prescribe a schedule, leaving those matters to the Secretary of the Treasury's discretion.[1]

To facilitate data collection, the Treasury Department 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.[2]

1820

The manufactures census of 1820 was similar to that of 1810. However, in addition to a question on the location of establishments, other 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 again the data were 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.[3]

1830

The 1830 decennial census made no attempt to obtain economic data.[4]

1840

Extensive growth in commercial fishing, commerce, and mining encouraged Congress to resume collecting economic statistics. The 1840 census included a census of manufactures as well as a 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 according to the basis of the manufactured product (machinery, paper, furniture, etc.), and included an "all other manufactures"

[1]Act of May 1, 1810.
[2]Tench Coxe. *A Statement of the Arts and Manufactures of the United States for the year 1810* (Philadelphia, PA: A. Cornman, 1814), pp. ii and iii.
[3]Carroll D. Wright and William C. Hunt. *The History and Growth of the U.S. Census* (Washington, DC: Government Printing Office, 1900), pp 26–27. Hereafter referred to as Wright and Hunt.
[4]Ibid., p. 29.

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.

Marshals tabulated the returns for manufacturing, fishing, commerce, and mining and published statistical tables on the "commerce and industry of the country." However, the 1840 census results, even though "corrected" in Washington, reflected a considerable undercoverage of the national economy.[5]

EXPANSION OF THE CENSUSES

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, and collecting and publishing data on the population, manufacturing, mining, fishing, and commerce.[6]

The Census Board appointed Joseph C. G. Kennedy, a statistician and newspaper editor-owner from Pennsylvania, to serve as secretary 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.[7]

1850

The Census Board consulted with prominent statisticians in order to develop six questionnaires, 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.[8]

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, the work of compiling and assembling statistics for publication was performed by clerks in an office in Washington, DC. General census results were published in June 1853, and partial data for manufactures were available in September 1854.[9]

[5]Ibid., pp. 309–312. See list of inquiries to Manufactures in the 1840 census.
[6]Ibid., p. 40.
[7]Ibid., p. 49.
[8]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."
[9]Ibid., p. 47.

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—a 500-percent increase since 1810, compared to a growth in population of only 75 percent. Although the undercount continued, the economic and decennial censuses were considerably more accurate than the previous censuses.[10]

1860–1879

With the exception of 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 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, 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.

During 1869 and 1870, Congress attempted, but failed, to draft new census legislation to supersede the 1850 law under which the 1850 and 1860 censuses had been taken. The 1870 Decennial Census was conducted according to the 1850 law, but the 1870 schedule for "products of industry" was 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.[11]

1880

In March 1879, Congress passed a new census law that implemented major changes in economic data collection for the censuses of 1880.[12] 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.

[10]George F. Warren and Frank A. Pearson. *Prices* (New York: John Wiley and Sons, 1933), pp. 11–13, 25–27, cited by Frederick G. Bohme, "U.S. Economic Censuses, 1810 to the Present," *Government Information Quarterly*, Volume 4, Number 3 (1987), p. 224.
[11]Wright and Hunt, pp. 52–54.
[12]Act approved March 3, 1879, for the conduct of the tenth census. 20 *Stat*. 473.

- 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—e.g., the same item appeared 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.[13]

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 created 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 collect information on the railroads' financial and physical characteristics.[14]

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."

The insurance industry, most notably life insurance, merited a few questions in the 1860 census. By 1880, the economic census used 15 special schedules to collect data on the organization, finances, and insurance in force of life, fire, and marine insurance companies. 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 rise of organized labor and trade associations prompted the government, for the first and only time in the 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 four special schedules containing a total of 101 questions to collect this information.

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 volumes reporting

[13]For a general description of the schedules, see Wright and Hunt, p. 63. Individual inquiries on the schedules are listed on pp. 316–363.

[14]Financial characteristics included income, expenses, and analysis of earnings, while physical characteristics encompassed track mileage, amount and kind of rolling stock (locomotives and cars), and fuel used to power locomotives, etc. The census 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).

manufacturing statistics and transportation-communications data came out in October 1883, and the mineral industries volume in July 1886. Several special monographs (on water power used in manufacturing; precious metals; and petroleum, coke, and building stone) appeared in the mid-1880s. The 1880 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 on their day-to-day operations) to compile economic census data. Congress directed that statistics be collected on the recorded indebtedness—such as real estate mortgages—of private corporations and individuals. Special census agents abstracted information about mortgages made during the period 1880 to 1890 from real estate recorders' offices. These abstracts included a description of the property, provisions of the mortgage, and the addresses of the mortgagor and mortgagee. The Census Office mailed schedules (and postage-paid return envelopes) to the mortgagors (or the mortgagees if the mortgagors did not respond), requesting 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.[15]

In addition, the census covered Alaskan manufactures for the first time in 1890.[16] The census also expanded considerably the inquiries on national transportation (first asked in 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.[17]

1900

The census of 1900,[18] modeled on 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. It 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 513,000 of 640,000 establishments responding to the census) reported information on the general questionnaire,[19] but some respondents complained that the 32 special questionnaires required too much detailed information.

Responsibility for collecting manufacturing data in 1,042 cities and towns was transferred from the enumerators to "special agents."[20] The Census Office disseminated in 59 unique bulletins on

[15]U.S. Census Bureau. *Report of the Superintendent of the Census to the Secretary of the Interior 1890* (Washington, DC: Government Printing Office, 1890), pp. 25–27.

[16]Ibid., pp. 38–39. In the early 1880s, Ivan Petroff, a special Census Office agent, traveled to Alaska (in accordance with instructions from the Superintendent of the Census) 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.

[17]Wright and Hunt, pp. 812–821.

[18]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. See U.S. Census Bureau, *Bureau of the Census Catalog of Publications 1790–1972*, (Washington, DC: Government Printing Office, 1974). Hereafter cited as *Census Catalog*.

[19]U.S. Census Office. *Census Reports*, Volume VII, *Twelfth Census of the United States Taken in the Year 1900, Manufactures, Part 1: United States by Industries* (Washington, DC: Government Printing Office, 1902), p. xlviii.

[20]U.S. Census Bureau. *Report of the Superintendent of the Census to the Secretary of the Interior For the Six Months Ending December 31, 1890* (Washington, DC: Government Printing Office, 1891), p. 29. The 1890 census law (Act Approved March 1, 1889, Section 18) authorized the Superintendent of the Census to withdraw the manufacturing schedules from the enumerators when he deemed it expedient to do so, and to have the data required collected by special agents or experts without regard to locality.

various special subjects in manufacturing, including shipbuilding, slaughtering and packing, and lumbering. It also published bulletins on manufacturing for each of the states and territories except Alaska and Hawaii.[21] 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 (1889 through 1894) and later in final reports (1892 through 1895) that were somewhat less detailed than the bound volumes on manufactures.[22] 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.

The Census Office staff compiled statistics about street and electric railroads, 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.[23]

THE TWENTIETH CENTURY

THE CENSUS BUREAU AND GROWTH OF THE ECONOMIC CENSUS

Permanent Census Act

In March 1902, Congress enacted the Permanent Census Act[24] establishing the Census Office as a permanent agency.[25] The act included a provision directing "That in the year 1905, and every ten 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 five 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 "street railways" survey was expanded to include motor buses and, in 1932, trolley buses. The "telegraph" classification included only land telegraph and ocean cable systems in 1902, but the agency 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, taken in 1908 and again in 1963 and 1967.[26]

1905

To conduct the 1905 census, the 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 basic information on their establishments (name and address, period of operation, and kind of business). Based on the results of this precanvass, the Bureau updated the card index and mailed questionnaires to establishments in early December 1904. Beginning in January 1905, 835 canvassers (Census Bureau permanent and temporary employees hired for the duration of the operations) visited nonrespondent companies.[27]

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[21]Data for Alaska and Hawaii appeared in the regular census reports.

[22]See *Census Catalog*, pp. 19–27.

[23]For details of the publications for the 1900 census, see the *Census Catalog*, pp. 28–33.

[24]Permanent Census Act 0f 1902. 32 *Stat*. 51. Also cited in U.S. Bureau of the Census, *Legislation Relating to the Bureau of the Census* (Washington, DC: Government Printing Office, 1917), pp. 5–8.

[25]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.

[26]The census of commercial fisheries was discontinued after 1967 due to a lack of interest by data users.

[27]U.S. Bureau of the Census. *Manufactures 1905*. Part I. *United States by Industries* (Washington, DC: Government Printing Office, 1907), pp. xxvi–xxviii.

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[28] that had been previously included. The Bureau retabulated the 1900 manufactures census results using the new definition to provide comparability between censuses.[29]

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. Since 1963, the census in Puerto Rico has been part of the stateside economic census program. In 1952 and 1956, the Commonwealth Government of Puerto Rico conducted censuses of manufactures with more limited coverage than the stateside census.[30]

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 were considered confidential,[31] but the 1910 law codified 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.[32]

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 a pledge of confidential treatment can the Bureau of the Census report expect manufacturers to furnish data promptly and accurately.[33]

1910

For the 1910 census of manufacturing establishments, the Bureau used 1 general schedule, 1 administrative and general office schedule, and 62 special questionnaires.[34] The general schedule was materially simpler than that employed for the censuses of 1900 and 1905, as were most of the special questionnaires. Establishments completed and returned their questionnaires to the Bureau. Special agents conducted a nonresponse follow-up. The Census Bureau and the U.S. Geological Survey used a single schedule to collect data for mines and quarries. (This was done to

[28]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.

[29]*Manufactures 1905*. Part I. *United States by Industries*, p. xxvii.

[30]An act to provide for the thirteenth and subsequent censuses (July 2, 1909), 36 *Stat*. 1, extended the 1910 censuses, including manufactures, to include "Porto Rico." For general information on the continuation of the census in Puerto Rico, see U.S. Census Bureau, *1963 Economic Censuses: Procedural History* (Washington, DC: Government Printing Office, 1968), p. 105.

[31]Wright and Hunt, pp. 136, 145, 150, and 156.

[32]36 *Stat*. 1. See Section 30 (25).

[33]U.S. Bureau of the Census. *Thirteenth Census of the United States*. Vol. VIII. *Manufactures 1909: General Report and Analysis* (Washington, DC: Government Printing Office, 1913), p. 18.

[34]Ibid., p. 797.

decrease respondent burden, since the agencies collected similar data.) The Census Bureau assigned 1,227 special agents and 76 regular employees to enumerate factories, mines, and quarries. In sparsely settled areas, decennial census enumerators visited manufacturing and mining establishments.[35]

For the first time, the 1910 Economic Census collected data from custom sawmills and gristmills and steam laundries. Under the definitions used in the two previous censuses of manufactures, mills that sawed lumber or ground grain for a fee did not fall under the factory system. The census covered steam laundries because they had become an important industry. Consolidating some categories reduced the number of separate industry tabulations published.[36]

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.[37]

1915

For the 1915 Census of Manufactures, the Census Bureau sought help from prominent manufacturers and representative commercial and trade groups to conduct the census, as well as Congress, the Department of Agriculture, the Bureau of Corporations, and state statistical organizations, to carry out the census. The director of the Census Bureau and the Chief Statistician for Manufactures visited large industrial cities to obtain suggestions on the form and content of the schedules from economic census participants.[38]

Census Bureau plans called for the prompt publication of bulletins containing preliminary results, most of which were issued by 1917. The United States' entrance into World War I in April 1917 delayed the preparation of many of the final printed reports until late 1918 and 1919.[39]

Special Censuses in 1917 and 1918

The urgent need for industrial data during World War I resulted in a number of special economic censuses—something not done previously. In late 1917 and early 1918, the 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.[40]

1920–1929

The growing need for detailed economic statistics prompted Congress to direct the Census Bureau (in the act providing for the decennial census of 1920[41]) to conduct censuses of manufactures on a biennial basis and 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:[42]

- The size of establishments and hours of labor.

[35]U.S. Bureau of the Census. *Report of the Director to the Secretary of Commerce and Labor Concerning the Operations of the Bureau for the Year 1909–10* (Washington, DC: Government Printing Office, 1911), p. 36.
[36]Ibid., p. 35.
[37]Ibid.
[38]U.S. Census Bureau. *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ending June 30, 1914* (Washington, DC: Government Printing Office, 1914), pp. 19–20.
[39]U.S. Census Bureau, *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ended June 30, 1917* (Washington, DC: Government Printing Office, 1917), pp. 16–17; and *Census Catalog*, pp. 219–221.
[40]U.S. Census Bureau. *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ended June 30, 1918* (Washington, DC: Government Printing Office, 1918), pp. 11–15.
[41]An Act to provide for the fourteenth and subsequent censuses (March 3, 1919), 40 *Stat.* 1291.
[42]Ibid., Section 29(8).

- The absolute and relative magnitude of the various branches of industry and their growth and decline.

- The industrial importance (with increase or decrease) of individual states and large cities.

In planning the 1921 census of manufactures, 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.[43]

To reduce expenses and expedite the processing and publication of results, the Census Bureau omitted certain items included in previous censuses of manufactures (capital invested, age and sex distribution of employees,[44] 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.[45]

The Census Bureau conducted a mailout/mailback census in 1921 to collect economic data 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. For the first time in an economic census, the Census Bureau used a punchcard tabulating system similar to the one introduced during the 1890 decennial census for tabulating population data to tabulate the data from manufactures, mines, and quarries.[46]

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 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.[47]

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 the establishments had been canvassed by mail or by personal enumeration. 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.[48]

For 1925, the Census Bureau again sought the cooperation of local chambers of commerce and professional groups to encourage response to the census. Respondents returned about 65 percent

[43] *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ended June 30, 1920* (Washington, DC: Government Printing Office, 1920), pp. 29–30.

[44] U.S. Census Bureau, *Biennial Census of Manufactures 1927* (Washington, DC: Government Printing Office, 1930), p. 3. Hereafter *1927 Census of Manufactures*.

[45] U.S. Census Bureau, "Manufactures 1919," *Fourteenth Census of the United States . . . 1920*, Vol. VIII (Washington, DC: Government Printing Office, 1923), p. 9. Previously, data had been obtained from establishments with annual production valued at $500 or more.

[46] U.S. Census Bureau, *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1921* (Washington, DC: Government Printing Office, 1921), pp. 13–14.

[47] Ibid., pp. 16–17.

[48] Ibid., p. 23, and *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1923 (Washington, DC: Government Printing Office, 1923), pp. 14–15.*

of the schedules (approximately 130,000 of 200,000 sent) 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.[49]

Manufacturers of confectioneries, ice cream, and sheet iron completed the 1927 census questionnaires only if their annual production was valued at $20,000 or more. (This was a recognition that many of the smaller firms were primarily engaged in retail trade, not manufacturing.) Overall, the census encompassed 335 industries; 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.[50]

1930

The economic component of the 1930 decennial census was broader in scope than in 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 undertaken in response to the post-World War I construction boom.[51] In 1920, fewer 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.[52]

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 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. Additionally, 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). Nonrespondents received two reminder letters. In cities with populations of at least 100,000, enumerators employed by the decennial census contacted nonrespondent establishments.[53]

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[49]U.S. Census Bureau, *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1925* (Washington, DC: Government Printing Office, 1925), pp. 8–10.

[50]*1927 Census of Manufactures*, pp. 3–12.

[51]U.S. Census Bureau, "Construction Industry," *Fifteenth Census of the United States: 1930* (Washington, DC: Government Printing Office, 1933), p. 2. Hereafter "Construction Industry 1930."

[52]U.S. Census Bureau, *Historical Statistics of the United States, Colonial Times to 1970* (Washington, DC: Government Printing Office, 1975), Part 1, p. 137; and Part 2, p. 618.

[53]"Construction Industry 1930," pp. 2–4.

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.[54]

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 according to their principal commodities or popular designation.[55]

In smaller cities and rural areas, 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 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.[56]

The census of wholesale establishments used the same field enumeration procedures as the retail census. 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.[57]

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

Enumerators visited each of approximately 1.5 million stores included in the census to complete 1 of the 6 questionnaires designed for this operation.[58] In cities with populations of at least 10,000, special enumerators took the census of distribution. 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.).[59] 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,

[54]Ibid., pp. 4–5.

[55]U.S. Census Bureau, "Retail Distribution: 1929," *Fifteenth Census of the United States: 1930: Distribution*, Vol. I (Washington, DC: Government Printing Office, 1933), pp. 13–14.

[56]U.S. Census Bureau, *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1930* (Washington, DC: Government Printing Office, 1930), p. 17. Hereafter, *Annual Report . . . 1930*.

[57]U.S. Census Bureau, "Wholesale Distribution: Summary for the United States," *Fifteenth Census of the United States: 1930* (Washington, DC: Government Printing Office, 1933), p. 7. Hereafter, "Wholesale Distribution, 1930."

[58]*Annual Report . . . 1930* (Washington, DC: Government Printing Office, 1930), p. 17.

[59]"Wholesale Distribution, 1930," p. 8.

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.[60]

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 minimum for the 1930 census was $500.[61]

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.[62]

The 1930 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 Decennial Census was broader in scope than any of the previous economic censuses.

1931–1933

Congress reduced Census Bureau funding and personnel authorizations for the 1931 and 1933 Censuses of Manufactures, and the Census Bureau had to adopt new methods to reduce the cost of the enumeration.[63] The 1931 census covered 310 industries, but discontinued some inquiries (e.g., on salaried employees, power equipment, and coal consumption[64]). 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 only in 1935.[65]

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, and about 75 percent of the

[60]U.S. Census Bureau, *Fifteenth Census of the United States: 1930: Census of Hotels 1930* (Washington, DC: Government Printing Office, 1931), pp. 1–3.

[61]U.S. Census Bureau, *Fifteenth Census of the United States: Census of Manufactures: 1929*, Volume I, *General Report* (Washington, DC: Government Printing Office, 1933), p. 1.

[62]U.S. Census Bureau, *Fifteenth Census of the United States: Mines and Quarries: 1929, General Report and Reports for States and for Industries* (Washington, DC: Government Printing Office, 1933), pp. 3–5.

[63]U.S. Census Bureau, *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1932* (Washington DC: Government Printing Office, 1932), p. 9.

[64]U.S. Department of Commerce, *Annual Report of the Secretary of Commerce . . . 1933* (Washington, DC: Government Printing Office, 1933), p. 20.

[65]U.S. Census Bureau, *Biennial Census of Manufactures 1931* (Washington, DC: Government Printing Office, 1935), p. 3 n.; U.S. Department of Commerce, *Annual Report of the Secretary of Commerce 1934* (Washington, DC: Government Printing Office, 1934), pp. 18–19; and *Annual Report of the Secretary of Commerce 1935* (Washington, DC: Government Printing Office, 1935), p. 23.

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.[66]

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. This census included retail distribution, wholesale distribution, and a new category, "Services, Amusements, and Hotels." The service 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.[67]

1935

The 1935 Census of Manufactures provided about the same level of detail as did 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.[68]

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.[69] 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 a follow-up visit).
- Radio broadcasting stations (mailed questionnaires, a follow-up letter, and 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 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.[70]

The goal of the 1935 census was to canvass every recognizable place of business and appraise the effects of the economic depression. Some of the data were tabulated at a special Census Bureau branch that was opened in Philadelphia.[71]

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.[72]

1937

In 1937, the Census Bureau conducted only the census of manufactures. Congress funded the operation through regular census appropriations rather than as an emergency public works

[66]U.S. Census Bureau, *Biennial Census of Manufactures 1933* (Washington, DC: Government Printing Office, 1935), pp. 3–4.
[67]*Annual Report . . . 1934*, pp. 24–25.
[68]U.S. Census Bureau, *Biennial Census of Manufactures 1935* (Washington, DC: Government Printing Office, 1938), pp. 3–5.
[69]*Annual Report . . . 1935* (Washington, DC: Government Printing Office, 1935), p. 19.
[70]Ibid., p. 20.
[71]Ibid., p. 19.
[72]For a list and descriptions of these reports, see the *Census Catalog*, pp. 144–149 and 238–241.

project. Although the number of special questionnaires was reduced, the amount of detail concerning products was greater than in any previous census. For example, Congress added questions concerning finished-product and work-in-progress inventories.[73]

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.[74]

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.[75]

The business census was exclusively a field enumeration. 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 noted above and by internal adjustments.[76] The agency also extended the censuses of retail and wholesale trades and selected service industries to Puerto Rico in 1940.[77]

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.[78]

The bulk of mineral industries were covered in the 1939 census by mail enumeration, but the stone, clay, and sand and gravel industries were canvassed by field 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.[79]

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 Bureau did not publish the last volume until June 1943.

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[73]U.S. Department of Commerce, *Annual Report of the Secretary of Commerce . . . 1938* (Washington, DC: Government Printing Office, 1938), p. 24.

[74]See the U.S. Census Bureau, *Biennial Census of Manufactures 1937*: Part I (Washington, DC: Government Printing Office, 1939).

[75]U.S. Department of Commerce, *Annual Report of the Secretary of Commerce . . . 1940* (Washington, DC: Government Printing Office, 1940), p. 44.

[76]U.S. Census Bureau, *Sixteenth Census of the United States: 1940 Census of Business*: Volume I, *Retail Trade*, Part 1, *United States Summary* (Washington, DC: Government Printing Office, 1943), p. 3. The reconciliation tables are contained in an appendix to the printed volume.

[77]Fred A. Gosnell, "The 1939 Business Census Gets Under Way," *Journal of the American Statistical Association*, Vol. 34, December 1939, pp. 667–670.

[78]U.S. Census Bureau, *Sixteenth Census of the United States: 1940: Manufactures 1939*, Volume 1: *Statistics by Subject* (Washington, DC: Government Printing Office, 1942), pp. 1, 3.

[79]U.S. Census Bureau, *Sixteenth Census of the United States: 1940: Mineral Industries 1939*, Vol. I: *General Summary and Industry Statistics* (Washington, DC: Government Printing Office, 1944), p. 1.

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 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 Congress did not appropriate the necessary funds.[80]

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[81] taken in accordance with the prewar law authorizing biennial economic censuses. The 1947 census was the first to be taken since1939 and was conducted under the authority of the Fifteenth Census Act of June 18, 1929.[82]

A major innovation was the introduction of the 1945 *Standard Industrial Classification (SIC) Manual* for classifying industries covered by the census. (Prior to World War II, the Census Bureau had developed its own classifications.) The Census Bureau sent precanvass 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 address listing operation by verifying the presence or absence of an establishment at specified addresses.[83]

The 1947 census 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. (A simplified questionnaire for small establishments and their data was used to reduce reporting burden and processing costs; simplified questionnaires were previously used in 1933.[84])

Further innovations in the 1947 census included the following:[85]

- 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 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.

[80]U.S. Department of Commerce, *Annual Report of the Secretary of Commerce, 1942* (Washington, DC: Government Printing Office, 1942), p. 15.
[81]Field enumerators canvassed approximately 15,000 sawmills, which had highly mobile and sporadic operations.
[82]46 *Stat*. 21, cited in Frederick G. Bohme, "U.S. Economic Censuses 1810 to the Present," *Government Information Quarterly*, Volume 4, Number 3 (1987).
[83]See United States Census Bureau, *Census of Manufactures: 1947*: Vol. I, *General Summary* (Washington, DC: Government Printing Office, 1950), pp. 1–22.
[84]Ibid.
[85]Ibid.

- 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.[86]

As in the past, the 1947 census results appeared first as preliminary reports, then as final reports, and finally 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[87] authorizing the Census Bureau to conduct economic censuses for 1949 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.[88] 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 singleestablishment firms, but obtained more detailed data from a sample consisting of every 10th small independent retailer, large retailers (those with 1948 sales volume in excess of $100,000), and multiestablishments.[89]

The Census Bureau established 308 temporary field offices for the 1948 census and carried out an address listing operation. 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. Enumerators completed the questionnaires for all establishments by interview, unless the establishments' management specifically requested other arrangements.

[86]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 areas with 50,000 or more inhabitants. Contiguous counties were included if they had close social and economic ties with the area's population nucleus.

[87]An Act to provide for the collection and publication of statistical information by the Bureau of the Census, 62 *Stat*. 478 (Public Law 80-671 was later incorporated into Title 13, U.S. Code—Census).

[88]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 below).

[89]U.S. Census Bureau, *United States Census of Business 1948, Retail Trade—General Statistics*, Part I (Washington, DC: Government Printing Office, 1952), pp. 1–3.

The second phase of the 1948 business census consisted of data collection, coding, and editing. Clerks recorded the receipt of questionnaires 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.[90]

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 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.[91]

As usual, the Census Bureau published preliminary results and final reports, the latter in bound volumes (three for retail trade, two for wholesale, 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.[92]

The Electronic Computer

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. UNIVAC I was used extensively for calculating, editing, and imputation, and for operating high-speed printers that prepared offset copy.[93]

The availability of computers and the centralization of census operations for multiestablishments at 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.

Watkins Commission: 1953–1954

Although 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.[94] This action provoked considerable alarm in many government departments and agencies, as well as in the business and academic communities. In 1953, in response to complaints about the cancellation of the census, the Secretary of Commerce appointed a number of academicians, business executives, economists, and other specialists not affiliated with the Census Bureau to a commission, chaired by Dr. Ralph J. Watkins, Director of Research for Dun and Bradstreet, Inc. The Watkins Commission was charged with making an intensive review of the economic census and, in March 1954, recommended that the economic censuses be resumed.[95] 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

[90]Ibid.
[91]Ibid.
[92]U.S. Census Bureau, "The Economic Censuses of the United States: Historical Development," by Charles G. Longham. Working Paper No. 38 (Washington, DC: U.S. Government Printing Office, 1973), p. 15.
[93]Joseph W. Duncan and William C. Shelton, *Revolution in United States Government Statistics 1926–1976* (Washington, DC: Government Printing Office, 1978), pp. 128–129.
[94]United States Department of Commerce, *Annual Report of the Secretary . . . 1952* (Washington, DC: Government Printing Office, 1953), p. 40.
[95]United States Department of Commerce, *Appraisal of Census Programs: Report of the Intensive Review Committee to the Secretary of Commerce* (Washington, DC: Government Printing Office, 1954), pp. 8–10.

instead of 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.[96]

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. Employers were enumerated via the mailout/mailback procedure, and 1954 income tax records suppled by the U.S. Internal Revenue Service (IRS) provided selected data items (such as employment, payroll, and sales) for retail nonemployers with 1954 sales of at least $2,500 and for service nonemployers.[97]

Income tax records did not contain the kind-of-business classifications necessary to determine which questionnaire should be mailed to a particular establishment, so the Bureau matched the IRS list with other lists—such as the Social Security Administration's (SSA's) employee master files—that contained kind-of-business classifications. 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.[98]

To secure accurate and up-to-date information for multiestablishment companies and to correct and consolidate the IRS list, the Census Bureau conducted a mailout/mailback precanvass in the fall of 1954. It asked multiestablishment companies for data about names and addresses, employment, types of activities, and the like.[99]

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.[100]

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).[101] Mailout of the economic census questions occurred in early 1955. The mailout and follow-up operations involving 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 establishments not responding to the follow-up letters. Coverage-control procedures ensured that all establishments on the mailing list were accounted for.[102]

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[96] *Encyclopedia of the U.S. Census*, s.v., "Economic Census," by Paul T. Zeisset (Washington, DC: CQ Press, 2000), p. 187.

[97] U.S. Census Bureau, *United States Census of Business 1954*, Vol. I, *Retail Trade: Summary Statistics* (Washington, DC: Government Printing Office, 1957), p. 1.

[98] U.S. Census Bureau, *United States Census of Mineral Industries 1954*, Vol. 1, *Summary and Industry Statistics* (Washington, DC: Government Printing Office, 1958), p. 9.

[99] Frank A. Hanna, *Compilation of Manufacturing Statistics* (Washington, DC: Government Printing Office, 1959), pp. 142–143. Hereafter referred to as "Hanna, *Compilation*."

[100] U.S. Census Bureau, *United States Census of Business: 1954*, Vol. I, *Retail Trade—Summary Statistics*, p. 1; and Vol. III, *Wholesale Trade—Summary Statistics* (Washington, DC: Government Printing Office, 1957), p. 1.

[101] U.S. Census Bureau, *United States Census of Manufactures 1954*, Vol. I, *Summary Statistics* (Washington, DC: Government Printing Office, 1958), p. xvii. The Annual Survey of Manufactures (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.

[102] Frederick G. Bohme, "U.S. Economic Censuses 1810 to the Present," *Government Information Quarterly*, Volume 4, Number 3 (1987), p. 235.

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.[103] 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. Census operations for 1958 saw the establishment of a census operations office in Jeffersonville, IN, to handle preparation of mailing packages, mailout, receipt, check-in, clerical editing and coding, and card punching.[104] The Census Bureau also had introduced more sophisticated computer systems; 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.[105]

With respect to geographic operations and scope, 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 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. With regard to the geographic scope of the censuses, Guam and the Virgin Islands of the United States were included in the economic censuses for the first time.[106]

1963

Inadequate transportation data prompted Congress to authorize a census of transportation in 1949 in Public Law 80-671. However, failure to appropriate funds for the 1953 census resulted in the 1963 Economic Census being the first to include a census of transportation.[107]

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:[108]

- **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.

[103]Central business districts were newly defined geographic entities encompassing the downtown business areas of large cities.

[104]U.S. Department of Commerce, *Annual Report of the Secretary of Commerce . . . 1958* (Washington, DC: Government Printing Office, 1958), p. 27.

[105]Duncan and Shelton, *Revolution in Statistics*, pp. 135–136.

[106]U.S. Census Bureau, *United States Census of Business 1958, Retail Trade—Summary Statistics*, Vol. I (Washington, DC: Government Printing Office, 1961), pp. 1 and APP-17.

[107]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).

[108]Bohme, "Economic Censuses," p. 237.

- **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.

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 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 full-time fishermen, without paid employees.[109]

The 1963 censuses of retail and wholesale trades, selected service industries, manufactures, and mineral industries closely resembled those conducted in 1958. The Census Bureau once again updated its computer systems and expanded the use of electronic equipment to automate geographic coding of establishment addresses and procedures to control mailout and follow-up operations, as well as systems for reporting progress on census operations, and to expedite the mass transfer of data from the Jeffersonville office to the agency's computer facility at Bureau headquarters. The 1963 census also saw the substitution of magnetic tape for punchcards in developing the census mailing list and the production of computer-programmed news stories for releasing census results and for automatically mailing these stories to news outlets.[110]

The Census Bureau obtained selected information, such as value of receipts and sales, from nonemployers' tax returns. It 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, it 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.

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. The 1967 Economic Censuses included censuses of retail and wholesale trades, selected services, construction and mineral industries, manufactures, commercial fisheries, transportation, and the enterprise statistics program.[111]

The Census Bureau expanded the scope of the 1967 Economic Census to include:[112]

- 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.

[109]U.S. Census Bureau, *Census of Commercial Fisheries, 1963* (Washington, DC: Government Printing Office, 1966), pp. 1, 15–23. 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.

[110]U.S. Census Bureau, *1963 Economic Census: Procedural History* (Washington, DC: Government Printing Office, 1968), p. 22.

[111]Arthur W. Horowitz, "1967 Economic Censuses," *Statistical Reporter*, No. 67-3 (September 1966), pp. 41–42.

[112]U.S. Census Bureau, *1967 Economic Censuses: Procedural History* (Washington, DC: Government Printing Office, 1972), pp. iv–vi. Hereafter referred to as *1967 Procedural History*.

- Adding the National Travel Survey (NTS, called the Passenger Transportation Survey in 1963), 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).[113]

In total, the Census Bureau used administrative records for 60 percent (about 2.9 million establishments) covered by the economic census.[114]

New techniques, computers, and auxiliary electronic equipment were used to handle data from the 1967 Economic Census. Other significant changes in processing methods included expanding the geographic coding file, developing computer programs to perform complementary disclosure analysis to ensure confidentiality, and expanded use of computer editing.[115]

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 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.[116]

(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:[117]

- 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).
- 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 was usually limited to legal form of organization and receipt- and employment-size of firm.

[113]For details, see U.S. Census Bureau, *Census of Business 1967*, Vol. I: *Retail Trade—Subject Reports* (Washington, DC: Government Printing Office, 1971), p. A-1; and *Census of Manufactures 1967*, Vol. I: *Summary and Subject Statistics* (Washington, DC: Government Printing Office, 1971), pp. 7 and 11.

[114]U.S. Census Bureau, *1967 Procedural History*, p. 4.

[115]Ibid.

[116]U.S. Census Bureau, *1967 Census of Commercial Fisheries* (Washington, DC: Government Printing Office, 1970), pp. 1–2.

[117]See U.S. Census Bureau, *Census of Construction Industries 1972*, Volume I: *Industry and Special Statistics* (Washington, DC: Government Printing Office, 1976), p. v (fn); U.S. Census Bureau, *Census of Wholesale Trade 1972*, Volume I, *Summary and Subject Statistics* (Washington, DC: Government Printing Office, 1976), p. A-1; U.S. Census Bureau, *Census of Transportation 1972*, Volume I: *National Travel Survey* (Washington, DC: Government Printing Office, 1973), p. ix; and *1972 Survey of Minority-Owned Enterprises, Special Report—Minority-Owned Businesses—Black*, MB72-1 (Washington, DC: Government Printing Office, 1974), p. 1.

The first reports in key publication series from each of the censuses appeared within 1 year of the period covered by the 1972 censuses. 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.[118]

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:[119]

- 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 in expanding product line detail for the 1977 Censuses of Manufactures and Mineral Industries to 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 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).[120] Those changes identified after clearance were not used for the 1977 Economic Census, but were included in the 1982 censuses.

The 1977 census coverage included nonregulated motor carriers and public warehousing as well as the National Transportation Survey (NTS), Truck Inventory and Use Survey (TIUS), and Commodity Transportation Survey (CTS). While the Bureau based the last three surveys on probability samples, data for nonregulated (by the Interstate Commerce Commission) motor carriers and public warehousing firms with employees were obtained in an enumeration of establishments in the same manner as the other economic censuses.[121] 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*).

[118]U.S. Census Bureau, *History of the 1977 Economic Censuses* (Washington, DC: Government Printing Office, 1980), pp. 4–6.
[119]Ibid., pp. 10–11.
[120]Ibid., pp. 3–4.
[121]U.S. Census Bureau, *1977 Census of Transportation: Nonregulated Motor Carriers and Public Warehousing* (Washington, DC: Government Printing Office, 1978), p. iv.

Standard Statistical Establishment List (SSEL)

In 1977, changes were made in the practice begun in 1954 of precanvassing all known multiestablishment companies. (This precanvass was done only 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.[122]

1982

The 1982 Economic Census consisted of censuses of retail trade; wholesale trade; service, construction, and mineral industries; manufactures; and transportation; the survey of minorityowned 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.[123]

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 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.[124]

The Census Bureau also revised the Truck Inventory and Use Survey for the 1982 census, stratifying trucks reported by body type, using two report forms (one for pickups and other light trucks and the other for all other vehicles), and asking for additional information on vehicles' characteristics, classification of operator, and products carried.

The Census Bureau modified the 1983 Commodity Transportation Survey (part of the 1982 program) as well, asking respondents to use the sales-invoice system instead of bills of lading for reporting, and strengthening instructions to respondents regarding the use of the serial number sequence.[125]

The 1982 census did not include a National Transportation Survey, 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. In addition, some 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) were dropped from the census because information for them was available from other sources, such as the U.S. Department of Education and the Bureau of Labor Statistics. On the other hand, the scope of the census

[122]U.S. Census Bureau, *Technical Paper 44, The Standard Statistical Establishment List Program* (Washington, DC: Government Printing Office, 1979), pp. 1–3.
[123]U.S. Census Bureau, *1972 Census of Retail Trade, Geographic Area Series, United States* (Washington, DC: Government Printing Office, 1984), pp. iii–v.
[124]U.S. Census Bureau, *1982 Census of Manufactures, Subject Series, General Summary*, MC82-S-1 (Part I) (Washington, DC: Government Printing Office, 1986), p. xxvi.
[125]William F. Micarelli, "Evolution of the United States Economic Censuses: The Nineteenth and Twentieth Centuries," *Government Information Quarterly*, Volume 15, Number 3, p. 368.

was extended by expanding the collection of data on retail trade, wholesale trade, manufacturing, and construction and service industries for the Commonwealth of the Northern Mariana Islands.[126]

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 Truck Inventory and Use Survey in October 1982 and completed the operation in June 1983. 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 1 of 3 techniques: (1) the systematic method, (2) the "first-15" method, and (3) the summary method.[127]

(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 similar to that of 1982, but included a number of significant changes in specific censuses. For retail trade, the number of specific merchandise lines was increased from 34 to 41. This provided data users with more detailed information on the kinds of merchandise sold by different kinds of retail establishments. The major retail center (MRC) reports series was dropped, primarily due to escalating costs. Changes to census of retail trade's publication program were as follows:[128]

- Retail trade data for employer establishments were 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 with and without payroll and sales for each type of retail classification, for states, 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. In addition, the census collected additional information on international service transactions. Four more 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.[129]

The census of transportation was similar to that conducted in 1982 except that the Commodity Transportation Survey was canceled in January 1988 as a result of the deficit-reduction guidelines mandated by the 1986 Deficit Reduction Act.[130]

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[126]U.S. Census Bureau, *History of the 1982 Economic Censuses* (Washington, DC: Government Printing Office, 1987), pp. 4–7.

[127]Ibid., pp. 42, 97, and 99–101.

[128]U.S. Census Bureau, *Guide to the 1987 Economic Censuses and Related Statistics* (Washington, DC: Government Printing Office, 1990), p. 26. Hereafter referred to as *1987 Guide*.

[129]U.S. Census Bureau, *1987 Census of Service Industries, Geographic Area Series, United States*, SC87-A-52 (Washington, DC: Government Printing Office, 1991), pp. iv–v; and *1987 Guide*, pp. 40–41.

[130]*1987 Guide*, p. 87.

Several changes were made to the census of construction industries for 1987, including the items to collect data on the value of construction work done rather than receipts, as was the case previously. In addition, the number of construction questions increased from 8 to 24 to make enquiries that were tailored to particular industries.[131]

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. The 1987 Annual Survey of Manufactures asked approximately 55,000 establishments for information on the aggregate amount of materials, parts, and supplies purchased from foreign countries.[132]

The Census Bureau also published comprehensive data 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.[133]

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 consisted of 83 bulletins. The final geographic area and subject series came out shortly thereafter.[134]

The census of construction industries continued to publish preliminary industry, final industry, and final geographic area reports.[135]

No preliminary industry reports were published for the censuses of retail trade, wholesale trade, or service industries. Instead, two-page press releases appeared for each state. These press releases highlighted data published in the 584 reports, including 125 preliminary reports. Press releases were published approximately 6 weeks before the final state reports were released.[136]

The 1987 censuses witnessed the following significant data-processing changes:[137]

- 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 than 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 census or census-related surveys were consolidated into one division to allow computer staff to move among projects as required.

[131]U.S. Census Bureau, *1987 Census of Construction Industries, Industry Series, United States Summary*, CC87-1-28 (Washington, DC: Government Printing Office, 1990), pp. iii–v.
[132]*1987 Guide*, p. 52; and U.S. Census Bureau, *1987 Census of Manufactures, Subject Series*, MC87-S-1, *General Summary* (Washington, DC: Government Printing Office, 1991), p. A-5.
[133]U.S. Census Bureau, "Guide to Foreign Trade Statistics," <http://www.census.gov/foreign-trade/guide/sec1.html>.
[134]*1987 Guide*, p. 53. The publication program for each component census of the economic censuses was printed on the inside back cover of the individual printed reports for that census.
[135]Ibid., p. 68.
[136]Ibid., pp. 26–41.
[137]U.S. Census Bureau, *History of the 1987 Economic Censuses* (Washington, DC: Government Printing Office, 1992), p. 7.

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.[138]

(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.[139] 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.[140] 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.[141]

By including coverage of financial, insurance, real estate industries, communications, and utilities, the 1992 census marked the most significant expansion of the census in half a century. In addition, the following transportation industry groups were added:[142]

- 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.[143]

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 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

[138]Ibid. For further information on the statistical area definitions, see the U.S. Office of Management and Budget, *Metropolitan Statistical Areas* (Washington, DC: Government Printing Office, 1983).

[139]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.

[140]U.S. Census Bureau, *1992 Census of Transportation, Communications, and Utilities, Geographic Area Series*, UC92-A-1, *Summary* (Washington, DC: Government Printing Office, 1995), p. A-2. Hereafter referred to as *1992 Census of Transportation*.

[141]Data for the individual Outlying Areas were published in U.S. Census Bureau, *1992 Economic Census of Outlying Areas, Geographic Area Series*, OA92-E-1 through -7 (Puerto Rico [OA92-E-1 through -4], Virgin Islands [OA92-E-5], Guam [OA92-E-6], and Northern Mariana Islands [OA92-E-7]) (Washington, DC: Government Printing Office, 1994–1995).

[142]*1992 Census of Transportation*, p. A-2.

[143]Coverage of the 1987 Economic Census was approximately 75 percent of the nation's economic activity.

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 questionnaire for transportation, communications, and utilities asked for operating revenues basis data.[144]

In the past, the IRS supplied the Census Bureau with gross receipts or sales (less returns and allowances). In 1992, the agency asked the IRS also 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.[145]

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.[146]

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 required by the 1988 Women-Owned Business Act, the Census Bureau collected information on women-owned corporations for the first time in 1992.[147]

In an effort to improve and accelerate response, the Census Bureau:[148]

- Used more effective direct-mail techniques.
- Standardized the size of most economic questionnaires.
- Improved instructions and streamlined transmittal letters.
- Increased the emphasis on mandatory reporting in 1992.
- Implemented more effective follow-up strategies; e.g., using questionnaire follow-ups for single-establishment companies and multiestablishment companies.
- Added toll-free telephone number to all questionnaire mailings.

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 a contact person in the agency to whom any questions could be directed. Companies requesting a contact person were asked to reciprocate by identifying a contact within their respective organizations.[149]

In November 1992 (about 1 month before census mailout), 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 had not responded by April 1993 were contacted again by telephone. Census Bureau analysts encouraged reporting and collected data by telephone from those companies that had not reported by late June 1993.[150]

[144]U.S. Census Bureau, *History of the 1992 Economic Census*, EC92-R-5 (Washington, DC: Government Printing Office, 1996), pp. 65–66.
[145]Ibid., pp. 63, 65–66.
[146]Ibid.
[147]U.S. Census Bureau, *1992 Census of Manufactures, Subject Series*, MC92-S-1, *General Summary* (Washington, DC: Government Printing Office, 1996), pp. v–viii.
[148]*History of the 1992 Economic Census*, pp. 6–7.
[149]Ibid., pp. 76–77.
[150]Ibid.

Finally, for the first time, the Census Bureau developed and used an electronic data interchange standard as part of 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.[151]

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. Selected metropolitan area data also were provided for some new industries in the transportation, communications, and utilities and financial, insurance, and real estate industries groups.

1997

While the economic coverage of the 1997 census was similar to preceding enumerations, budget reductions compelled the Census Bureau to reduce the overall scope of the operation, the principal casualty being the Enterprise Statistics Program. At various 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, 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). In the end, Congress provided the majority of funds needed to continue collecting these vital data.[152]

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 an overhaul of the SIC codes. The need to replace the SIC codes 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 among the Census Bureau, the Bureau of Economic Analysis, and the statistical agencies of Canada and Mexico. 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.[153]

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 Bureau's decision to use electronic dissemination as the primary form of data required a 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 be made available on the agency's Web site. Providing such unprecedented access to economic data also required widely compatible software formats. 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.[154]

In other preparations for the 1997 enumeration, the Census Bureau undertook a significant upgrading of its data-processing infrastructure. It replaced the Local Area Network servers with more powerful equipment, installed faster Virtual Memory Systems, replaced older processor

[151]U.S. Census Bureau, "Economic and Agricultural Census Update," *Minutes and Report of Committee Recommendations: Census Advisory Committees of the American Economic Association, the American Marketing Association, the American Statistical Association, and on Population Statistics*, October 22–23, 1992, p. 6.

[152]U.S. Census Bureau, "What Are the Economic Program Implications of the 1997 Budget?" *Minutes and Report of Committee Recommendations: Census Advisory Committee of Professional Associations*, October 24–25, 1996, p. 34.

[153]Office of Management and Budget, *North American Industry Classification System: United States 1997* (Lanham, MD: Bernam Press, 1998), p. 22. For more detailed information on the development and implementation of the NAICS, see Chapter 3, "The Introduction of the North American Industry Classification System (NAICS)" in the *History of the 1997 Economic Census*.

[154]U.S. Census Bureau, *History of the 1997 Economic Census* (Washington, DC: Government Printing Office, 2000), pp. 3–4; and U.S. Census Bureau, "Guide to the 1997 Economic Census," <http://www.census.gov/epcd/www/guide.html>.

equipment with new machines, and installed Common Use Interface applications. Ultimately, the Census Bureau moved away from subject area-specific processing to more "generalized" processing for data edits and data analysis.[155]

The Census Bureau mailed questionnaires to approximately 4.3 million companies in December 1997 to collect information. Administrative records from the Internal Revenue Service and the Social Security Administration were used to compile basic economic information on a further 1.5 million small employer businesses, and some 14 million nonemployer businesses. Telephone and mail follow-up operations continued into June 1998.[156] The data were published only in electronic form (see above), although the Census Bureau maintained a print-on-demand service. An *Advance Report*, issued in March 1999, initiated the publication program with a preliminary look at the 1997 census tabulations, including the first data ever published on a NAICS basis. In addition to the standard data reports series, the Census Bureau also released the *Bridge Between NAICS and SIC*, which showed 1997 data cross-tabulated by both the old and the new classification systems identifying the lowest common denominators between the two.[157]

Bibliography

Statutes

Act of May 1, 1810.

Act approved March 3, 1879, for the conduct of the tenth census. 20 *Stat*. 473.

Permanent Census Act of 1902. 32 *Stat*. 51.

An act to provide for the thirteenth and subsequent censuses (July 2, 1909), 36 *Stat*. 1.

An Act to provide for the fourteenth and subsequent censuses (March 3, 1919), 40 *Stat*. 1291.

46 *Stat*. 21, cited in Frederick G. Bohme, "U.S. Economic Censuses 1810 to the Present," *Government Information Quarterly*, Volume 4, Number 3 (1987).

An Act to provide for the collection and publication of statistical information by the Bureau of the Census, 62 *Stat*. 478.

Annual Reports of the Director of the Census Bureau and the Secretary of Commerce

U.S. Bureau of the Census. *Report of the Director to the Secretary of Commerce and Labor Concerning the Operations of the Bureau for the Year 1909–10* (Washington, DC: Government Printing Office, 1911).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ending June 30, 1914* (Washington, DC: Government Printing Office, 1914).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ended June 30, 1917* (Washington, DC: Government Printing Office, 1917).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ended June 30, 1918* (Washington, DC: Government Printing Office, 1918).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce for the Fiscal Year Ended June 30, 1920* (Washington, DC: Government Printing Office, 1920).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1921* (Washington, DC: Government Printing Office, 1921).

[155] *1997 Economic History*, pp. 59–60.
[156] Ibid.
[157] Ibid., pp. 119–120.

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1923* (Washington, DC: Government Printing Office, 1923).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1925* (Washington, DC: Government Printing Office, 1925).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1930* (Washington, DC: Government Printing Office, 1930).

U.S. Bureau of the Census. *Annual Report of the Director of the Census to the Secretary of Commerce . . . 1932* (Washington, DC: Government Printing Office, 1932).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce . . . 1933* (Washington, DC: Government Printing Office, 1933).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce 1934* (Washington, DC: Government Printing Office, 1934).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce 1935* (Washington, DC: Government Printing Office, 1935).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce . . . 1938* (Washington, DC: Government Printing Office, 1938).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce . . . 1940* (Washington, DC: Government Printing Office, 1940).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce, 1942* (Washington, DC: Government Printing Office, 1942).

U.S. Department of Commerce. *Annual Report of the Secretary . . . 1952* (Washington, DC: Government Printing Office, 1953).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce . . . 1958* (Washington, DC: Government Printing Office, 1958).

Economic Census Histories

U.S. Bureau of the Census. *1963 Economic Census: Procedural History* (Washington, DC: Government Printing Office, 1968).

U.S. Bureau of the Census. *1967 Economic Censuses: Procedural History* (Washington, DC: Government Printing Office, 1972).

U.S. Bureau of the Census. *History of the 1977 Economic Censuses* (Washington, DC: Government Printing Office, 1980).

U.S. Bureau of the Census. *History of the 1982 Economic Censuses* (Washington, DC: Government Printing Office, 1987).

U.S. Bureau of the Census. *History of the 1987 Economic Censuses* (Washington, DC: Government Printing Office, 1992).

U.S. Bureau of the Census. *History of the 1992 Economic Census*, EC92-R-5 (Washington, DC: Government Printing Office, 1996).

U.S. Census Bureau. *History of the 1997 Economic Census* (Washington, DC: Government Printing Office, 2000).

Tench Coxe. *A Statement of the Arts and Manufactures of the United States for the year 1810* (Philadelphia, PA: A. Cornman, 1814).

Carroll D. Wright and William C. Hunt. *The History and Growth of the U.S. Census* (Washington, DC: Government Printing Office, 1900).

George F. Warren and Frank A. Pearson. *Prices*. New York: John Wiley and Sons, 1933, pp. 11–13, 25–27, cited by Frederick G. Bohme, "U.S. Economic Censuses, 1810 to the Present," *Government Information Quarterly*, Volume 4, Number 3 (1987).

U.S. Bureau of the Census. *Report of the Superintendent of the Census to the Secretary of the Interior 1890* (Washington, DC: Government Printing Office, 1890).

U.S. Census Office. *Census Reports*, Volume VII, *Twelfth Census of the United States Taken in the Year 1900, Manufactures, Part 1: United States by Industries* (Washington, DC: Government Printing Office, 1902).

U.S. Bureau of the Census. *Report of the Superintendent of the Census to the Secretary of the Interior For the Six Months Ending December 31, 1890* (Washington, DC: Government Printing Office, 1891).

U.S. Bureau of the Census. *Bureau of the Census Catalog of Publications 1790–1972* (Washington, DC: Government Printing Office, 1974).

U.S. Bureau of the Census. *Legislation Relating to the Bureau of the Census* (Washington, DC: Government Printing Office, 1917).

U.S. Bureau of the Census. *Manufactures 1905*. Part I. *United States by Industries* (Washington, DC: Government Printing Office, 1907).

U.S. Bureau of the Census. *1963 Economic Censuses: Procedural History* (Washington, DC: Government Printing Office, 1968).

U.S. Bureau of the Census. *Thirteenth Census of the United States*. Vol. VIII. *Manufactures 1909: General Report and Analysis* (Washington, DC: Government Printing Office, 1913).

U.S. Bureau of the Census. *Biennial Census of Manufactures 1927* (Washington, DC: Government Printing Office, 1930).

U.S. Bureau of the Census. "Manufactures 1919," *Fourteenth Census of the United States . . . 1920*, Vol. VIII (Washington, DC: Government Printing Office, 1923).

U.S. Bureau of the Census. "Construction Industry," *Fifteenth Census of the United States: 1930* (Washington, DC: Government Printing Office, 1933).

U.S. Bureau of the Census. *Historical Statistics of the United States, Colonial Times to 1970*, 2 vols. (Washington, DC: Government Printing Office, 1975).

U.S. Bureau of the Census. "Retail Distribution: 1929," *Fifteenth Census of the United States: 1930: Distribution*, Vol. I (Washington, DC: Government Printing Office, 1933).

U.S. Bureau of the Census. "Wholesale Distribution: Summary for the United States," *Fifteenth Census of the United States: 1930* (Washington, DC: Government Printing Office, 1933).

U.S. Bureau of the Census. *Fifteenth Census of the United States: 1930: Census of Hotels 1930* (Washington, DC: Government Printing Office, 1931).

U.S. Bureau of the Census. *Fifteenth Census of the United States: Census of Manufactures: 1929*, Volume I, *General Report* (Washington, DC: Government Printing Office, 1933).

U.S. Bureau of the Census. *Fifteenth Census of the United States: Mines and Quarries: 1929, General Report and Reports for States and for Industries* (Washington, DC: Government Printing Office, 1933).

U.S. Bureau of the Census. *Biennial Census of Manufactures 1931* (Washington, DC: Government Printing Office, 1935).

U.S. Bureau of the Census. *Biennial Census of Manufactures 1933* (Washington, DC: Government Printing Office, 1935).

U.S. Bureau of the Census. *Biennial Census of Manufactures 1935* (Washington, DC: Government Printing Office, 1938).

U.S. Department of Commerce. *Annual Report of the Secretary of Commerce . . . 1935* (Washington, DC: Government Printing Office, 1935).

U.S. Bureau of the Census. *Biennial Census of Manufactures 1937: Part I* (Washington, DC: Government Printing Office, 1939).

U.S. Bureau of the Census. *Sixteenth Census of the United States: 1940 Census of Business:* Volume I, *Retail Trade*, Part 1, *United States Summary* (Washington, DC: Government Printing Office, 1943).

Fred A. Gosnell. "The 1939 Business Census Gets Under Way," *Journal of the American Statistical Association*, Vol. 34, December 1939.

U.S. Bureau of the Census. *Sixteenth Census of the United States: 1940: Manufactures 1939*, Volume 1: *Statistics by Subject* (Washington, DC: Government Printing Office, 1942).

U.S. Bureau of the Census. *Sixteenth Census of the United States: 1940: Mineral Industries 1939*, Vol. I: *General Summary and Industry Statistics* (Washington, DC: Government Printing Office, 1944).

U.S. Bureau of the Census. *Census of Manufactures: 1947:* Vol. I, *General Summary* (Washington, DC: Government Printing Office, 1950).

U.S. Bureau of the Census, *United States Census of Business 1948, Retail Trade—General Statistics*, Part I (Washington, DC: Government Printing Office, 1952).

Joseph W. Duncan and William C. Shelton. *Revolution in United States Government Statistics 1926–1976* (Washington, DC: Government Printing Office, 1978).

U.S. Department of Commerce. *Appraisal of Census Programs: Report of the Intensive Review Committee to the Secretary of Commerce* (Washington, DC, Government Printing Office, 1954).

Encyclopedia of the U.S. Census. S.v., "Economic Census," by Paul T. Zeisset (Washington, DC: CQ Press, 2000).

U.S. Bureau of the Census. *United States Census of Business 1954*, Vol. I, *Retail Trade: Summary Statistics* (Washington, DC: Government Printing Office, 1957).

U.S. Bureau of the Census. *United States Census of Mineral Industries 1954*, Vol. 1, *Summary and Industry Statistics* (Washington, DC: Government Printing Office, 1958).

Frank A. Hanna. *Compilation of Manufacturing Statistics* (Washington, DC: Government Printing Office, 1959).

U.S. Bureau of the Census. *United States Census of Business: 1954*, Vol. I, *Retail Trade—Summary Statistics*, p. 1, and Vol. III. *Wholesale Trade—Summary Statistics* (Washington, DC: Government Printing Office, 1957).

U.S. Bureau of the Census. *United States Census of Manufactures 1954*, Vol. I, *Summary Statistics* (Washington, DC: Government Printing Office, 1958).

Frederick G. Bohme. "U.S. Economic Censuses 1810 to the Present," *Government Information Quarterly*, Volume 4, Number 3 (1987).

U.S. Bureau of the Census. *United States Census of Business: 1958*, Vol. I, *Retail Trade Summary Statistics* (Washington, DC: Government Printing Office, 1961).

U.S. Bureau of the Census. *Census of Commercial Fisheries, 1963* (Washington, DC: Government Printing Office, 1966).

Arthur W. Horowitz. "1967 Economic Censuses," *Statistical Reporter*, No. 67-3 (September 1966).

U.S. Bureau of the Census. *Census of Business: 1967*, Vol. I, *Retail Trade—Subject Reports* (Washington, DC: Government Printing Office, 1971).

U.S. Bureau of the Census. *Census of Manufactures: 1967*, Vol. I, *Summary and Subject Statistics* (Washington, DC: Government Printing Office, 1971).

U.S. Bureau of the Census. *1967 Census of Commercial Fisheries* (Washington, DC: Government Printing Office, 1970).

U.S. Bureau of the Census. *Census of Construction Industries 1972*, Volume I, *Industry and Special Statistics* (Washington, DC: Government Printing Office, 1976).

U.S. Bureau of the Census. *Census of Wholesale Trade, 1972*, Volume I, *Summary and Subject Statistics* (Washington, DC: Government Printing Office, 1976).

U.S. Bureau of the Census. *Census of Transportation, 1972*, Volume I, *National Travel Survey* (Washington, DC: Government Printing Office, 1973).

U.S. Bureau of the Census. *1972 Survey of Minority-Owned Enterprises, Special Report—Minority-Owned Businesses—Black*, MB72-1 (Washington, DC: Government Printing Office, 1974).

U.S. Bureau of the Census. *1977 Census of Transportation: Nonregulated Motor Carriers and Public Warehousing* (Washington, DC: Government Printing Office, 1978).

U.S. Bureau of the Census. *Technical Paper 44, The Standard Statistical Establishment List Program* (Washington, DC: Government Printing Office, 1979).

U.S. Bureau of the Census. *1972 Census of Retail Trade, Geographic Area Series, United States* (Washington, DC: Government Printing Office, 1984).

U.S. Bureau of the Census. *1982 Census of Manufactures, Subject Series, General Summary*, MC82S-1 (Part I) (Washington, DC: Government Printing Office, 1986).

William F. Micarelli. "Evolution of the United States Economic Censuses: The Nineteenth and Twentieth Centuries," *Government Information Quarterly*, Volume 15, Number 3.

U.S. Bureau of the Census. *Guide to the 1987 Economic Censuses and Related Statistics* (Washington, DC: Government Printing Office, 1990).

U.S. Bureau of the Census. *1987 Census of Construction Industries, Industry Series, United States Summary*, CC87-1-28 (Washington, DC: Government Printing Office, 1990).

U.S. Bureau of the Census. *1987 Census of Manufactures, Subject Series, General Summary*, MC87-S-1 (Washington, DC: Government Printing Office, 1991).

U.S. Bureau of the Census. *1987 Census of Service Industries, Geographic Area Series, United States*, SC87-A-52 (Washington, DC: Government Printing Office, 1991).

U.S. Bureau of the Census. "Guide to Foreign Trade Statistics," <http://www.census.gov/foreign-trade/guide/sec1.html>.

U.S. Office of Management and Budget. *Metropolitan Statistical Areas* (Washington, DC: Government Printing Office, 1983).

U.S. Bureau of the Census. *1992 Census of Transportation, Communications, and Utilities, Geographic Area Series, Summary*, UC92-A-1 (Washington, DC: Government Printing Office, 1995).

U.S. Bureau of the Census. *1992 Economic Census of Outlying Areas, Geographic Area Series*, OA92-E-1 through -7 (*Puerto Rico* [OA92-E-1 through -4], *Virgin Islands* [OA92-E-5], *Guam* [OA92-E-6], and *Northern Mariana Islands* [OA92-E-7]) (Washington, DC: Government Printing Office, 1994–1995).

U.S. Bureau of the Census. *1992 Census of Manufactures, Subject Series, General Summary*, MC92-S-1 (Washington, DC: Government Printing Office, 1996).

U.S. Bureau of the Census. "Economic and Agricultural Census Update," *Minutes and Report of Committee Recommendations: Census Advisory Committees of the American Economic Association, the American Marketing Association, the American Statistical Association, and on Population Statistics*, October 22–23, 1992.

U.S. Bureau of the Census. "What Are the Economic Program Implications of the 1997 Budget?" *Minutes and Report of Committee Recommendations: Census Advisory Committee of Professional Associations*, October 24–25, 1996.

Office of Management and Budget. *North American Industry Classification System: United States 1997* (Lanham, MD: Bernam Press, 1998).

U.S. Bureau of the Census. "Guide to the 1997 Economic Census," <http://www.census.gov/epcd/www/guide.html>.

Appendix C.
Principal Advisory Committees on the 2002 Economic Census

PUBLIC ADVISORY COMMITTEES

A public advisory committee is any group of people—not composed wholly of officers or employees of the federal government—organized under governmental authority for the purpose of obtaining advice, recommendations, or other kinds of assistance. From April 1, 2001, to March 31, 2006 (the period in which the bulk of the 2002 Economic Census operations took place), the Census Bureau had five public advisory committees—the membership of which was made up entirely of non-Bureau people—that were responsible to the director. One of these, the Census Advisory Committee of Professional Associations, was directly concerned with one or more aspects of the economic census, drawing its membership from the American Economic Association (AEA), the American Marketing Association (AMA), the American Statistical Association (ASA), and the Population Association of America (PAA). (Prior to 1994, each of these organizations had provided representatives for four separate advisory committees.)[1] The committee made recommendations concerning the scope, content, and methodology, and proposed tabulations and publications for the censuses. Representation on these bodies changed during the census period.

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 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 announcing 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 (normally two 3-year terms).[2] Committee members received no compensation, other than per diem and travel expenses, for attending meetings.

Typically, the committee met twice every calendar year, although during the period leading up to Census 2000, additional meetings took place. The membership of the three subgroups primarily concerned with the economic census (the AEA, AMA, and ASA) is shown for the period April 1, 2001, to March 31, 2006.

[1]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 a single organization called the Census Advisory Committee of Professional Associations. The new Committee was composed of members from these professional associations, but was organized into four individual subgroups.

[2]Members' terms normally began on the first day of the year of their appointment and ended on the last day of the last year of the term.

THE AMERICAN ECONOMIC ASSOCIATION (AEA)

Various members of the AEA, together with representatives of the ASA, served on a single Census Bureau advisory committee from 1919 to 1937. In 1960, when the agency was entering new areas of interest to economists and it appeared desirable to have a direct channel for 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 2002 Economic Census were as follows:

Dr. Ernst R. Berndt
Dr. Roger R. Betancourt
Dr. Lynn E. Browne
Dr. Austan Goolsbee
Dr. Shane Greenstein
Dr. Erica Groshen
Dr. Judith Hellerstein
Dr. Thomas J. Holmes
Dr. Rebecca A. Maynard
Dr. Duncan H. Meldrum
Dr. David E. Mills
Dr. Robert A. Moffitt
Dr. Ariel Pakes
Dr. Mark J. Roberts
Dr. Frederic M. Scherer
Dr. Daniel T. Slesnick
Dr. Philip L. Swan

THE AMERICAN MARKETING ASSOCIATION (AMA)

In 1945, the 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, with members to be appointed to 3-year terms by the president of the AMA.

Committee members who served during the planning and conduct of the 2002 Economic Census were as follows:

Tony Adams
Prof. Edward A. Blair
Katherine Bock-Jocz
Michelle Elster
Dr. Michael Etzel
Frank A. Haas
Gary Kerr
Michael A. Lotti
David B. MacKay
William J. Qualls
Connie Pechmann
Dr. Robert Peterson

Arthur Redmond
Carol Shea
Dr. Rosann Spiro
Sybil Stershic

THE AMERICAN STATISTICAL ASSOCIATION (ASA)

In November 1918, Secretary of Commerce William C. Redfield invited the presidents of the ASA and the 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 General Advisory Committee functioned until 1937 on a permanent basis, with its members drawn from the two associations. In 1937, the Committee was reconstituted, with all of its members drawn from the ASA and appointed 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 agency 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 agency's requests for opinions and judgements in the whole area of its operations."

Members who served during the planning and conduct of the 2002 Economic Census were as follows:

Dr. Thomas R. Belin
Dr. John Michael Brick
Dr. Joseph Garrett
Dr. Malay Ghosh
Dr. Michael A. Hidiroglou
Dr. F. Thomas Juster
Dr. Partha Lahiri
Dr. Sharon L. Lohr
Dr. Nancy A. Mathiowetz
Dr. William O'Hara
Dr. Colm O'Muircheartaigh
Dr. Robert L. Santos
Dr. Elaine Zanutto

Appendix D.
Consultation on the Census Questionnaires

INTRODUCTION

The U.S. Census Bureau solicited comments on the 2002 Economic Census questionnaire content from agencies, trade associations, trade journals, and other organizations, including companies reporting in the censuses. The list below shows, by major North American Industry Classification System (NAICS) economic sector, the organizations that responded.

MINING (SECTOR 21)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis
  International Trade Association
U.S. Department of Energy
  Energy Information Administration
U.S. Department of the Interior
U.S. Department of Labor
  Bureau of Labor Statistics
U.S. Environmental Protection Agency
Federal Emergency Management Agency
Federal Reserve Board
Federal Trade Commission
General Accounting Office
U.S. International Trade Commission
Library of Congress
National Institute of Occupational Safety and Health
Small Business Administration

Other Organizations

American Association of Petroleum Geologists
American Bureau of Metal Statistics
American Copper Council
American Gas Association
American Institute of Mining, Metallurgical, and Petroleum Engineers
American Iron Ore Association
American Petroleum Institute
American Zinc Association
American-European Soda Ash Shipping Association
Bituminous Coal Operators Association
Building Stone Institute
China Clay Producers Association
Copper Development Association
Ferroalloys Association
Gas Processors Association
Gas Technology Institute
Gold Institute
Independent Petroleum Association of America
Indiana Limestone Institute of America

International Association of Drilling Contractors
International Association of Geophysical Contractors
Interstate Natural Gas Association of America
Interstate Oil and Gas Compact Commission
Iron and Steel Society
Lead Industries Association
Marble Institute of America
Mineral Economics and Management Society
Mining and Metallurgical Society of America
National Aggregates Association
National Industrial Sand Association
National Mining Association
National Petrochemical and Refiners Association
National Propane Gas Association
National Stripper Well Association
Pennwell Publishing Company
Perlite Institute
Potash and Phosphate Institute
Refractories Institute
Salt Institute
Silver Institute
Society of Exploration Geophysicists
Society of Mineral Analysts
Society of Mining, Metallurgy, and Exploration
Sorptive Minerals Institute
The Sulphur Institute
United Mine Workers of America, International Union
Vermiculite Association
World Gold Council

CONSTRUCTION (SECTOR 23)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis
  International Trade Association
U.S. Department of Energy
  Energy Information Administration
Federal Emergency Management Agency
Federal Reserve Board
Federal Trade Commission
General Accounting Office
U.S. Department of the Interior
U.S. Department of Labor
  Bureau of Labor Statistics
Library of Congress
U.S. Department of Housing and Urban Development
U.S. International Trade Commission
Small Business Administration

Other Organizations

Air Conditional Contractors of America
American Association of State Highways and Transportation Officials
American Concrete Institute
American Fence Association
American Iron and Steel Institute

American Public Power Association
American Railway Engineering and Maintenance of Way Association
American Road and Transportation Builders Association
American Society of Concrete Contractors
American Subcontractors Association
Asphalt Roofing Manufacturers Association
Associated Specialty Contractors
Association of the Wall and Ceiling Industries—International
Brick Industry Association
Cahners Building and Construction
Ceilings and Interior Systems Construction Association
Ceramic Tile Institute of America
Concrete Foundations Association
Construction Financial Management Association
Construction Labor Research Council
Construction Management Association of America
Construction Specifications Institute
Design-Build Institute of America
Dredging Contractors of America
Finishing Contractors of America
Fire Suppression Systems Association
Floor Covering Installation Contractors Association
Harvard University, Joint Center for Housing Studies
Home Improvement Research Institute
Independent Electrical Contractors
Independent Professional Painting Contractors Association of America
Insulation Contractors Association of America
International Brotherhood of Electrical Workers
International Concrete Repair Institute
Maple Floor Manufacturers of America
Mason Contractors Association of America
Mechanical Contractors Association of America
National Association of Elevator Contractors
National Association of Home Builders of the United States
National Association of Reinforcing Steel Contractors
National Association of the Remodeling Industry
National Burglar and Fire Alarm Association
National Drilling Association
National Electrical Contractors Association
National Erectors Association
National Frame Builders Association
National Institute of Building Sciences
National Precast Concrete Association
National Railroad Construction and Maintenance Association
National Ready Mixed Concrete Association
National Roof Deck Contractors Association
National Roofing Contractors Association
National Tile Contractors Association
National Utility Contractors Association
Painting and Decorating Contractors of America
Plumbing Contractors of America
Plumbing-Heating-Cooling Contractors—National Association
Power and Communications Contractors Association
Remodeling Contractors Association of America
Resilient Floor Covering Institute
Roof Consultants Institute

Scaffold Industry Association
Sheet Metal and Air Conditioning Contractors' National Association
United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada
United Brotherhood of Carpenters and Joiners of America
United Steelworkers of America
United Union of Roofers, Waterproofers and Allied Workers
Vinyl Siding Institute
Wallcovering Association

MANUFACTURING (SECTORS 31–33)

Federal Agencies

U.S. Department of Agriculture
U.S. Department of Commerce
  Bureau of Economic Analysis
  International Trade Association
  National Institutes of Standards and Technology
U.S. Department of Energy
  Energy Information Administration
U.S. Environmental Protection Agency
Federal Reserve Board
Federal Reserve System
Federal Trace Commission
General Accounting Office
U.S. Geological Survey
U.S. Department of Health and Human Services
  Food and Drug Administration
U.S. Department of Housing and Urban Development
Bureau of Industry and Security
U.S. Department of the Interior
U.S. International Trade Commission
U.S. Department of Labor
  Bureau of Labor Statistics

Other Organizations

Aerospace Research Center
Agricultural Retailers Association
Air Conditioning and Refrigeration Institute
Aluminum Institute
American Apparel and Footwear Association
American Apparel Manufacturers Association
American Bakers Association
American Bearing Manufacturers Association
American Bureau of Metal Statistics
American Ceramic Society
American Chemical Society
American Chemistry Council
American Crop Protection Association
American Electronics Association
American Fiber Manufacturers Association, Incorporated
American Forest and Paper Association
American Iron and Steel Institute
American Lighting Association
American Machine Tool Distributors Association
American Society of Heating, Refrigeration, and Air Conditioning Engineers

American Soybean Association
American Textile Manufacturers Institute, Incorporated
American Yarn Spinners Association
Association of Equipment Manufacturers
Association of Home Appliance Manufacturers
Association of Loud Speaker Manufacturers and Acoustics International
The Association of Manufacturing Technology
Biscuit and Cracker Manufacturers' Association
Brick Industry Association
Cargill Incorporated Information Center
Carpet and Rug Institute
Chemical Producers and Distributers Association
Chlorine Institute
Clothing Manufacturers Association
Cold Finished Steel Bar Institute
Compressed Air and Gas Institute
Compressed Gas Association
Computer and Communications Industry Association
Consumer Electronics Association
Consumer Healthcare Products Association
Copper and Brass Service Center Association
Copper Development Association Incorporated
Corn Refiners Association
Cotton Warehouse Association of America
Ductile Iron Pipe Research Association
Electrical Generating Systems Association
Engine Manufacturers Association
Farm Equipment Manufacturers Association
The Fertilizer Association
Flexible Packaging Association
Footwear Distribution and Retailers of America
Gas Appliance Manufacturers Association, Incorporated
General Aviation Manufacturers Association
Glass Packaging Institute
Health Industry Manufacturers Association
Hydraulic Institute, Incorporated
Hydronics Institute
Information Technology Industry Council
Institute of Electrical and Electronic Engineers
Institute of Shortening and Edible Oils
Instrument Society of America
International Business Machines Corporation
International Hand Protection Association
International Magnets
International Oxygen Manufacturing Association
Irrigation Association
The Laser and Electro-Optics Manufacturers Association
Lead Industries Association
Leather Institute of America
Material Handling Industry Association
Measurement, Control and Automation Association
Metals Service Center Institute
Multimedia Telecommunications Association
National Association of Margarine Manufacturers
National Association of Relay Manufacturers
National Clay Pipe Institute

National Confectioners Association
National Cotton Council of America
National Cottonseed Products Association
National Electrical Manufacturers Association
National Fluid Power Association
National Glass Association
National Hardwood Lumber Association
National Housewares Manufacturers Association
National Oilseed Processors Association
National Paints and Coatings Association
National Renderers Association
National Science and Technology Education Partnership
National Tooling and Machining Association
New York Cotton Exchange
North American Die Casting Institute
North American Millers' Association
Optical Imaging Association
Optical Society of America
Outdoor Power Equipment Institute, Incorporated
Pharmaceutical Research and Manufacturing of America
Piano Manufacturers Association
Potash and Phosphate Institute
Powder Coating Institute
Power Sources Manufacturers Association
Refractories Institute
The Rives Group
Semiconductor Equipment and Material International
Semiconductor Industry Association
Small Motors and Motion Association
Snack Food Association
Society of Glass and Ceramic Decorators
Sony Corporation of America
Southern Forest Products Association
Specialty Steel Industry of North America
SPIE—International Society of Optical Engineering
Spring Manufacturers Institute
SRI International
Steel Founders' Society of America
Steel Tube Institute of North America
Submersible Wastewater Pump Manufacturers Association
Sump and Sewage Pump Manufacturers Association
Supima Association of America
Telecommunications Industry Association
Tile Council of America, Incorporated
Toshiba America, Incorporated
United States Cutting Tool Institute
Valve Manufacturers Association
Water Systems Council
Western Wood Products Association
White Consolidated Industries
Westat

WHOLESALE TRADE (SECTOR 42)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis
U.S. Department of Labor
  Bureau of Labor Statistics

Other Organizations

Air-Conditioning and Refrigeration Institute
American Association of Meat Processors
Automotive Aftermarket Industry Association
Automotive Warehouse Distributors Association
Door and Hardware Institute
Farm Equipment Wholesalers Association
Home Sewing Association
Lawn and Garden Marketing and Distribution Association
National Association of Floor Covering Distributors
National Electronic Distributors Association
National Truck Equipment Association

RETAIL TRADE (SECTORS 44–45)/ACCOMMODATION AND FOOD SERVICES (SECTOR 72)

Federal Agencies

U.S. Department of Agriculture
U.S. Department of Commerce
  Bureau of Economic Analysis
U.S. Department of Labor
  Bureau of Labor Statistics

Other Organizations

American Booksellers Association
American Furniture Manufacturers Association
American Hotel and Motel Association
The American Institute of Food Distribution
American Optometric Association
American Pet Products Manufacturers Association
American Pharmaceutical Association
American Specialty Toy Retailing Association
Art and Antique Dealers League of America
Automotive Aftermarket Industry Association
Book Industry Study Group
Consumer Health Care Products Association
Direct Selling Association
Distilled Spirits Council of the United States
Electronic Retailing Association
Food Marketing Institute
Footwear Distributors and Retailers of America
Footwear Industries of America
Gift Association of America
Hearth Products Association
Home Furnishings International Association
Home Improvement Research Institute
Home Sewing Association
International Mass Retail Association
International Music Products Association
International Sleep Products Association
Jewelers of America
Manufactured Housing Institute
Marine Retailer Association of America
National Association of Beverage Retailers
National Association of Floor Covering Distributors
National Association of Home Builders of the United States

National Association of Resale & Thrift Shops
National Association of RV Parks and Campgrounds
National Association of Truck Stop Operators
National Automatic Merchandising Association
National Community Pharmacists Association
National Conference of State Liquor Administrators
National Gardening Association
National Home Furnishing Association
National Knitwear and Sportswear Association
National Marine Manufacturers Association
National Needlework Association
National Propane Gas Association
National Restaurant Association
National Retail Federation
National Retail Hardware Association
National Sporting Goods Association
North American Retail Dealers Association
Office Furniture Dealers Alliance
Paint and Decorating Retailers Association
Painting and Decorating Contractors of America
Pet Industry Joint Advisory Council
Photographic and Imaging Manufacturers Association
Professional Association of Innkeepers
Recreation Vehicle Dealers Association
Service Station Dealers of America
Society of American Florists
Society of Independent Gasoline Marketers
Travel Industry Association of America
United Infants' and Children's Wear Association
Video Software Dealers Association
World Floor Covering Association

TRANSPORTATION AND WAREHOUSING (SECTORS 48–49)

Other Organizations

Airport Ground Transportation Association
American Ambulance Association
American Bus Association
American Moving and Storage Association
American Public Transportation Association
American Trucking Association
Association for Commuter Transportation
Cruise Lines International Association
Inland River Ports and Terminals, Incorporated
International Warehousing Logistics
National Air Transportation Association
National Association of State Aviation Officers
National Cargo Bureau
National Marine Manufacturers Association
National School Transportation Association
National Waterways Conference
Offshore Marine Service Association
Regional Airline Association
Taxicab, Limousine & Paratransit Association
Transportation Intermediaries Association
Transportation Research Forum
United Motorcoach Association

INFORMATION (SECTOR 51)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis
Federal Communications Commission

Other Organizations

Academy of Motion Picture Arts and Sciences
Alliance of Motion Picture and Television Producers
American Theological Library Association
Association of Imaging Technology and Sound
Association of Independent Information Professionals
Association of Local Television Stations
Book Industry Study Group
Cellular Telecommunications Industry Association
City and Regional Magazine Association
Medical Library Association
Motion Picture Association
Society of Professional Audio Recording Services
Software & Information Industry Association
Texas Cable & Telecommunications Association
Wireless Communications Association International
Women in Cable And Telecommunications

FINANCE AND INSURANCE (SECTOR 52)/REAL ESTATE AND RENTAL AND LEASING (SECTOR 53)

Federal Agencies

U.S. Commodity Futures Trading Commission
U.S. Department of the Treasury, Comptroller of the Currency
Federal Reserve Board
Securities and Exchange Commission

Other Organizations

Alliance of American Insurers
American Bankers Association
American Council of Life Insurers
American Financial Services Association
American Land Title Association
American Resort Development Association
America's Community Bankers
Association for Investment Management and Research
Association of Progressive Rental Organizations
Atlanta Financial Center
Bank Administration Institute
Blue Cross Blue Shield Association
Chartered Property Casualty Underwriters
Commercial Finance Association
Conference of State Bank Supervisors
Council of Insurance Agents & Brokers
CUNA & Affiliates
Electronic Transactions Association
Employee Benefit Research Institute
Financial Planning Association

Health Insurance Association of America
Independent Community Bankers of America
Independent Insurance Agents of America
Institute of Certified Financial Planners
Institute of Real Estate Management
Insurance Information Institute
International Facility Management Association
Investment Company Institute
Investment Counsel Association of America
Limra International
Managed Funds Association
Manufactured Housing Institute
Mastercard International
Mortgage Bankers Association of America
NACOR International
National Association for Medical Equipment Services
National Association of Federal Credit Unions
National Association of Home Builders
National Association of Independent Fee Appraisers
National Association of Independent Insurance Adjusters
National Association of Independent Insurers
National Association of Insurance and Financial Advisors
National Association of Mortgage Brokers
National Association of Mutual Insurance Companies
National Association of Realtors
National Association of Residential Property Managers
National Association of Securities Dealers
National Association of Small Business Investment
National Council of Real Estate Investment Fiduciaries
National Credit Union Management Association
National Futures Association
National Multi Housing Council
National Truck Leasing System
National Venture Capital Association
New York Cotton Exchange
New York Mercantile Exchange
Reinsurance Association of America
Risk and Insurance Management Society
Robert Morris Associates
San Jose Real Estate Board
Securities Industry Association
Securities Transfer Association
Security Traders Association
Sheshunoff Information Services Incorporated
Society of Professional Benefit Administrators
The Bankers Roundtable
Truck Renting and Leasing Association
Women's Council of Realtors

PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES (SECTOR 54)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis

Other Organizations

American Consulting Engineers Council
American Society of Photogrammetry and Remote Sensing
American Veterinary Medical Association
Association of Executive Search Consultants, Incorporated
Construction Management Association of America
Independent Computer Consultants Association
Industrial Designers Society of America
International Reprographic Association
Photo Marketing Association International

ADMINISTRATIVE AND SUPPORT AND WASTE MANAGEMENT AND REMEDIATION SERVICES (SECTOR 56)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis

Other Organizations

American Collectors Association, Incorporated
American Society of Travel Agents
Association of Business Support Services International, Incorporated
National Solid Waste Management Association
National Tour Association
Security Industry Association
Solid Waste Association of North America
Travel Industry Association of America
United States Tour Operators Association

EDUCATIONAL SERVICES (SECTOR 61)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis

HEALTH CARE AND SOCIAL ASSISTANCE (SECTOR 62)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis
U.S. Department of Health and Human Services
  Centers for Medicare & Medicaid Services

Other Organizations

American Academy of Pediatrics
American Health Care Association
American Medical Association
American Optometric Association
American Osteopathic Association
American Podiatric Medical Association
National Association for Home Care
Visiting Nurse Associations of America

ARTS, ENTERTAINMENT, AND RECREATION (SECTOR 71)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis

Other Organizations

American Association of Botanical Gardens and Arboreta
American Gaming Association
American Historical Association
American Musicians Union
American Zoo and Aquarium Association
Bowling Proprietors Association of America
International Associations of Amusement Parks and Attractions
League of American Theaters and Producers
National Ski Areas Association
United States Trotting Association

OTHER SERVICES (EXCEPT PUBLIC ADMINISTRATION) (SECTOR 81)

Federal Agencies

U.S. Department of Commerce
  Bureau of Economic Analysis

Other Organizations

Council on Foundations
Electrical Apparatus Service Association
International Fabricare Institute
Meals on Wheels Association of America
National Parking Association

Appendix E.
Definitions and Descriptions of Geographic Areas

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INTRODUCTION

Except for the Core Based Statistical Areas (CBSAs; these defined areas formerly were known as Metropolitan Areas [MAs]), the boundaries used for the geographic areas for the 2002 Economic Census were those in effect on January 1, 2002. The CBSA boundaries became effective on June 30, 2003. (See below for the definition of CBSAs and their components.) Boundary changes occurring after these effective dates were not recognized in the 2002 Economic Census and were not reflected in the data tabulations. The boundaries used by the Census Bureau for American Indian reservations and off-reservation trust lands, states, counties, and selected incorporated places are based on responses to the Annual Boundary and Annexation Survey (BAS).[1]

To qualify as an economic census place or a special economic urban area (SEUAs), places had to meet a specified population threshold. The count used for qualification was the higher of two population counts drawn from Census 2000:

- Corrected Census 2000 population (Census 2000 population adjusted for Count Question Resolution [CQR][2]).
- Census 2000 population counts within January 1, 2002, boundaries (including CQR corrections as well as changes due to post-2000 BAS activity).

UNITED STATES

The United States comprises the 50 states and the District of Columbia.

CENSUS REGIONS AND DIVISIONS

Regions

The Census Bureau recognized four regions within the 50 states and the District of Columbia: Northeast, Midwest, South, and West. Each region was identified by a one-digit code. The island areas were not part of any region; they were assigned a region code of 9. Each of the regions was composed of one or more census divisions.

[1]The information in this appendix is drawn from Memorandum from Pamela J. Coan, Chairperson, 2002 Economic Census Geographic Interface Team, to Shirin A. Ahmed, Chief, Economic Planning and Coordination Division (EPCD), et al, "2002 Economic Census Geographic Interface Team—Final Committee Report: Attachment A" (n.d.).

[2]The CQR adjustments are based on the results of a comparison of the count obtained in the 2000 Census of Population, and state and local data supporting a different count. The CQR adjustment is recognized by the Census Bureau for certain purposes, but is not an official population count.

Census Divisions

The Census Bureau recognized nine census divisions within the 50 states and the District of Columbia: 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 one-digit code. The island areas were not part of any division and were assigned a division code of 0. Census divisions contained two or more states each.

STATES

For the 2002 Economic Census, the Census Bureau recognized the following areas as states or statistically equivalent entities:

The 50 states of the United States
The District of Columbia
The Commonwealth of Puerto Rico
American Samoa
Guam
The Commonwealth of the Northern Mariana Islands
The Virgin Islands of the United States
Nationwide (i.e., the 50 states, the District of Columbia, and the island areas [Puerto Rico, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands])
Foreign
Offshore Areas
Undistributed (Data not assigned to a specific geographic entity)

The state codes used for the economic census were the two-digit Federal Information Processing Standard (FIPS) state codes. The FIPS codes were assigned in alphabetic sequence for the 50 states and the District of Columbia (e.g., 01 for Alabama, 02 for Alaska, etc.) and in a separate alphabetic sequence following the states for the island areas.[3]

For the special situations for the Nationwide, Foreign, Offshore Areas, and Undistributed entities, state-equivalent codes were used as follows:

- **United States**. The stub file contained a United States header record, with a state equivalent code of "00" in both the FIPS state code field and the census state code field. This code was provided in the stub file for publication purposes only. The geographic coding system did not assign this code to any establishment records.
- **Nationwide**. The geocoding system assigned a nationwide state equivalent code of "97" to any establishment that could not be assigned an acceptable confidence level geocode or when the post office name was "nationwide."
- **Foreign**. Foreign establishments were assigned a foreign state equivalent code of "98" in the FIPS state code field. The county and place codes in these records were filled with zeroes. Further, any establishment record that met any of the conditions below also were assigned foreign state codes:

State abbreviation	State name equivalent represented by abbreviation	ZIP Code
ZZ	Foreign (assigned by the Economic Planning and Coordination Division [EPCD])	00000 or blank
AE	Armed Forces, Europe	09000–09899
AA	Armed Forces, the Americas	34000–34099
AP	Armed Forces, Pacific	96200–96699

- **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 for offshore areas were:

[3]The island areas comprise American Samoa, the Commonwealth of the Northern Mariana Islands, and the Virgin Islands of the United States.

Area	State abbreviation	Offshore state	Census state	Offshore county
Offshore totals	OT	80	19	886
Atlantic	AT	81	29	886
Northern Gulf of Mexico	NG	82	69	886
Pacific	PC	83	89	886

The offshore area codes were not assigned directly by the geographic coding system, but by the Manufacturing and Construction Division (MCD) where applicable. The geocoding system assigned addresses identified as "offshore" or "onshore"; the appropriate FIPS state code and the county, minor civil division, and place codes were zero-filled.

- **Undistributed**. The Undistributed category for each state was used by the Census Bureau for selected industries that had operations not designated to specific counties. The appropriate FIPS state code was retained, and the remaining geographic classification codes were zero-filled. As for the offshore areas, the codes were not assigned by the geographic coding system. In this case, the Economic Programs Directorate assigned codes where applicable. For data presentation purposes, a county level record designated "undistributed" and county code of "000" was included within each state record's stub file.

COUNTIES

The Census Bureau recognized the following areas as counties or as entities statistically equivalent to counties for the 2002 Economic Census:

- **In all states except Alaska and Louisiana**—Counties.
- **In Alaska**—Boroughs, census areas, city and boroughs, and municipality.
- **Louisiana**—Parishes.
- **District of Columbia**—The District of Columbia was recognized as the statistical equivalent of both a state and a county. In this case, the state and county were coextensive (i.e., had the same boundaries).
- **Maryland, Missouri, Nevada, and Virginia**—Independent cities are independent of any county and, thus, constitute primary divisions of their states. Independent cities differ from coextensive cities and counties because no county exists for an independent city. The Census Bureau created county-equivalent records for 42 independent cities (39 in Virginia) for the 2002 Economic Census to provide complete coverage for states at the county level. The data tabulated and presented for independent cities were identical to the data for their county equivalents.
- **Hawaii**—Kalawao County, which had no functioning local government, was included with Maui County for statistical purposes in the 2002 Economic Census publications.
- **Puerto Rico**—Municipios were recognized as the statistical equivalents of counties. Municipios are grouped into nine commercial regions for economic census data presentation purposes only. No place-level data were tabulated for Puerto Rico; the place code fields on all Puerto Rico records were zero-filled. The geographic coding system assigned the FIPS state, county, Puerto Rico Commercial Region, and Core Based Statistical Area (CBSA) codes. The minor civil division and place code fields on all Puerto Rico records were zero-filled.
- **American Samoa**—Districts and islands were recognized as the statistical equivalent of counties. For data presentation purposes, minor civil divisions (known as counties in American Samoa) and Rose and Swains Islands were recognized as place equivalents. Geographic codes below the state level were not assigned directly by the geographic coding system. The county, minor civil division, and place code fields for American Samoa records were zero-filled. The Company Statistics Division (CSD) clerically researched and assigned the remaining geocodes required for data presentation.

- **Guam**—Guam, as was the case with the District of Columbia, was recognized as the statistical equivalent of both a state and a county (i.e., the boundaries of the "state" and "county" were coextensive). For data presentation purposes, election districts (minor civil divisions) were recognized as county equivalents. No place-level data were tabulated for Guam. Geographic codes below the state level were not assigned directly by the geographic coding system, and the county, minor civil division, and place code fields were zero-filled. The CSD clerically researched and assigned the remaining geocodes required for data presentation.
- **Northern Mariana Islands**—Municipalities were recognized as the statistical equivalents of counties. No place-level data were tabulated for the Northern Mariana Islands. Geographic codes below the state level were not assigned directly by the geographic coding system, and the county, minor civil division, and place code fields were zero-filled. The CSD clerically researched and assigned the remaining geocodes required for data presentation.
- **Virgin Islands of the United States**—Each island was recognized as the statistical equivalent of a county, and place-level data were tabulated for three towns: Charlotte Amalie, Christiansted, and Frederiksted. Geographic codes below the state level were not assigned directly by the geographic coding system, and the county, minor civil division, and place code fields were zero-filled. The CSD clerically researched and assigned the remaining geocodes required for data presentation.

PLACES

Places for the 2002 Economic Census were identified by five-digit FIPS codes. A four-digit census place code also was used for internal processing. These place codes were assigned in alphabetic sequence within state and state-equivalent areas. Additional place-equivalent codes were assigned in the sequence, as needed. For the 2002 Economic Census, the Census Bureau recognized the following areas as places or as statistically equivalent entities:

- **Incorporated places**. Incorporated places that had populations of 2,500 or more were recognized for economic census data tabulations. New places reported to the Census Bureau and legally incorporated on January 1, 2002, were recognized if they met the population threshold.[4] In cases where a city and a county were coextensive, both were recognized, and the data for the city were identical to the data for the county.
- **Census designated place (CDP)**. CDPs were not recognized as places for the 2002 Economic Census, except in Hawaii. For Hawaii, which does not have incorporated municipalities recognized for decennial census purposes, places were delineated for statistical purposes by the state government in cooperation with the Census Bureau. CDPs in Hawaii with a population of 2,500 or more (measured in Census 2000) were recognized as place equivalents for the 2002 Economic Census.[5]
- **Consolidated city**. Six consolidated governments in the United States included separate incorporated municipalities. These consolidated cities were the result of legal action between a city and its surrounding county—and any governmental units within that county—and were represented in census publications as a single entity. Each consolidated city had a five-digit FIPS place code. (See "Balance of consolidated city" below for a list and description of the consolidated cities.)
- **Balance of consolidated city**. For the 2002 Economic Census, the Census Bureau recognized the "balance of" a consolidated city, which excluded the incorporated place(s) that were recognized separately as places. The balance of a consolidated city may refer to a whole consolidated

[4]Three incorporated places with populations smaller than 2,500 or more were recognized in census data publications because they had been used for data publications in previous economic censuses and because of their economic importance at the time of the 2002 census. These places were Industry, CA; Vernon, CA; and Bedford Park, IL.

[5]Maui County, HI, consists of four islands. At the request of the State of Hawaii, the Census Bureau had recognized the Island of Lanai and the Island of Molokai as places for data publication purposes in previous economic censuses, and continued to do so for the 2002 Economic Census. Data for Kalawao County, a nonfunctioning government unit, were included as the Island of Molokai place for the census.

city if none of the included places has a population of 2,500 or more. (An entity containing a population of 2,500 or more was treated as a separate place and is excluded from the balance of the consolidated city.) Each such balance of a consolidated city had a five-digit FIPS place code. The six consolidated cities, and their components, recognized in the 2002 Economic Census were:

1. Milford, CT, consolidated city, which was coextensive with Milford town. It included Woodmont, which did not meet the minimum population threshold for data presentation as a separate place. "Milford" referred to the whole consolidated city.
2. Athens-Clarke County, GA, consolidated city was coextensive with Clarke County, GA. It included Winterville and Bogart (part of which is in Clarke County), neither of which met the minimum population criteria for separate places. "Athens-Clarke County" referred to the whole consolidated city.
3. Augusta-Richmond County, GA, consolidated city was coextensive with Richmond County and included Hephzibah, which met the minimum population threshold and had data presented separately as a place. "Augusta-Richmond County (balance)" was a place equivalent and included Blythe (part of Richmond County), which did not meet the minimum population criteria for data presentation as a separate place.
4. Indianapolis, IN, consolidated city included all of Marion County except Beech Grove, Lawrence, Southport, and Speedway, each of which had data presented separately as places. The consolidated city included Cumberland (part of which was in Marion County), which also had data shown separately as a place. "Indianapolis (balance)"—a place equivalent—included Clermont, Crows Nest, Homecroft, Meridian Hills, North Crows Nest, Rocky Ripple, Spring Hill, Warren Park, Williams Creek, and Wynnedale, none of which qualified as separate places.
5. Butte-Silver Bow, MT, consolidated city is coextensive with Silver Bow County and includes Walkerville. "Butte-Silver Bow" refers to the whole consolidated city.
6. Nashville-Davidson, TN, consolidated city is coextensive with Davidson County and included Belle Meade, Forest Hills, Goodlettsville (part of which is in Davidson County), and Oak Hill, each of which had data shown separately as places. "Nashville-Davidson (balance)"—a place equivalent—included Berry Hill, Lakewood, and Ridgetop (part of which was in Davidson County), none of which met the minimum population criteria to have data presented as separate places.

- **Special economic urban areas (SEUAs)**. SEUAs were townships in Michigan (including charter townships), 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 qualified as an SEUA and contained an incorporated place that was recognized separately for economic census data presentation, the Census Bureau recognized the balance of the SEUA as a separate place-equivalent if it had a population of 10,000 or more.
- **Balance of county** included those areas not recognized as places or place-equivalents under the above definitions. A census place code of "9999" and a FIPS code of "99999" indicated "balance of county."

CORE BASED STATISTICAL AREAS (CBSAS)

The 2002 Economic Census used new terminology and definitions for core based statistical areas (CBSAs), which replaced the metropolitan areas (MAs) used in previous censuses.

The CBSAs were established by the Statistical Policy Office of the Office of Management and Budget's (OMB's) Office of Information and Regulatory Affairs. The newly designated areas included two different types of areas: metropolitan statistical areas (MeSAs) and micropolitan statistical areas (MiSAs). Both of these areas included at least one population core and adjacent territory with a high degree of social and economic integration with the core area. MeSAs included an urbanized area with a population of at least 50,000, while MiSAs included an urban cluster with a population

of 10,000 to 49,999. Both kinds of CBSAs were defined by county, including those in the New England states. CBSAs could be combined to form larger combined statistical areas (CSAs)—two or more MeSAs, two or more MiSAs, or a combination of one or more MeSAs and one or more MiSAs. MeSAs with large populations could be subdivided into metropolitan divisions (MDs).

The 2002 Economic Census recognized the June 30, 2003, boundaries for CBSAs and contained codes for all the area types. The file also provided codes for OMB-defined New England City and Town Areas (NECTAs)—geographic entities defined using cities, towns, and other types of legal minor civil divisions as building blocks and conceptually similar to CBSAs. NECTAs also could be subdivided into MDs as necessary.

The codes for MeSAs and MiSAs, CBSAs, NECTAs, and Combined NECTAs consisted of five digits: 10000 to 29990 for MeSAs/MiSAs, 30000 to 49990 for CBSAs, 5000 to 69990 for NECTAs, and 70000 to 89990 for combined NECTAs. MD and NECTA division codes consisted of two digits. All codes were assigned based on an alphabetic sort of titles within each category or area.

CENSUS TRACTS AND CENSUS BLOCKS

The geocoding system assigned specific census tract and block numbers to as many economic establishments as possible. These census tract and block numbers were stored in the Census Bureau's Business Register and were used as linkages to the higher level geographic codes required for economic census data publications. No economic census data were tabulated at the tract or block level.

ZIP CODE TABULATION AREAS (ZCTAS)

A ZIP Code tabulation area (ZCTA) is a statistical geographic entity that approximates the delivery area for a U.S. Postal Service five-digit or three-digit ZIP Code. ZCTAs are aggregations of census blocks that have the same predominant ZIP Code associated with the addresses in the Census Bureau's Master Address File. The Census Bureau uses three-digit ZCTA codes to identify large contiguous areas for which the five-digit ZIP Code information does not exist in the Master Address File. ZCTAs do not precisely depict ZIP Code delivery areas and do not include all ZIP Codes used for mail delivery. The Census Bureau established ZCTAs as a new geographic entity for Census 2000 to prepare data tabulations at a geographic level similar to the ZIP Code data tabulations undertaken in conjunction with the 1990 and earlier censuses. The geocoding system assigns the ZCTA code to establishment records coded to the tract and block level.

The 2002 Economic Census did not tabulate data specifically for ZCTAs, however; the codes for these entities were provided in the geographic area code structure as a reference.

AMERICAN INDIAN, ALASKA NATIVE, AND HAWAIIAN HOMELAND (AIANHH) AREAS

Although the 2002 Economic Census did not tabulate specifically for the legal or statistical areas associated with American Indian, Alaska Native, or Hawaiian homeland area, the codes for these entities were provided in the code structure as a reference. The FIPS code scheme is state-based, and the Census Bureau uses the codes for processing as well as the presentation of the data. Since many of the geographic entities for which data are collected, processed, and published cross state boundaries, the Census Bureau assigns the FIPS codes nationwide. The agency grouped the codes into code ranges for the various geographic entity types, and the geocoding system assigned AIANHH codes to establishments coded to the tract and block level.

Description	Code range
American Indian reservation and/or off-reservation trust land entities (federally recognized tribes only)	0001–4999
Hawaiian homelands	5000–5499
Oklahoma tribal statistical areas (OTSAs; formerly tribal jurisdiction statistical areas [TJSAs])	5500–5999
Alaska Native village statistical areas (ANVSAs)	6000–7999
Tribal designated statistical areas (TDSAs)	8000–8999
State recognized American Indian reservations	9000–9499
State designated American Indian statistical areas (SDAISAs)	9500–9998