

Evolution of the United States Economic Censuses: The Nineteenth and Twentieth Centuries

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The economic censuses reflect growing industrialization and the spread of communications in the United States since the early 19th century. Temporary organizations took these censuses with increasing detail almost every 10 years from 1810 to 1900. Demands for more frequent enumerations and current data were major factors in the establishment of a permanent census office in 1902. The 20th century features censuses of manufactures every two years and later at five-year intervals, construction industries; mineral industries; minority- and women-owned businesses; retail and wholesale trades; service industries; financial, insurance, and real estate industries; truck inventory and use survey; commodity flow survey; transportation, communications and utilities.

In the 1950s, the censuses were integrated to ensure complete, unduplicated, comparable data for all of their components. Enumeration was increasingly by mail and, for small establishments, by the use of administrative records in lieu of returns. The introduction of mechanical, electronic tabulation, and computers and CD-ROMs increased the variety of data products available and how the information could be accessed.

The most recent¹ quinquennial economic census, for the year 1992,² covered retail trade; wholesale trade; service industries; transportation, communications, and utilities; finance, insurance, and real estate; construction industries, manufactures, and mineral industries; and the truck inventory and use survey. The program also included the 1992 Survey of Minority-Owned Business Enterprises, the 1992 Survey of Women-Owned Businesses, the 1992 Characteristics of Business Owners Survey, and the 1992 Enterprise Statistics

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Program. The Census Bureau took all of these in the 50 states and the District of Columbia. The 1992 Economic Census of Outlying Areas collected data on retail and wholesale trades, service industries, manufactures, and construction industries in Puerto Rico, the U.S. Virgin Islands, Guam, and the Northern Mariana Islands. The enumeration in Puerto Rico was the most detailed.

THE NINETEENTH CENTURY

1810³

The first economic census was part of the Third Decennial Census of the United States in 1810, when the census of population included questions on manufacturing. In an act passed 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."⁴ The act did not outline any specific questions or prescribe a schedule; it left these matters to the Secretary of the Treasury's discretion.

To facilitate the collection of data, the Treasury Department divided manufactured products into 25 broad categories, encompassing more than 220 kinds of goods. As they enumerated the population, the U.S. marshals and their assistants charged with taking the decennial census visited the manufacturing establishments in their assigned areas to obtain information, generally on the quantity and value of products manufactured. Paid \$40,000 for this "account of manufactures," these officials performed their tasks from August 1810 to July 1811. However, it was not until March 1812 that Congress authorized \$2,000 for the Treasury Department to "employ a person to digest and reduce [the returns]" and prepare a statistical report that would basically cover 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 in its summary that there had been serious undercounting and omissions in the enumeration.⁵ Although the censuses valued total manufactures at about \$173 million, the actual figure probably exceeded \$200 million.

1820

The manufactures census of 1820 was similar to that of 1810. However, in addition to a question on the location of establishments, 14 additional inquiries elicited information on raw materials employed (kind, quantity, and cost), number of employees (men, women, and boys and girls), machinery (whole quantity and kind of machinery and quantity of machinery in operation), expenditures (capital, wages, and contingent expenses), and production (nature and names of articles manufactured, value, demand, and sales). Again, the federal marshals and their assistants collected the data and published a digest of the returns, this time under the auspices of the U.S. Department of State. Statistics appeared for each State, territory, and district, but there was no attempt to compute U.S. totals because the data were again admittedly incomplete. This was attributed to insufficient funds allocated to pay the marshals and the fact that many establishments apparently neglected (or refused) to provide the required information. In addition, 1820 and 1810 data were not comparable

because household manufactures (goods produced at home) were counted in 1810 but not in 1820. The 1830 Decennial Census made no attempt to obtain economic data, partly as a result of incompleteness in the 1810 and 1820 censuses and perhaps because of the comparatively slow rate of economic growth in the 1820s.

1840

With extensive growth in the 1830s in commercial fishing, commerce, and mining (and considerable pressure to resume the collection of economic statistics), the decennial census of 1840 encompassed not only a census of manufactures but also included a series of questions about mining and fisheries to measure the extent of commercial activities. The marshals and their assistants used one form, "Schedule of Mines, Agriculture, Commerce, Manufactures, Etc.," to collect data on these subjects. The census divided manufacturing into 30 categories on the basis of the manufactured product (machinery, paper, furniture, etc.), plus an "all other manufactures" classification. In general, census takers collected statistics on the quantity and value of goods produced, amount of capital invested, number of employees, and number of establishments. There were questions on the following classifications of minerals: iron; lead; gold; other metals; coal; domestic salt; and granite, marble, and other stone. These inquiries generally covered quantity and value of minerals produced, employment, and capital invested in mining operations. Commercial fishermen were to report the quantity (and sometimes the value) of fish products taken, the number of men employed, and the capital invested.

Commerce and trade activities also accelerated during the early and middle decades of the 19th century, as evidenced in part by the fact that volume of trade (total imports plus total exports) increased almost twofold, from about \$126 million in 1821 to approximately \$248 million in 1841. To measure the extent of commercial activities, the 1840 Decennial Census included, for the first time, a series of questions on the number of business enterprises in various categories (commercial houses in foreign trade, commission houses, lumber yards, grocery stores, etc.), capital invested, and number of employees.

The marshals tabulated the returns for manufacturing, fishing, commerce, and mining and published statistical tables on the "commerce and industry of the country." However, as in the 1810 and 1820 censuses, the 1840 census results, even though "corrected" in Washington, reflected considerable undercoverage. Many historians and statisticians consider the economic data tabulated and published for these three censuses to be of little value except as indicators of the gross outlines of manufacturing development.

These inauspicious beginnings of economic census-taking resulted from several interrelated factors, in addition to customary handicaps such as wide geographic dispersion, poorly defined boundaries, and inadequate transportation. The federal marshals who supervised the field operations had many other duties and often could not devote adequate time and attention to the census of economic activity. The marshals' assistants, the actual enumerators, often received sketchy instructions or none at all. Although they might not normally have required detailed training or instructions to obtain answers to straightforward population questions (such as age and sex of members of a household), it is reasonable to assume that they might have had some conceptual or practical problems eliciting answers to more complex economic questions (such as the cost of raw materials consumed in manufacturing during the year).

Even assuming that enumerators were perceptive enough to know what information they were seeking and how to ask for it, there was still a serious question as to whether the respondent could and would provide it. The prevailing philosophy in political economy was that of *laissez faire*—a minimal role of government in economic affairs—and many entrepreneurs were suspicious and uncooperative when asked to provide information about their business to federal agents. To deal with these circumstances, the instructions given the marshals stated that:

You [marshals] will perceive the strong necessity for acquainting the people in advance with the nature of the inquiries to be made of them, and to give them time for preparation to answer the questions promptly....If [the inquiries] be made known and generally understood before the enumeration commences, the answers to the interrogatories will be prepared in time for the domiciliary visit of the assistant, and the responses promptly made.

The instructions went on to say that:

Objections, it has been suggested, may possibly arise on the part of some persons to give the statistical information required by the act, upon the ground of disinclination to expose their private affairs. Such, however, is not the intent, nor can be the effect, of answering ingenuously the interrogatories. On the statistical tables no name is inserted—the figures stand opposite no man's name; and therefore the objection can not apply. It is, moreover, inculcated upon the assistant that he consider all communications made to him in the performance of his duty, relative to the business of the people, as strictly confidential.⁶

In other cases, the census takers found that the respondents' records were inadequate or nonexistent, and the owners or operators simply could not provide more than sketchy estimates.

Tabulating the statistics also presented problems because, in most cases, the federal marshals supervising the enumeration had to compile and classify the data for their jurisdiction and generally prepare tables for publication. This decentralization inevitably introduced some irregularities in the reported information because the marshals, who were not trained statisticians, frequently used divergent procedures in performing these duties.

1850

As a result of acknowledged inaccuracies in the previous censuses, Congress passed an act on March 3, 1849 to establish a Census Board, consisting of the Secretary of State, the Attorney General, and the Postmaster General as members, for the purpose of improving the 1850 census results. The act also provided for a full-time secretary; in effect, this official functioned as the director of the census.⁷ He had to design and have printed suitable schedules for the 1850 census, and to collect and publish data on manufacturing, mining, fishing, and commerce that would reflect a full view of the industrial development of the United States. The Census Board consulted with prominent statisticians in government and the academic and business communities to develop six questionnaires,⁸ one of which (schedule 5) was for the collection of the economic data. It was to be completed for each corporation, company, or individual accounting for annual production valued at \$500 or more for the year ending July 1, 1850. Schedule 5 asked for "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; and quantities, kinds, and values of annual production. Enumerators received written instructions of how each question should be answered and examples of properly completed questionnaires.

Although federal marshals still supervised field operations, they no longer had to compile and assemble for publication the statistics for their respective jurisdictions. Instead, clerks performed this work in a central office in Washington, DC. The Census Office published general census results in June 1853 and made available partial data for manufactures in September 1854, but it did not release complete economic statistics for the 1850 census until December 1859. The total value of manufactures (including fisheries and the products of mines), as reflected in the 1850 census, exceeded \$1 billion. This represented a 500% increase over the \$200 million estimated for 1810, as against a growth in population of only 75 percent. The 500% increase in value should be viewed in the light of the decrease in the wholesale price index (for all commodities) from 131 in 1810 to 84 in 1850. Even given some undercounting, most statisticians have concluded that 1850 census data—both economic and demographic—are considerably more accurate than in previous censuses.

The Census Board appointed Joseph C. G. Kennedy, a statistician and Pennsylvania newspaper editor-owner, to serve as secretary of the Board in 1849. The Secretary of the Interior appointed Kennedy superintendent of the Census Office in 1850. He was largely responsible for the improved accuracy of the census results. In 1853, Kennedy resigned to become U.S. representative to the first and second International Statistical Congresses in Brussels (1853 and 1854), where he consulted with leading European statisticians and became familiar with government statistical programs in Europe. The Secretary rehired Kennedy in June 1858 to supervise the preparation of the report on economic statistics. At the completion of this assignment, the Secretary appointed Kennedy superintendent of the 1860 Decennial Census.

1860–1879

With the exception of some minor modifications in the schedules used, the censuses of 1860 were similar to those of 1850. The Census Office published four volumes, including one devoted exclusively to economic statistics. A major innovation was Superintendent Kennedy's analysis of the census statistics. He used the data as a basis for describing "all the great elements of a nation's prosperity as they existed in the year 1860."

In his section on "products of industry" (included in the *Preliminary Report on the Eighth Census*, published in 1862), Kennedy described the increasing impact of manufacturing and commerce in the United States, estimating that one-third of the entire population in 1860 was supported, directly or indirectly, by manufacturing. He compared various industries, and interpreted the data to show how and why sections of the economy expanded, stabilized, or decreased, and illustrated interrelationships among the production and socioeconomic factors. For example, he credited the expanded use of the sewing machine in industry with adding "thousands of industrious females" to the labor force, as well as promoting the growth of the garment industry. He praised the "cultivated intellect" of the federal army mobilized for Civil War duty and cited the increasing number of print-

ing presses as being a prime factor in making books and newspapers readily available for average citizens to improve their intellects.

The Civil War (1861–1865) had a marked effect on economic development in both the North and the South. The need for war materiel provided major stimulation to industry, particularly in the North, where industrial capitalism to a large degree supplemented merchant capitalism. Wartime requirements for woolen cloth, clothing, iron, guns, munitions, and other products led to production methods that hastened the Industrial Revolution in the United States. The need to mobilize a federal army of more than 2 million men brought an attendant economic mobilization, the first in the nation's history. The federal government actively encouraged industrialization during and after the Civil War by tariff protection, a central banking system, large grants to railroads, and generally conservative monetary policies.

Faced with a naval blockade and an economy based on cotton, the Confederate government attempted to develop manufacturing. Industrialization increased (particularly cotton cloth and leather goods) and the government took over some essential industries. In the wake of the war, with slavery ended and the plantation system turned in the direction of tenant farming and sharecropping, the South was forced to develop a more diversified economy emphasizing manufacturing and commerce.

Many other factors encouraged this transformation throughout the United States after the war. There was a successful blend of abundant natural resources, adequate supplies of capital and labor, technical advances in virtually all industries, readily available markets, and rapidly expanding and improving transportation networks.

The Civil War emergency had compelled the federal government to adopt explicit policies to promote industrial development. With the implementation of such policies, which continued after the war, came an increased need for and interest in economic statistics, statistics which could best be supplied through the periodic censuses.

(Before 1860, the American economy was basically agrarian, but, by 1900, the value of manufactured goods was double that of agricultural products. During that 40-year period, the United States advanced from fourth to first place among the world's industrial nations, as measured by the value of manufactures. The following statistics, all collected in economic censuses, reflect this expansion: In 1859 there were only about 140,000 industrial establishments in the country, employing 1.3 million workers and producing goods with a gross value of \$1.9 billion. By 1899, there were about 509,000 establishments providing jobs for 5.3 million workers and producing goods with a gross value of \$13 billion. Value added by manufacture increased from \$854 million in 1859 to \$5.5 billion in 1899; but note that, when the Census Office tabulated the 1900 manufactures census results, excluding neighborhood and household industries and hand trades from the 1900 results (for 1899), the number of manufacturing establishments was reduced from about 509,000 to approximately 205,000 and value added by manufacture from \$5.5 billion to \$4.6 billion.)

As industrial specialization increased, it became more difficult to develop general questions applicable to all establishments. Many unique schedules, tailored to the characteristics of each industry, had to be designed to obtain meaningful statistics. At the same time, the concentration of economic power brought a growing public demand for government regulation of business, which culminated in the antitrust movement. As the government

exercised increasing power over economic affairs, it required more and better data upon which to base its far-reaching decisions.

During 1869 and 1870, Congress attempted to draft new census legislation to supersede the 1850 law under which the 1850 and 1860 censuses had been taken, but which was deemed inadequate to meet the changing conditions of 1870. However, the Members could not agree, and the 1870 Decennial Census had to follow the old law. Congress did modify slightly, however, the 1870 schedule for “products of industry” to collect additional or better information on machinery and machine power sources, cost of labor, and number of months the establishment was in operation. For example, the inquiry concerning motive power and machinery was subdivided so as to show specifically the kind of motive power, number of horsepower (if steam or water), and the number of machines used. The inquiry concerning the average number of hands employed was made to cover males above 16 years of age, females above 15 years, and children and youth, instead of the number of males and females, as formerly noted. However, the census volume on statistics on industry and wealth contained basic tabulations closely resembling those of 1850 and 1860. Innovations for the 1870 censuses included the use of tally machines (for the population schedules) and the introduction of maps and charts to portray census results in a statistical atlas.

1880

At least in part to meet the nation’s changing economic structure brought about by the Industrial Revolution, Congress passed a new census law in March 1879⁹ that implemented major changes in economic data collection for the censuses of 1880. This law provided for:

- Many additional special schedules tailored to various specialized businesses.
- Expansion in the scope of the censuses;
- Utilization of 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). In the economic area, “experts” and “special agents” (not regular enumerators) were authorized to collect, classify, and analyze statistics on manufacturing, mineral industries, or commercial fisheries in 279 large cities and towns. These specialists were college professors, engineers, economic statisticians, and others with training and experience in the appropriate subject-matter areas; and
- Penalties which made it a misdemeanor for “any supervisor or enumerator, who, having taken and subscribed by this act, shall, without justifiable cause, neglect or refuse to perform the duties enjoined on him by this act, or shall, without the authority of the Superintendent, communicate to any person not authorized to receive the same, any statistics of property or business included in his return, . . . [upon] conviction [he] shall forfeit a sum not exceeding five hundred dollars; or, if he shall willfully and knowingly swear or affirm falsely, he shall be deemed guilty of perjury, and, on conviction thereof, shall be imprisoned not exceeding three years or be fined not exceeding eight hundred dollars; or, if he shall willfully and knowingly make false certificates or fictitious returns, he shall be deemed guilty of a misdemeanor, and,

upon conviction of either of the last named offenses, he shall forfeit and pay a sum not exceeding five thousand dollars and be imprisoned not exceeding two years.”

The act also provided that “if any person should receive or secure to himself any fee, reward, or compensation as a consideration for the employment of any person as enumerator or clerk, or shall in any way receive or secure to himself any part of the compensation provided in this act for the services of any enumerator or clerk, he shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be fined not less than five hundred dollars nor more than three thousand dollars, in the discretion of the court.”

The Census Office expanded the number of general economic questions to 29, and designed 49 special schedules, containing more than 2,000 inquiries, for particular industries in the manufacturing area. Although there was considerable overlap of questions (i.e., the same item appearing on several special schedules, or on the general schedules and also on one or more special schedules), more than 700 of the inquiries were unique.

Whereas questions on mining and mineral industries had been included on the “products of industry” schedules in the 1850, 1860, and 1870 censuses, the Census Office used 42 special schedules to collect data on this subject in 1880. These special schedules contained almost 3,000 inquiries, including over 1,600 unique items. Those for copper mines contained more than 120 questions, but 53 was the median number of items on the special schedule for minerals.

There were five special schedules just for commercial fisheries. The 87 questions generally elicited 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, plus more detailed schedules for dealers in fresh and salt fish, respectively, and two for river fishing activities.

The post-Civil War period witnessed the rapid growth of the communications and transportation industries (particularly railroads). The first transcontinental railroad was completed in 1869, and rapid construction of new railroad facilities was manifest throughout the latter decades of the 19th century. Track mileage increased from 31,000 in 1860 to 93,000 in 1880 and to 167,000 in 1890. The Civil War and the nation’s westward expansion gave impetus, too, to the telegraph industry. In 1854, there were only 34,000 miles of telegraph wire, but by 1880, 291,000 miles of wire were carrying over 30 million messages annually. Growth of the telephone industry was even more expeditious: The first commercial telephone exchange was opened in 1878, only 2 years after the invention of the instrument, and, by 1880, 54,000 telephones were in use. The 1880 censuses marked the first major effort to compile detailed statistics on transportation and communications.¹⁰ 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 schedules (466 inquiries) were used for this purpose. Most of the questions (375 items) were designed to compile voluminous statistics on the railroads’ financial and physical characteristics.¹¹ Financial characteristics included income, expenses, and analysis of earnings, while physical characteristics encompassed such things as track mileage, amount and kind of rolling stock (locomotives and cars), and fuel used to power locomotives. The census requested a detailed report from each railroad on virtually every facet of

its operations, including timber conservation practices and a tabulation of employees and others killed or injured in accidents.

In addition to the 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 rise of organized labor was still another outgrowth of the Industrial Revolution in the United States. At the same time, business and industrial leaders with common interests frequently formed trade societies and associations. The need for information on these developments prompted the government—for the first and only time in the economic censuses—to include a series of inquiries on labor unions and trade societies (number, objectives and methods, membership, receipts, and expenditures) and on the number, location, causes, and results of strikes and lockouts. The census used four special schedules containing a total of 101 questions to collect this information.

The 1880 census also contained a special survey on wages and prices. Three special schedules, consisting of 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 first casualty insurance policy was not issued in the United States until 1832, and the first fidelity bond, 1840. But by 1860, the insurance industry had grown to the extent that a few questions on this subject (primarily on life insurance) had been included in the 1860 census. The 1880 census covered life, fire, and marine insurance companies, and the census used 15 special schedules to compile statistics on their organizational and other characteristics, finances, and insurance in force. However, 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 Census Office published the compendium summarizing census data in early 1883, but because of budgetary problems, it did not release the basic census volumes reporting manufacturing statistics and transportation-communications data until October 1883, and the mineral industries volume, until July 1886. Several special monographs (e.g., on water power used in manufacturing; precious metals; and petroleum, coke, and building stone) appeared in the mid-1880s. The planned statistical atlas had to be left to a commercial publisher, who hired the former census geographer to compile it. The Census Office resumed producing atlases after the 1890 census, however.

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.

1890

The 1890 Censuses of Manufactures and Mineral Industries followed the basic procedures established for the 1880 censuses; for instance, specialists and agents canvassed in 1,042 important manufacturing and commercial centers, bulletins announced preliminary census results, and in many instances, the same schedule formats were used. The 1890 censuses also marked what was probably the first use of administrative records (those kept by governmental or private organizations on their day-to-day operations) to compile eco-

conomic census data. Congress directed that statistics be collected on the recorded indebtedness (i.e., real estate mortgages) of private corporations and individuals. Special census agents went to real estate recorders' offices to abstract information about mortgages made during the period 1880 to 1890. This included a description of the property, provisions of the mortgage, and the addresses of the mortgagor and mortgagee. Then, the Census Office mailed schedules (and postage-free return envelopes) to the mortgagors (or the mortgagees if the mortgagors did not respond), asked them to supply additional information about their mortgages (whether or not they had been fully paid and, if not, how much was owed) and return the completed schedules to the Census Office.

There was a census of manufactures in Alaska for the first time in 1890.¹² The Office expanded considerably the inquiries on transportation (first asked in 1880), with coverage extended to sailing vessels and rapid-transit facilities in cities. (These latter primarily included cable railways, railways operated by animal power, and electric street railroads. By 1888, there were 38 electric rail systems in use in American cities.)

1900

The census of 1900,¹³ which was limited by law to an exact parallel of the 1890 census, included coverage of manufactures, mines and quarries, street and electric railroads, and, for the first time, central electric light and power stations.

The census generally 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 reported information on the one general questionnaire (about 530,000 of the 644,000 total returns), but there was still some criticism from respondents that the 32 special questionnaires required too much information in too much detail.

Special agents again compiled manufacturing data in selected areas: 1,891 specialists (supervised by 20 "expert special agents") collected data in 1,340 cities and towns. In disseminating the results, the Census Office prepared 59 unique bulletins on various special subjects in manufacturing, such as shipbuilding, slaughtering and packing, and lumbering. The Office also released bulletins on manufacturing for each of the states and territories except Alaska and Hawaii. (Data for Alaska and Hawaii appeared in the regular census reports.) Manufacturing data were published in four volumes and summarized in a statistical abstract and the atlas.

Statistics on mines and quarries, street and electric railroads, and central electric light and power stations were initially published in bulletins and later in final reports somewhat less detailed than the bound volumes on manufactures. Data on mining covered the same general topics as before (number of mines and mine operators, wage earners and total wages, cost of supplies, other operating expenses, and quantity and value of minerals extracted), by geographic area and by type of mineral.

For street and electric railroads, Census Office employees assembled statistics on such topics as number of companies, length of rail lines, cost of construction and equipment, employees, and passengers. Data compiled for central electric light and power companies included number of stations, cost of construction and equipment, earnings, expenses, and power generated.

THE TWENTIETH CENTURY

1902

After several decades of hearing pleas from government decisionmakers, members of the academic community, business leaders, and other experts for more data—and more current data, Congress established the Census Office as a permanent agency in March 1902. (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.) This legislation made it possible to have economic censuses more frequently than once every 10 years and, indeed, mandated a number of specialized interdecennial censuses (subsequently taken between 1902 and 1937). These included street railways and telephone and telegraph companies. The Bureau expanded the “street railways” category in 1922 to include motor buses and in 1932, trolley buses. The “telegraph” classification included only land telegraph and ocean cable systems for 1902, but the Bureau enlarged the definition for 1907 to take in wireless systems. Censuses of water transportation covered 1906, 1916, and 1926. Other special enumerations included a census of the express business for 1907. A census of commercial fisheries was taken in 1908 and again in 1963 and 1967, but was discontinued thereafter for lack of interest by data users.

As part of the 1902 Permanent Census Act, Congress directed, “That in the year 1905, and every ten years thereafter, there shall be a collection of the statistics of manufacturing establishments....” This was in addition to the coverage of manufactures in the decennial census, which meant that the Bureau compiled data on this topic every five years (quinquennially). The schedules used in the 1905 enumeration of the industrial activity in 1904 were the same as those used in 1900. The Bureau developed new enumeration techniques: It 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. Then, in October 1904, the agency sent preliminary circulars to these establishments, asking that they answer a few questions (name and address, period of operation, and kind of business). Based on the results of this prec canvass, the Bureau updated the card index and mailed census schedules to establishments in early December 1904. Then, beginning in January 1905, 835 canvassers (regular Census Bureau employees and temporary employees hired for the duration for the operation) visited companies that had not completed and returned their schedules. Also, the agency redefined the scope of the census to cover only manufacturing establishments under the “factory system,” excluding the neighborhood and household industries and trades¹⁴ that had been previously included. To provide for comparability, the Bureau retabulated the 1900 manufactures census results under the new definition. With neighborhood and household industries and hand trades excluded from the 1900 results (for 1899), the number of manufacturing establishments shrank from about 509,000 to approximately 205,000, and value added by manufacture, from \$5.5 billion to \$4.6 billion.

1909

The Census Bureau took the first economic census of Puerto Rico (for manufactures) for the year 1909 and, excepting 1929, had one at 10-year intervals through 1949. Censuses of

manufactures were then taken concurrently with censuses of business, covering retail and wholesale trade and selected service industries, for the years 1954 and 1958, and since 1963, as part of the regular economic census program. In 1952 and 1956, the Commonwealth Government of Puerto Rico conducted censuses of manufactures with more limited coverage than in the states.

1910

For manufacturing establishments, the Bureau used one general and 60 special questionnaires. These establishments were given the opportunity to complete and mail in questionnaires, but again, special agents canvassed in a field enumeration companies that did not complete and return their schedules. For mines and quarries, only one schedule was used to collect data for the Census Bureau and the U.S. Geological Survey. (This was done in 1910 so that the "operators of mines and quarries should be called upon by the Federal Government to fill out or furnish information for only one schedule, instead of two emanating from different bureaus.") Census assigned a total of 1,227 special agents, plus 76 of its regular employees, to canvass the factories, mines, and quarries. In a few sparsely settled areas, population census enumerators visited the manufacturing and mining establishments.

The coverage in 1910 differed from that of 1905 only in that the Bureau secured information, for the first time, from custom sawmills and gristmills and steam laundries. However, the number of industries for which the agency published a separate tabulation was reduced to 264, mainly as a result of consolidating some of the 1905 categories. Under the definitions at the time of the two previous censuses of manufactures, mills that did not produce for sale but only sawed lumber or ground grain for toll did not fall under the factory system. The census covered steam laundries because they had become an important industry. The data-collection forms for manufactures consisted of one general schedule applicable to all industries and 60 special schedules, each relating to a single industry. The general schedule was materially simpler than that employed for the censuses of 1900 and 1905, and the same was even more true of most of the special schedules. In the enumeration of mines and quarries, the Bureau pursued the same policy of using general and special schedules.

An amendment to the 1902 census act, passed February 25, 1910,¹⁵ required the 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.

The act authorizing the 1910 census also strengthened the confidentiality restrictions, particularly as they related to economic data.¹⁶ It was this law that placed restrictions on the publication of census statistics. As a matter of administrative policy, responses on schedules for earlier economic censuses had been considered confidential, but the 1910 law specified that information furnished by business, manufacturing, and mining establishments:

Shall be used only for the statistical purposes for which it is supplied. No publication shall be made by the Census Office whereby the data furnished by any particular establishment can be identified, nor shall the Director of the Census permit anyone other than the sworn employees of the Census Office to examine the individual reports.

The Census Bureau acknowledged the importance of confidentiality by noting in the volume containing 1910 manufactures census results that:

{ex}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.¹⁷

1915

The 1915 Census of Manufactures was a repetition of the 1905 census. One feature of the preparatory work for this census that distinguished it from previous enumerations, however, was the effort to secure the assistance of prominent manufacturers and of representative commercial and trade groups of all kinds. The staff wrote letters to such people and seven groups, inviting cooperation and requesting suggestions, particularly in reference to the inquiries carried on the various special or supplementary schedules. The Director of the Census and the Chief Statistician for Manufactures made trips to a number of cities (e.g., Philadelphia, New York, Boston, and St. Louis) to obtain suggestions on the form and content of the schedules. In addition, the Bureau enlisted the aid of Members of the Senate and House of Representatives, the Department of Agriculture, the Bureau of Corporations, and the state statistical organizations. Census employees tabulated data for 1914 for 344 industries and 271 industry subgroups. Plans called for the prompt publication of bulletins containing preliminary results, but when the United States entered World War I in April 1917, the preparation of these bulletins (and the two volumes and the abstract containing final results) was delayed because of demands on the Public Printer for war-related work. The Bureau did not issue the last of the bulletins until August 1918, just before the census volumes were published.

Because of the urgent need for industrial data during the war, there were a number of special economic censuses—something not done in prior times of emergency data needs. For example, the agency compiled statistics of New York's daily landings of fresh catches from U.S. fishing boats and receipts by rail and steamer during the last four months of 1917. 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 covered such commodities as iron and steel; wool machinery and woolen manufactures; kapok fiber, jute, and silk; leather stocks, boots, shoes, and manufactured leather goods; antimony and graphite crucibles; commercial greenhouses; materials used in the manufacture of explosives; and the production of dental gold.

1920–1929

The 1920 censuses included manufactures and mines and quarries (including oil and gas wells). They were patterned after those of 1910 with two exceptions described below:

- In addition to collecting data for establishments that had not returned schedules, the field enumerators corrected defective schedules (i.e., those with inconsistent or incomplete responses) that had been returned by respondents. The censuses covered 358 industries and 98 industry subgroups, but combined data for 7 industries to avoid disclosure of data for individual firms. For the census of manufactures, the Bureau published three volumes and a special abstract (plus the usual preliminary bulletins).
- The agency used a punchcard tabulating system, introduced in the 1890 Census of Population, for the first time for manufactures and mines and quarries. (While this system was periodically improved between 1890 and 1915, the agency did not use it for processing economic data until the development of the integrating tabulator (between 1917 and 1919), which not only recorded and added units but also numbers.)

For mining, the published statistics generally reflected geographic distribution of operations, land controlled by mining operators, characteristics of organization, scale of operations, and amount and kind of power used. The one-volume general report contained analytical tables (arranged to facilitate comparisons with the mining statistics published annually by the U.S. Geological Survey) and tabulations on selected mineral industries by state.

The government's interest in economic affairs and its need for detailed statistics to assist in decisionmaking (brought about in large measure by the demands of the war effort, post-war demobilization, and reconversion) prompted Congress to direct, in the act providing for the decennial census of 1920, the collection and publication "for the years [1921, 1923, 1925, 1927], and for every tenth year after each of said years, statistics of the products of manufacturing industries...." Since the decennial censuses would cover the years 1929, 1939, etc., censuses of manufactures, thus, were authorized on a biennial basis. Data would show the: (1) absolute and relative magnitude of the various branches of industry and their growth and decline and (2) industrial importance (with increase or decrease) of individual states and large cities. Statistics were to be collected that would reveal certain matters of economic and sociological importance, such as the size of establishments and hours of labor.

To reduce the expense of the biennial census and expedite processing and publication of results, the Bureau did two things for the 1921 census. First, it omitted certain items that had been included in the quinquennial censuses of manufactures. These included capital invested, age and sex distribution of employees, rent and taxes, primary horsepower used, and kind and quantity of fuel used in manufacturing. Second, the Bureau collected only limited statistics on number of wage earners and value of production from manufacturing establishments reporting products valued at less than \$5,000 for 1921. (In the quinquennial censuses, data had been obtained from establishments with annual production valued at \$500 or more.) For 1921, about 22% of the establishments had products valued at less than \$5,000, but these plants accounted for less than 1% of the wage earners and total production.

For 1921, the census gathered data on 348 separate industries (98 of which were subdivided to show greater detail) on such things as the number of proprietors or firm members,

number of salaried employees, number of wage earners, amounts paid in salaries and wages, amount paid for contract work, and cost of materials.

In planning the first biennial census of manufactures, Bureau officials consulted extensively with the National Association of Manufacturers, the Bureau's General Advisory Committee (which included representatives of the American Economic Association), committees from civic associations (e.g., chambers of commerce), representatives of important trade associations, and statisticians in the government and private sectors. These sources helped develop schedules, publicize the census, and generally encourage industry's acceptance of the project.

The 1921 canvass was a combination mailout/mailback operation and field enumeration, and respondents returned more than half of the schedules by mail. The 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. All data were then consolidated into a one-volume report published in 1924.

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 cooperation of chambers of commerce. In many large cities, chamber representatives, sworn in as census agents, took complete charge of the canvass. Approximately 65% of the returns were received by mail and, by June 1924, almost 95% of the establishments had been canvassed by mail or by personal enumeration. The Bureau collected and tabulated data for 333 industries, of which it subdivided 87 to provide greater detail. As in the 1921 census, preliminary statistics first appeared in press releases; then final data were assembled in industry bulletins and a final one-volume report was published in January 1926.

The 1925 census covered 324 industries, and respondents returned about 75% of the schedules by mail, again with the close cooperation of the chambers of commerce and other professional groups. Census staff prepared press releases of preliminary results, plus the usual industry bulletins, and released the one-volume final report in December 1927.

For the 1927 census, manufacturers of confectionery and ice cream and fabricators of sheet iron completed schedules only if they produced products with an annual value of \$20,000 or more. (This was in recognition of the fact that many of the smaller firms were primarily engaged in retail trade, not manufacturing.) Over all, the census encompassed 335 industries, and approximately 65% of the respondents returned their schedules by mail. The press-release, industry-bulletin, and final-volume publication sequence was again followed, with the final volume published in April 1930.

1930

The 1930 Decennial Census had, in addition to the censuses of manufactures and mineral industries, censuses of construction industries, distribution (which included retail and wholesale trades and special topics), and hotels. These censuses encompassed activities for the year 1929.

The construction census was a response to the post-World War I boom in this sector of the economy. In 1920, less than 850,000 workers were employed in contract construction, and total private construction for that year was valued at \$5.4 billion. By 1928 (the last full

year before the start of the Depression), more than 1.6 million workers were employed in this field, and total private construction was valued at \$9.2 billion.

In planning this first census of construction industries, the Bureau worked closely with an advisory committee representing national contractors' associations and individual construction companies. This cooperative effort produced one basic questionnaire designed to collect information on the: (1) organization of the establishment, (2) number of salaried employees and total salaries paid, (3) number of skilled and unskilled workmen employed, (4) total annual wages, (5) length of working day and week, (6) expense for equipment, operation, and overhead, and (7) total value of materials and building equipment installed.

The construction census was a mailout/mailback operation. To mail the questionnaires to the correct companies at the right addresses, the Bureau prepared a directory from lists of names and addresses provided by contractors' associations, private statistical agencies, builders' exchanges, chambers of commerce, and other business and trade associations. The agency sent letters to city officials and postmasters, asking that they submit (or list) names and addresses of known construction establishments in their jurisdictions. Bureau clerks obtained additional names from classified telephone directories, city directories, and other sources. Ultimately, the directory encompassed about 144,000 unduplicated names and addresses. The questionnaire was to be completed by all persons and 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). In two follow ups, the Bureau mailed reminder letters to nonrespondents. In cities with populations of at least 100,000, enumerators canvassing for the population census personally contacted nonrespondents. However, census employees compiled detailed statistics only for establishments that reported gross business of at least \$25,000 during calendar year 1929. 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 government published the results in December 1932 in one bound volume.

The 1930 census of distribution consisted only of a field canvass, using procedures that had been tested and refined in 11 cities in 1927. The retail trade census covered operations of "all establishments doing business in a retail manner." Thus, in addition to retail stores per se, it encompassed restaurants and some semiservice businesses, such as garages, which sold merchandise in addition to their services. The agency classified retail establishments on the basis of the following types of operation: Single-store establishments; two- and three-store independents; local branch systems; local, sectional, and national chains; and miscellaneous types of operations.

Enumerators personally visited each of approximately 1.5 million stores to obtain answers to questions on one of the six questionnaires designed for this operation. In cities with populations of at least 10,000, only special enumerators took the census of distribution. In smaller cities and rural areas, the population census canvassers also visited retail outlets. The census 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 and, in Febru-

ary 1933, issued a one-volume final report that included a summary of data by states, counties, and incorporated places, and separate tables for each state.

The same field enumeration procedures, with four questionnaires, were used for the approximately 168,000 wholesale establishments. The wholesale trade classification embraced 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. For the purposes of this census, the wholesale field covered virtually all merchandising establishments not in the retail group. The census compiled data on the number of establishments, number of employees, salaries and wages, stocks, net sales, credit sales, sales to ultimate consumers, and sales to industrial consumers. Clerks tabulated these statistics by kind of business (chemical products wholesaler, drug wholesaler, etc.), by geographic area (division and state), and by type of organization (proprietorship, partnership, etc.). Special tabulations yielded wholesale statistics for cities with populations of at least 100,000, where almost half of the establishments were located. The Bureau published preliminary results as press bulletins and released the final bound volume in December 1933.

The census of hotels, which included only those with at least 25 guestrooms, was originally planned as a mailout/mailback operation. The staff compiled a directory of names and addresses of about 27,000 hotels, and census employees mailed questionnaires in February 1930. Because of changes in ownership, duplications, and classification problems, a field canvass was necessary, using population census enumerators, to supplement the mail operation. Ultimately, clerks compiled statistics for approximately 15,500 hotels (70% of which returned questionnaires by mail, while enumerators canvassed the rest). The agency published tabulations on the number of hotels, number of rooms, seating capacity of dining rooms, receipts, employment, salaries and wages, and number of proprietors and firm members. These data were classified by plan of operation (American, European, and mixed), type of occupancy (transient, permanent, or mixed), and geographic division and state.

The procedures, coverage, and publication program for the 1930 manufactures census closely resembled those of the biennial censuses for 1921 through 1927.¹⁸ There were 165 questionnaires for canvassing 238 industries.

The scope of the 1930 Census of Mines and Quarries, however, differed considerably from that of 1920 in that it did not cover the petroleum and natural gas industries, nor did the census collect data for capital, land holdings, rents, royalties, and taxes, as well as a detailed breakdown by kind of employees. This census included, for the first time, 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; added inquiries as to distribution of sales, equipment purchased, and mobile power equipment; and consolidated and reclassified a number of industries. The agency, however, basically left unchanged the data-collection methods and the publication program. There is no historical record as to why certain industries were added nor why those covered in earlier censuses were not included for 1929.

The 1930 census publication program included several special reports on economic topics—i.e., distribution of sales of manufacturing plants, products of manufacturing industries, materials used in manufacturing, and location of industrial plants. In addition, the census collected statistics on unemployment as an adjunct to the population census. 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 previous economic census in the United States.

1931–1933

In efforts to reduce federal expenditures and balance the budget, Congress decreased the Census Bureau's funding and personnel authorizations for the 1931 and 1933 biennial censuses of manufactures. The 1931 census covered 310 industries, but discontinued some inquiries (e.g., on salaried employees, power equipment, and coal consumption). The Bureau mailed questionnaires in January 1932, and about 60% were returned by mail. Officials of local chambers of commerce and, in large industrial centers, census field employees, followed up nonrespondents by telephone. Funding was inadequate for a large crew of canvassers, so there were few field follow ups. Budget restrictions also delayed the publications of census results.

The agency reduced the number of special questionnaires for 1933. It made greater use of the general questionnaire and a short-form version for smaller establishments. Again, this census used the mailout/mailback enumeration method, with telephone follow ups, and about 75% of the questionnaires were returned by mail. The volume containing final census results warned data users that the smaller field force available for personal follow ups had resulted in "some incompleteness of coverage."

President Franklin D. Roosevelt's "New Deal" policies, however, provided emergency relief measures, some of which directly involved economic census projects. An example of this was the 1933 business census, which encompassed retail distribution, wholesale distribution, and a new category, "Services, Amusements, and Hotels." The service classification consisted of personal services (e.g., barber shops and beauty parlors), mechanical repair services (e.g., radio shops), and miscellaneous services (e.g., parking lots). The agency collected data exclusively in a field canvass, which the Civil Works Administration funded as part of its emergency project to provide temporary employment for 4 million people during the winter of 1933–1934.

1935

The expanded scope of the 1935 manufactures census provided for about the same level of detail as in the 1930 census. Although the Bureau developed a mailing list and mailed questionnaires in January 1936, it instructed companies to hold their questionnaires until enumerators visited their establishments in a door-to-door canvass in all cities, towns, and villages. The field workers canvassed every manufacturing concern, even those that had not received questionnaires by mail.

The 1935 Census of Business covered retail trade, wholesale trade, the construction industries, and service establishments (personal, business, repair, custom, and miscella-

neous services) in an extensive field operation. The Works Progress Administration funded the operation as a public works project for the unemployed. In addition, the census included a miscellaneous business category consisting of many types of establishments not canvassed in any previous census. This miscellaneous category consisted of:

- Advertising agencies (questionnaires were mailed, but there was extensive field follow up);
- Radio broadcasting stations (mailed questionnaires and one follow up letter, plus field follow up);
- Real estate agencies (field enumeration exclusively);
- Insurance companies (mailout, plus field follow up);
- Banks (data collected by mail by the Federal Reserve Board, Comptroller of the Currency, and Federal Deposit Insurance Corporation, plus field follow up supervised by the Census Bureau);
- Financial institutions other than banks, such as stock brokerage firms and finance companies (field enumeration exclusively);
- Hotels and tourist courts (field enumeration exclusively);
- Places of amusement (field enumeration exclusively);
- Transportation—motor buses, trucks for hire, and warehousing (field enumeration exclusively); and
- Nonprofit organizations, office-building management firms, and miscellaneous business (field enumeration exclusively).

The announced goal of the 1935 census was to canvass “every recognizable place of business” to provide for the “first factual appraisal ever available on the effects of a serious business depression.” The census collected a mass of data, some of which staff tabulated at a special Bureau branch established to provide work in Philadelphia, where the unemployment rate was higher than in Washington, DC. The Bureau published final business census results in 14 volumes (three each for retail trade, wholesale trade, selected service industries, and construction; one for transportation and warehousing; and one for the miscellaneous topics), plus a series of special reports. The agency also published a one-volume census of manufactures report. The sheer scope and complexity of the operation, the limited time available for planning, and the difficulty in supervising the large contingent of field workers and clerks resulted in misclassifications, undercounting, tabulation difficulties, and other problems. The 1935 census, however, yielded some valuable data.

1937

For 1937, the Bureau conducted only the biennial census of manufactures, and the Congress funded the operation through regular census appropriations rather than as an emergency public works project. Although the number of special questionnaires was reduced, the amount of detail concerning products was greater than in any previous census. For example, there were questions added concerning finished-product and work-in-progress inventories. Enumerators canvassed 351 industries, using one general, one administrative, and 143 special questionnaires.

The 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. Census field employees visited establishments during the period April to June 1938, after which the agency made a final attempt to obtain outstanding questionnaires by mail. The results appeared first as press releases with preliminary data, then as pamphlets with final results, and ultimately as a volume published in December 1939.

1940

The 1940 Decennial Census included the censuses of business (retail and wholesale trades; selected service establishments, places of amusement, hotels, tourist courts, and tourist camps; and construction), manufactures, and mineral industries, covering activities for the year 1939. The business census was exclusively a field canvass. In 1940, the Bureau did not canvass most 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 and tourist courts 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 comparing the 1935 and 1940 tabulations. The Bureau also altered the scope of the census of selected service establishments, both by the addition of the miscellaneous business classifications (as noted above) and by internal adjustments. The agency recommended that users of the data, because of the numerous additions and deletions, not compare the 1935 and 1940 aggregates. For the construction industries, the Bureau eliminated the size cutoff for tabulating detailed statistics used in previous censuses (annual business of at least \$25,000), and, for the wholesale trade category, kept the scope essentially the same as in previous censuses. The agency also extended the censuses of retail and wholesale trades and selected service industries to Puerto Rico in 1940 (and for the subsequent economic census years, except for 1948).

Coverage of the census of manufactures remained approximately the same as that of 1937, but the enumeration shifted from a mailout/mailback operation with field follow up to a canvass. There was a new inquiry on capital expenditures for plants and equipment, and the question on personnel requested detailed breakdowns for various categories of non-manufacturing employees and by sex of manufacturing workers.

The census of mineral industries did involve a mail canvass, and most establishments returned their report forms by mail. The 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. That Bureau's field offices distributed and collected the questionnaires.

In addition to the usual press releases and pamphlets, Census employees compiled economic statistics in 10 volumes (five for the census of business, three for the census of manufactures, and two 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, and the Bureau did not publish the last volume until June 1943.

During World War II, the government discontinued the periodic economic censuses in favor of war-related current surveys to provide 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 Department of Commerce in order to undertake other urgent statistical work 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 under proper authority. The 1945 census was suspended because the Congress failed to appropriate the necessary funds.

The first economic census taken after World War II, and the first major one since 1940, was the manufactures census for 1947. This was almost entirely a mailout/mailback operation¹⁹ taken in accordance with the prewar law authorizing biennial censuses on this topic. (Title 14 of the Second War Powers Act (but not the entire act) expired on March 31, 1947. Therefore, under the then-existing law, a census of manufactures for 1947 would be taken in 1948 and other censuses in 1950 would cover 1949 unless other legislation was enacted.) A number of significant new features highlighted the 1947 Census of Manufactures:

- The Bureau used the Old Age and Survivors Insurance (OASI) records of the Social Security Administration as a basis to ensure coverage in the census, and staff reconciled the OASI establishment and industry classifications and those of the census. This not only improved the basis for accurate and economic coverage for the census, but also was an important initial step in further integrating Census Bureau and other federal agencies' statistics;
- To ensure efficiency in response and improvements in coverage, the Bureau sent a prec canvass card to about 525,000 possible manufacturing firms before mailing the questionnaires. The prec canvass form contained inquiries on company name and address, corporation affiliation, manufacturing process used, types of products, and number of employees. Using the returned cards, the Bureau was able to eliminate quickly many addresses that should not have been listed as manufacturing establishments, and determined in advance which of the 212 types of industry questionnaires should be sent to a given establishment. The Post Office Department also cooperated by verifying the presence or absence of a manufacturing plant at specified addresses on lists for particular localities. During the period January to March 1948, the agency used about 325,000 census questionnaires to collect statistics on 435 manufacturing industries. Field office employees telephoned nonrespondents and companies whose answers were deemed incomplete or inadequate. After the staff culled duplicates and out-of-business and out-of-scope firms from the file, it tabulated statistics for approximately 141,000 manufacturing establishments;
- For the first time since 1933, the agency used a simplified questionnaire for small establishments to reduce the reporting burden and processing cost.
- For the first time, the Bureau collected statistics on work hours from all industries, and gave more prominence to the total number of employees rather than to production workers. Thus, the size distributions in presenting statistics were set up in terms of the

total number of employees rather than the number of production workers. The census collected questionnaires from firms manufacturing products valued at \$5,000 or more during the census year. This step was taken mainly to provide coverage more comparable to that used in other federal programs;

- In addition to statistics for individual products ordinarily published in the census of manufactures, the staff grouped value figures into about 1,000 product classes, and used these classes where the number of reporting establishments was too small to permit showing data for individual products; for instance, state data were published for all product classes in addition to selected products;
- The Bureau discontinued the publication of statistics on cost of materials and value of products for the United States as a whole, for the major industry groups and for all geographic areas, because of the unknown amount of duplication contained in these totals resulting from transfers, especially between industries. The agency, however, published these figures for most individual industries, and released data on value added by manufacture and number of employees for industry groups as well as individual industries;
- Staff made a quality check involving an intensive 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 based classification of industries on the 1945 *Standard Industrial Classification [SIC] Manual*. (In previous censuses (those before World War II), the Census Bureau had developed its own classifications; see Figure 1); and
- The Bureau tabulated and published data for 147 standard metropolitan areas.²⁰

Standardizing the collection and publication of economic statistical data had been long the goal of the Federal Government. In 1939, the U.S. Central Statistical Board in the Bureau of the Budget (BOB), (the predecessor, several times removed, of the Statistical Policy Branch of the Office of Management and Budget (OMB)), observed that several Federal agencies were engaged in industrial classification of business enterprises and were using various classification systems that sometimes differed from one agency to another. Such a situation made the comparison of industrial data produced by different agencies difficult and often misleading. Recognizing the need for a standard classification of industries, the Board's objective was to arrive at a standard list of industries.

This objective was met fairly quickly through the efforts of an Interdepartmental Committee on Industrial Classification and a Technical Subcommittee on Industrial Classification. Draft lists and descriptions of industries and alphabetical indexes were produced separately for manufacturing and nonmanufacturing industries during 1938–1940. After review, the BOB (now OMB) published the first *Standard Industrial Classification (SIC) Manual* for manufacturing industries in 1941 and for nonmanufacturing industries in 1942, and issued the subsequent editions of the *SIC Manual* discussed below.

The Census Bureau followed the 1941 manufacturing classifications in coding industrial occupations in the 1940 Decennial Census of Population, and then manufacturing SIC's revised in 1945 for the 1947 Census of Manufactures. For the 1948 Business Census (i.e., retail trade, wholesale trade, and selected service industries), the agency relied on the 1942 SIC codes for nonmanufacturing industries. By 1954, these dual classification systems were combined in the 1954 *SIC Manual*, used for the 1954 Economic Censuses. The SIC system was substantially revised for the 1957 censuses and again for 1967. The manual underwent yet another major revision for the 1972 censuses. The 1972 *SIC Manual*, in conjunction with minor changes instituted after the 1972 censuses, was utilized for the 1977 Economic Censuses. Though the Government revised the

manual again for 1982, the changes were not implemented because of insufficient funds. Some, but not all, of the 1982 revisions, plus major changes not considered for earlier ones, were implemented for 1987.

The many SIC revisions instituted since the 1940s were the result of work undertaken by economists, statisticians, and classification specialists representing Federal agencies that used the SIC system as well as from recommendations made by the Census Bureau's Advisory Committees of the American Economic Association, the American Marketing Association, and the American Statistical Association; businesses; trade associations; and State and local government agencies. In addition to the Census Bureau, Federal participants represented such agencies as the Bureau of Economic Analysis (BEA), the Bureau of Labor Statistics (BLS), the Social Security Administration (SSA), the Internal Revenue Service (IRS), the U.S. Tariff Commission (now the U.S. International Trade Commission), Bureau of Mines, Department of Agriculture, Department of Transportation, Board of Governors of the Federal Reserve System, Small Business Administration, Federal Emergency Management Agency, National Science Foundation, the Federal Trade Commission, and the Interstate Commerce Commission.

For the 1987 revisions, the Government gave special consideration to industry changes that would increase comparability of the SIC with the United Nation's International Standard Industrial Classification and that would increase the Government's capability to assess the impact of international trade on domestic industries, such as making the domestic SIC system comparable with the Customs Cooperation Council's Harmonized System.

Finally, since the SIC system was developed during a time when the bulk of the American economy was involved in manufacturing; consequently, during a period of years after World War II when the economy underwent vast changes, the anomalies within SIC system became painfully obvious. In November 1991 an International Conference on the Classification of Economic Activity was held to focus on the need to reexamine the classification system. By July 1994, the Office of Management and Budget announced that Mexico, Canada, and the United States had agreed to develop a North American Industrial Classification System (NAICS) that would produce common industrial classifications for all three countries. The adoption of the NAICS for the 1997 Economic Census required the Census Bureau to introduce 360 new industrial classifications and to revise 330 more for industries previously classified under the SIC code.

The NAICS will enable users to derive data for roughly two-thirds of the four-digit SIC code industries, either because the industries have not been changed (other than the numerical code), or because any new industries involved are subdivisions of the old industry. However, many other industries were significantly altered, either expanded or fragmented by the NAICS (approximately 330 NAICS industries represent substantial revisions to the scope of existing industries previously defined by the SIC system), and over 360 entirely new industries were defined. The Office of Management and Budget will publish tables showing the full NAICS hierarchy, as well as tables showing the NAICS industries matched to the 1987 SIC code, and vice versa. (A detailed explanation of the NAICS will appear in the *History of the 1997 Economic Census*, which probably will be published at the end of the year 2000.)

Figure 1
Development of Industrial Classification Systems

As in the past, the 1947 census results appeared first as preliminary reports, then as final reports, and finally were assembled in three volumes—general summary, statistics by industry, and statistics by state.

1948

After the 1947 Census of Manufactures had begun, Congress considered Senator Albert W. Hawkes' (R., NJ) bill to shift the years in which the various economic censuses would be taken and to conduct the census of manufactures every 5 years instead of 2 and the censuses of business and mineral industries every 5 years instead of 10. Congress estimated that this would save the government \$1 million during the first 10-year period alone. In

addition, the law would provide the Census Bureau with the authority to “make such surveys as are deemed necessary to furnish annual and other interim current data on the subjects covered by the censuses provided for in this and other Acts” and it gave the agency “authority to place on a mandatory basis annual surveys collecting needed information of the type collected in a complete Census.”

These last two provisions were largely responsible for the widespread business and editorial backing of the legislation. Among the organizations that advocated passage of the bill were the U.S. Chamber of Commerce; chambers of commerce of Los Angeles, CA, Philadelphia, PA, Richmond, VA, and Seattle, WA; the Chicago Association of Commerce and Industry; and the American Marketing Association. Editorial backing for the bill or its principles appeared in such varied publications as the *New York Herald Tribune*, *Editor and Publisher*, *Advertising Age*, *Industrial Marketing*, and the *Northwestern Miller*. As far as is known, there was no significant opposition.

Therefore, on June 19, 1948, Congress passed what became Public Law 80-671 (incorporated into Title 13, *U.S. Code*, when the Bureau’s censuses and surveys were codified in 1954) that authorized “censuses of manufactures, of mineral industries, and of other businesses, including the distributive trades, service establishments, and transportation . . . in the year 1949 and every fifth year thereafter, and each census shall relate to the year immediately preceding the taking thereof.” The law further specified that, because there had been a census of manufactures for 1947, one would not be taken in 1949. One immediate result was the authorization of an Annual Survey of Manufactures (ASM) at the time the transition was made from the 2-year to the 5-year censuses of manufactures after 1947. The ASM was designed to carry forward the main outlines of the establishment statistics in the noncensus years.

The first application of this law was for the 1948 business census, which included retail trade, wholesale trade, and selected service industries.²¹ After the Bureau had divided the country into 37,000 enumeration districts and established 308 temporary field offices, it distributed questionnaires to respondents during the period May to November, 1949. The first phase of the project was a listing operation during which enumerators systematically canvassed each business establishment to secure basic information (e.g., name of business and proprietor, type of business, and whether it was part of a multiestablishment company) and entered the information in a listing book for each enumeration district. The field workers listed all recognizable businesses (except medical, dental, and law offices; government offices; and also farms). For most single-establishment companies, they left the appropriate questionnaire with instructions that it be completed and returned to the census office by mail. (There were 12 questionnaires—five for selected service establishments, five for wholesalers, and two for retail stores.) For multiestablishment firms, the central office staff completed the questionnaires for all establishments, unless the management specifically requested other arrangements.

The second phase was the data-collection/coding-editing operation. Most companies completed and returned their questionnaires without further contact, and clerks “checked in” the firms in the listing books for each enumeration district. The agency mailed reminder letters to nonrespondents, and field workers revisited those who had not complied. Field office employees carefully coded and edited questionnaires so that field workers could visit firms whose returns were incomplete or contained inconsistent or illogical information.

Other procedural changes included preliminary editing of questionnaires in the field offices and payment of field enumerators on a per diem rather than a piece-rate basis.

Before the temporary offices closed, there were several coverage checks, including matching operations with Social Security Administration lists and comparisons of county totals with those of neighboring counties or counties with similar economic characteristics.

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; and the compilation of data on the number of trucks operated by business establishments. The census collected only a limited amount of information from most small single-establishment firms, but obtained more detailed data from a sample consisting of every 10th small independent retailer, from all large retailers (those independent retailers with 1948 sales volume in excess of \$100,000), and all multiestablishments or chain organizations.

After the field canvass, a post-enumeration survey re-enumerated 2,500 representative small (substate) areas. This survey revealed undercoverage of 8.2% of service establishments and 3.6% of retail establishments. In general, the undercoverage reflected failure to list and canvass small businesses, particularly those with no employees.

As usual, the Bureau published preliminary results first and then final reports, which were later assembled in bound volumes (three for retail trade, two for wholesale trade, and two for service industries). In addition to the usual tabulations (receipts, sales, payroll, number of establishments, etc.), there were special tabulations on sales of retail stores by merchandise line and sales of wholesale outlets by commodity line. The publications presented statistics for 147 standard metropolitan areas, in addition to states, counties, and cities.

1954–1955

As noted above, Public Law 80–671 specifically authorized censuses of business, manufactures, and mineral industries in 1954, covering calendar year 1953. Although the Congress appropriated funds for planning and preparatory operations in fiscal years 1952 and 1953, it disallowed the fiscal year 1954 budget request for the actual census-taking. Instead, there was money only for limited special surveys of manufactures and business. This congressional action forced the Bureau, in May 1953, to terminate work on the economic censuses and created considerable opposition in many government departments and agencies and in the business and academic communities. In light of this opposition, the Secretary of Commerce, in October 1952, appointed a number of professors, business executives, economists, and other specialists not affiliated with the Census Bureau to an “Intensive Review Committee.” In March 1954, this group added its strong recommendation that the economic censuses be resumed. As a result, Congress enacted legislation (which became Public Law 83–467) in June 1954 that provided that “the censuses of manufacturing, of mineral industries, and other business, including the distributive trades and service establishments, directed to be taken in the year 1954 relating to the year 1953, shall be taken instead in the year 1955, relating to the year 1954.” Thus, the economic censuses, for the first time, 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.

The 1954 Census of Business (retail and wholesale trades and selected service industries) marked the Bureau's first attempt since 1890 to compile census statistics from administrative records. While employers were enumerated via the mailout/mailback procedure, the agency did not require nonemployers in retail and service trades to complete census questionnaires; instead, it derived selected data items (e.g., employment, payroll, and sales) for retail nonemployers with 1954 sales of at least \$2,500 and for service nonemployers with 1954 receipts of at least \$1,000 from the 1954 income tax returns filed with the U.S. Internal Revenue Service (IRS). The Bureau excluded wholesale firms without employees from the census. (Just prior to the 1954 censuses, and after consultations with the Census Bureau, the IRS revised its income tax forms to distinguish physical location from mailing address and to determine whether a firm's activities were within the scope of the census.) The enumeration excluded retail and service nonemployers with sales and receipts below the cutoff points. Nonemployers, although large in number, accounted for only a small percentage of retail sales volume and service receipts in 1954. Experience also had demonstrated that these small firms were the ones most likely to be missed in an enumeration, since many were operated from the owner's home and/or on an intermittent basis.

While the Bureau collected data for employers exclusively in a mail operation for the business census and for the censuses of manufactures and mineral industries, it made extensive use of administrative records in developing the mailing lists. The starting point was the IRS list of all employers who made one or more quarterly payments to the Social Security Trust Fund under the Federal Insurance Contributions Act. Since this list did not contain kind-of-business classifications necessary to determine which questionnaire should be mailed to a particular establishment, the Bureau had to match the IRS list with other lists containing kind-of-business classifications (e.g., the Social Security Administration's (SSA's) employer master file). The names on these lists could usually be linked through the use of the employer identification number (EIN) assigned to each case by the SSA, and matched mechanically on punchcard collating equipment. To secure accurate and up-to-date information on establishments of multiestablishment companies and to correct and consolidate the IRS list, the Bureau conducted a precanvass by mail in the fall of 1954. It asked multiestablishment companies to complete and return questionnaires on which they listed their establishments with corresponding information about name and address, employment, type of activity, etc.

The economic census mailout occurred in early 1955. The census of manufactures used 192 different questionnaires, each tailored to a particular industry or group of industries, to compile statistics for 450 industries defined under the standard industrial classification (SIC) system. Each type of questionnaire contained common items (e.g., employment, payroll, work hours, and cost of materials), but there were different questions on such subjects as product mix and raw materials to suit the characteristics of each industry. Bureau employees prepared for the mailing list using the process described above and, for large companies, the mailing register for the 1953 ASM. (The ASM was instituted for 1949 because of the need for intercensal years. Since that time, it has been a current program in the years between censuses.) In census years, the ASM panel of establishments served as the nucleus of the census of manufactures. The survey covered all large plants (those having 100 employees or more from 1954 through 1967 and, from 1972, those with 250 employees or more) and a representative sample of the smaller ones. All large plants

remained in the ASM over time, but the Bureau replaced smaller ones every 5 years. During census years, the ASM questionnaire served as the first two pages of the census questionnaire for survey respondents. The survey part was primarily a plant report and, instead of asking information on specific products (as in the census of manufactures), it wanted manufacturers to report shipments by class of product.

Respondents returned the questionnaires by mail, and nonrespondents received follow up letters. Census field office employees telephoned or visited those who still did not respond. The mailout and follow up operations involving large companies (generally those with at least six employees) were under the direct control of the Bureau's Suitland, MD headquarters. Field offices controlled mailout and follow up operations for the smaller companies. Coverage-control procedures ensured that all establishments on the mailing list were accounted for.

There were similar methods for the mailout/mailback canvass of the mail universe portion of the censuses of business and mineral industries. For mining companies, the Bureau supplemented the mailing list with information provided by such agencies as the Bureau of Mines and the Federal Power Commission. In total, approximately 280,000 manufacturing, 1.8 million business (retail and wholesale trade and selected services), and 32,000 mining establishments completed questionnaires. Census-derived data for more than 1 million retail and selected service companies from tax returns, resulting in an estimated savings of \$3 million in data-collection costs.

The 1954 censuses also marked their transition to electronic computing. In 1951, the Bureau acquired the United States' first large-scale nonmilitary computer, UNIVAC I, in time to tabulate part of the 1950 Decennial Census. UNIVAC I still required punchcards as input to its magnetic tape, but it could be used extensively, not only for calculating, but also for editing and imputing data and for driving high-speed printers that prepared offset copy.

The availability of computers (and the adoption of the general procedure of having all questionnaires for multiestablishment firms completed at company headquarters) also enabled the Bureau to initiate its first enterprise statistics program. This regrouped data for establishments under common ownership or control into tabulations showing various economic characteristics based on the classification of the owning or controlling company (enterprise).

As in past censuses, the 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, newly defined geographic entities encompassing the downtown business areas of large cities. Using the 1954 definition of a central business district, the Bureau 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 Bureau mailed questionnaires during the period January to May, 1959. Innovations for the 1958 censuses included:

- The use of more sophisticated computers. Processing operations performed by computer greatly expanded to mailing list controls, more extensive editing, certain kinds

of coding, and other functions that had been previously performed manually or with punchcard equipment.

- Establishment of a census operations office in Jeffersonville, Indiana, for the extensive preparatory operations and mass clerical procedures? preparation of mailing packages, mailout, receipt, check-in, clerical editing and coding, and card punching. Clerks took prints of the IRS's microfilmed tax returns and edited, industry-coded, and cardpunched the data from these administrative records. Bureau headquarters then transferred the data on the cards to electronic tape and processed them by computer.
- A new statistical area for the business census, the "major retail center" (MRC; an outlying business area, such as a shopping center). The Bureau published data for these major retail centers in standard metropolitan statistical areas (SMSA's), together with information for central cities and their central business districts (CBD's), in a new series of reports for 97 SMSA's.
- Economic censuses for the first time in Guam and the Virgin Islands.

1963

The 1963 Economic Censuses expanded to include censuses of transportation (for the first time²²) and commercial fisheries.

Previously, nearly all available transportation statistics were byproducts of federal and state governments' regulatory and promotional activities. Statistics were adequate for some aspects but inadequate or nonexistent for other areas of equal or greater public importance.

Because of the inadequacy of transportation data and the need for appropriate action by the Department of Commerce to overcome this deficiency, the President had signed Public Law 80-671 in 1948, which authorized a census of transportation in 1949. Congress did not provide funds, however, so the Bureau did not undertake the census. Subsequently, Congress appropriated money to develop methods for the census, then scheduled for 1953. Most of this work was accomplished on a reimbursable-cost basis for other governmental or nongovernmental organizations requiring data not currently available. However, Congress did not approve funds for a transportation census in either the 1954 or 1958 Economic Censuses.

In July 1961, Congress held hearings to discuss the need for a census of transportation, with particular reference to plans for undertaking the census in 1963. Thereafter, that body appropriated funds, and work commenced in April 1963.

The 1963 Census of Transportation was necessarily a pioneering effort with respect to the economic areas covered as well as the survey techniques used. The primary objective was to close, or at least narrow, major gaps in statistical knowledge without duplicating data already available from other governmental or private sources. This objective led to a program consisting of four individual surveys, each aimed at a specific gap in knowledge, rather than a single unified project as was common in other economic censuses:

- The Passenger Transportation Survey produced statistics showing national and regional passenger patterns for 1963 and their relationship to socioeconomic and geo-

graphic factors. Census representatives collected data in four quarterly personal interviews from a probability sample of about 6,000 households.

- The Truck Inventory and Use Survey (TIUS) yielded 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 Bureau mailed questionnaires to a sample of about 100,000 truck and truck-tractor owners selected from state motor vehicle registration records.
- The Commodity Transportation Survey (CTS) compiled data concerning the geographic distribution of tons and ton-miles of commodities, by type, shipped by the manufacturing sector of the United States. The survey obtained the basic information from a probability sample of bills of lading or other shipping records maintained in company files.
- The Motor Carrier Survey supplied statistics concerning for-hire carriers not subject to economic regulation by the Interstate Commerce Commission. This involved 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.

The census of commercial fisheries, resumed at the recommendation of the Interior Department's Bureau of Commercial Fisheries after a 55-year hiatus, involved a mail canvass of commercial fishing operations reporting employment to the Social Security Administration. The questionnaires contained inquiries on employment, payroll, receipts, characteristics of vessels, and landed catch. The Bureau did not ask part- and full-time fishermen without paid employees to complete questionnaires. Rather, the agency used a sample of administrative records for nonemployers to compile limited statistics. Because the mailing list was later revealed to be incomplete, there was a supplemental vessel survey for 1964.

The 1963 censuses of retail and wholesale trades, selected service industries, manufactures, and mineral industries closely resembled their 1958 counterparts. The main differences again were that the Bureau used newer model computer systems and expanded the use of electronic equipment, including:

- Computerized geographic coding of establishment addresses;
- Substitution of magnetic tape for punchcards in developing the census mailing lists from IRS lists;
- Automated procedures to control mailout and follow up operations;
- A high-speed telephone-transmission system to expedite mass transfer of data from Jeffersonville to the computer facility at headquarters;
- A computerized system for work and progress reporting of census operations; and
- Implementation of computer-programmed news stories for releasing census results and automatically mailing them to news media.

Again, the Bureau obtained selected items of information, such as value of receipts and sales, from tax returns for nonemployers. The agency also used administrative records to assemble mailing lists and obtain preliminary industry classifications for employer firms to

be included in the mail canvass. In total, the agency asked about 3 million firms to complete questionnaires (which were mailed from November 1963 to March 1964), and it derived statistics for approximately 1.5 million nonemployer firms from administrative records based on a 50% sample.²³

1967

For 1967,²⁴ the Census Bureau increased the scope of the economic censuses. Major elements of this expansion consisted of:

- Reinstitution of a census of construction industries (the first since 1939). For the first time, this was taken in Puerto Rico as part of the economic censuses;
- Expansion of coverage of the census of selected service industries to include architects and engineers, law firms, and arrangement of passenger transportation (travel agents and tour operators).
- Three surveys as the census of transportation?the National Travel Survey (NTS).²⁵ The Truck Inventory and Use Survey (TIUS), and the Commodity Transportation Survey (CTS). (The fourth part of the 1963 program, a survey of nonregulated motor carriers, was part of the 1967 and 1972 Censuses of Selected Service Industries. For 1977, it was reinstated in the transportation census as the Nonregulated Motor Carriers and Public Warehousing Survey).
- Modification of the prototype 1963 CTS by doubling the sample size in the major population centers as a means of improving 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 those printing or publishing newspapers and periodicals). These types of establishments were not in the 1963 survey.

The 1967 Economic Censuses thus included censuses of retail and wholesale trades, selected services, construction and mineral industries, manufactures, commercial fisheries, transportation, and the enterprise statistics program.

The 1967 Census of Commercial Fisheries mail canvass collected statistics on the number of vessel operators; catch, and fishing gear; and various vessel characteristics. While the Bureau obtained some basic information (gross receipts and industry classification) from the IRS and SSA for part- and full-time fishermen without paid employees, it did not publish the 1967 data from administrative records because of serious classification problems.

A major change in the use of administrative records for the 1967 censuses was that 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 Bureau expanded the use of these records to compile statistics for selected single-establishment small employers (firms with few employees during 1967). For retail trade and selected service industries, different payroll cutoffs for various kinds of businesses determined which firms would be excused from completing questionnaires. The number-of-employees equivalent to the payroll cutoff for manufacturing firms was 10 employees and five for mineral industries establishments. For construction industries with employees, Census used administrative records only to select the mail sample and not to compile sta-

tistics. Thus, data for more than 1 million small-employer establishments, canvassed by mail in previous censuses, were compiled from tax returns in the 1967 censuses. In total, the Bureau used administrative records for 2.9 million establishments, and asked 1.9 million establishments to complete questionnaires.

The Bureau devised various new techniques for handling mass data for the 1967 censuses, and utilized new computers and auxiliary electronic equipment. Other significant changes in processing methods included the expansion of the geographic coding file to facilitate computer coding of establishments located in small cities, development of specifications and computer programs to perform complementary disclosure analysis (to ensure that data for individual establishments were not revealed), and extended use of computer editing to replace some operations previously performed manually.²⁶

1972

Except that there was no census of commercial fisheries after 1967, the 1972 Economic Censuses were essentially the same as those for 1967. In addition, for the first time, they covered construction industries in Guam and the U.S. Virgin Islands. For the 1972 census program as a whole, staff mailed 2.9 million questionnaires between December 1972 and February 1973. In addition, there was information from administrative records for approximately 2.6 million establishments.

As well as incorporating the improvements and expansions introduced for 1967 (see above), the 1972 censuses included a prec canvass of all out-of-scope activities of companies that reported on an establishment basis in previous economic censuses. Also, the NTS sample size increased (from 6,000 households for 1963, and 18,000 for 1967) to 24,000 households for 1972.

The Bureau classified all 1972 data according to the new 1972 *SIC Manual*. For selected data items, the reports contained "bridge" tables that showed 1972 data classified under both the 1967 and the 1972 SIC systems. The 1972 revision recognized a number of additional separate industries, eliminated statistically insignificant ones, and contained modified definitions of many others within the scope of the economic censuses by shifting products and services from one industry to another within each SIC division.

The 1972 program included a Survey of Minority-Owned Business Enterprises (SMOBE) that the Bureau had begun with a 1969 study analyzing data from the 1967 Economic Censuses. The SMOBE presented tabulations by major SIC industry or industry group by race (Black, Asian American, American Indian, and "Other") and Hispanic origin for metropolitan areas and, from 1972 on, for counties and places with specified numbers of minority-owned firms. The SMOBE usually limited the published data to legal form of organization and receipt- and employment-size of firm.

Economic census data users had stressed the importance of early availability of the information on a detailed industry and geographic basis. As a result, work on the 1972 censuses emphasized improving the timeliness of the publication program. The first reports in key publication series from each of the censuses appeared within 1 year of the period covered by the censuses. This achievement represented an average gain of 6 months compared with the release of the 1967 census information. A further achievement was the completion of publication of the major series 9 to 12 months earlier than for 1967. Finally, the 1972 censuses witnessed the introduction of a systematic, standardized program to issue public-use

computer tapes, which consisted of the same summary data as the printed reports, for data users with their own processing facilities.²⁷

1977

The 1977 Economic Censuses program covered retail trade; wholesale trade; service, construction, and mineral industries; manufactures; and transportation; the survey of minority-owned business enterprises; the enterprise statistics program; and a census and a survey of women-owned businesses. The 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 census of women-owned businesses was a compilation of economic data from existing records and presented a general economic picture of women-owned businesses. Finally, the special survey of women-owned businesses collected more specific information about the demographic and economic characteristics of women-owned businesses and their owners.

For the 1977 censuses, a 1976 recordkeeping practices survey obtained information on the ability of respondents to provide data not previously requested in the Bureau's economic censuses and surveys. As a result, the Bureau decided to:

- Collect additional data needed to improve the gross national product accounts;
- Expand the coverage of the service industries census;
- Develop a common set of commodity lines for all types of operations in the wholesale trade census;
- Develop a better geographic coding system to improve the classification of data by areas;
- Improve the quality of the national travel survey; and
- Carry out evaluation programs.

The staff gave high priority to the growing need for more data to compare domestic output to imports and exports in expanding product line detail for the 1977 Censuses of Manufactures and Mineral Industries. 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 by the United States for imports, exports, and domestic production. This study, in 1975–1976, was a joint effort of the Bureau of the Census and the International Trade Commission. These federal agencies proposed modifications for each of the three existing systems so that data collected for individual products or groups of products would be more compatible with each other, and some of the product-line classifications for the 1977 censuses were developed or revised as a result of the study. The censuses incorporated all new product-line classifications identified during the trade act review for which questionnaires had not already cleared the Office of Management and Budget. Those changes identified after clearance were not used for 1977 but were included in the 1982 censuses.

There were changes in the practice, begun in 1954, of having a quinquennial prec canvass of all known multiestablishment companies. The primary objective of the prec canvass was to update the Bureau's file of company and establishment address records, so that the agency could mail the appropriate questionnaires more economically and efficiently to

each in-scope establishment operated by these firms during the census year. It also assured completeness of company reporting in the census. However, since the prec canvass occurred only once every 5 years, the file of company and establishment address records became obsolete within a very short period of time. As a result, after the 1972 Economic Censuses, the Bureau developed and implemented a standard statistical establishment list (SSEL), and began an annual company organization survey (COS) designed to update the address files in the SSEL. The SSEL consisted of a central, multipurpose computerized name and address file of all known single- and multiestablishment employer firms (and nonemployer agricultural firms) in the nation. Through the combined use of the SSEL file number and the EIN (assigned to each legal entity by the IRS), the Bureau could link together and identify the affiliation of parent companies, subsidiary firms, and their establishments throughout all phases of economic activity.

Unlike the 1967 and 1972 Censuses of Transportation, the 1977 coverage included nonregulated motor carriers and public warehousing as well as the national travel, truck inventory and use, and commodity transportation surveys. While the Bureau based the last three surveys on probability samples, it based data for nonregulated motor carriers and public warehousing firms with employees on an enumeration of establishments in the same manner as the other economic censuses. In addition, the staff made a number of changes and improvements in the probability surveys.²⁸

1982

The 1982 program consisted of censuses of retail trade; wholesale trade; service, construction, and mineral industries; manufactures; and transportation; the survey of minority-owned business enterprises; 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 (see p. 51)); and the enterprise statistics program. The 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 Commodity Transportation Survey was in 1984 (for 1983). In addition, staff obtained data for about 3 million small firms (which were not sent questionnaires) from administrative records.

Because of the need to revise the inventory question in the 1982 Censuses of Wholesale Trade, Construction and Mineral Industries, Manufactures, and the 1982 Enterprise Statistics Program, the Bureau carried out several inventory test surveys in 1981. The objectives were to measure response rates and accuracy for several plausible and controlled data-collection methodologies. Based on the response evaluations, the agency adopted a revised inventory inquiry for the 1982 Economic Censuses (and its annual surveys). This meant that only the term "last in/first out reserve" was used and that it was related to a standard definition. The question also included the value of inventories not subject to last in/first out costing.

Between June 1 and July 31, 1981, the Bureau tested proposed revisions to the 1982 Truck Inventory and Use Survey. For example, would it be feasible to use two different questionnaires in 1982 rather than one, as had been done in the past? The results of the test demonstrated that although the use of two different questionnaires increased the Census Bureau's processing burden, it provided the respondent with a survey instrument more

closely related to the characteristics of the sampled vehicle. In addition, other results led to the revision of the sequence and wording of many of the questions in the 1982 survey questionnaire to improve their clarity and to reduce reporting errors.

The 1981 Recordkeeping Practices Survey sought to determine if establishments maintained alternative document systems that were better suited to gather commodity-flow data requested in the Commodity Transportation Survey (CTS). The results of the practices survey prompted the following changes in the CTS:

- Instructions to respondents emphasized using the sales-invoice document system versus the traditional bills of lading. (Bills of lading would be accepted if respondents decided not to use sales invoices.)
- Respondents received stronger worded instructions for using the serial number sequence.
- The staff intended to make special provisions for establishments that wanted to use automated data-processing systems in responding, but these were not implemented.

The 1982 CTS did not take place in 1983 (for 1982) as noted earlier, but in 1984, to allow time for the staff to test and consider alternative data-collection methods. They divided establishments into three groups to test one of three techniques: (1) The systematic method, (2) the first-15 method, and (3) the summary method.²⁹ The 1983 test did not result in a workable methodology for shipment sampling. The Bureau, therefore, decided on a much less detailed survey for 1983, which would only provide summary CTS data.

Unlike the 1977 Census of Transportation, the 1982 census did not include a national travel survey or collect data on nonregulated motor carriers. Data on public warehousing and arrangement of passenger transportation appeared in the census of service industries reports.

The 1982 census excluded some of the service industries that had been covered for the first time in the 1977 census (e.g., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions; and political organizations) because the information for these service industries appeared to be available from other sources, such as the Department of Education and the Bureau of Labor Statistics. The need to reduce census cost also was a factor. For the first time, the Bureau obtained data on retail trade, wholesale trade, manufacturing, and construction and service industries for the Northern Mariana Islands.

Despite known inadequacies that would prevent complete publication processing, the Bureau had adopted an experimental computer program—Table Image Processor System (TIPS) for the 1977 Economic Censuses publication program. The staff had designed this system to photocompose (in conjunction with its own computer-output-to-microfilm device and the Government Printing Office's Video Computer-output-to-microfilm system) large volumes of tables for the census reports. Prior to the 1982 censuses, the Bureau examined the experimental TIPS and determined that 34 refinements to that system would be needed. Of the refinements, at least three were major: The ability to: (1) place any kind of table anywhere on a page, (2) produce multiple tables on a page, and (3) produce multibanked tables (those with the boxhead repeated horizontally or the stub repeated vertically within the same table and on the same page). Since only about one-third of the required refinements could

be realized by modifying the TIPS, the system, as then designed, was not capable of meeting the 1982 Economic Censuses' publication requirements. Therefore, the staff undertook a major redesign of the photocomposition system in 1981. The result was the Table Image Processor Systems II (TIPS II), which remedied most of the original system's deficiencies.³⁰

1987

The 1987 program consisted of the same censuses as for 1982. These encompassed approximately 12.4 million establishments, with information collected through a combination of 3.7 million mail questionnaires and data for about 8.7 million small firms from the administrative records of other government agencies.

There were a number of significant changes in specific censuses. For *retail trade*, the Bureau increased, by 20 percent, the number of merchandise-line questions, providing data users with more detailed information on the kinds of merchandise sold by different kinds of retail stores. The 1982 major retail center (MRC) series of reports marked the sixth and last in a series that, since 1958, had traced the movement of retail businesses from the central business districts (CBD's) to outlying shopping centers, particularly suburban centers. In the more recent past, the role of CBD's in retail trade had declined dramatically in most metropolitan areas. Since the migration of retail business to the suburbs appeared to be complete, it was decided to no longer publish CBD data separately. Conversely, the substantial increase in the number of suburban shopping centers changed not only the nature but also the cost of the MRC program. Costs rose significantly not only because of the increase in the number of centers but also because the boundaries of each center had to be delineated on site, with each store listed by name and type of business. Each store then had to be clerically matched to census listings for the geographic area in which the center was located. Even the changes made for the 1977 censuses, which revised the size criteria and delegated the delineation and enumeration process to local Census Statistical Areas Committees or other local organizations, failed to keep enumeration costs at a manageable level. Consequently, the agency decided to discontinue the MRC program after the 1982 censuses.

To meet the increasing need for small-area data, however, the census of retail trade provided data (for employer establishments only) for each five-digit ZIP Code in the *ZIP-Code Statistics Series* reports. Information here, including establishments counts classified by employment-size groups and sales-size ranges, was issued via electronic media only, such as CD-ROM, diskette, and computer tape.

Other 1987 changes consisted of removing nonemployer establishments from the *Geographic Area Series* reports (i.e., each report presented statistics for establishments without payroll only) and adding a new *Nonemployer Statistics Series*. This 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 varied retail classifications for each state, and within each state, for metropolitan statistical areas, counties, and places with 2,500 inhabitants or more.

Finally, the new *Special Report Series* presented the *Selected Statistics* report. It contained selected aggregate data by kind of business, including ranks and ratios not provided in the other final reports, for the United States, states, and metropolitan statistical areas.

For 1987, the *service industries* census collected information on health services as well as on other industries, such as educational services; social services; museums, art galleries, and botanical and zoological gardens; membership organizations, except religious organizations; and rooming and boarding houses. The Bureau obtained data on privately owned and operated hospitals (collected for 1977 but not for 1982) for 1987 and, for the first time, gathered information on government-owned and -operated hospitals.

The census collected additional information on international service transactions. For 1982, there had been tabulations for exported service receipts for architects, engineers, and surveying services; management, consulting, and public relations services; equipment rental and leasing services; and computer and data processing services. For 1987, four additional industries reported data on exported services—advertising agencies; accounting, auditing, and bookkeeping services; research, development and testing services; and legal services.

As with the census of retail trade (see above), the 1987 Census of Service Industries also provided data for individual ZIP Codes (for employer establishments only) and statistics for nonemployer businesses.

The *transportation* census originally consisted of the Truck Inventory and Use Survey (TIUS), the Commodity Transportation Survey (CTS), and expanded census coverage of transportation establishments (to include all motor freight transportation, water transportation, and transportation services). The 1987 TIUS was substantially the same as for 1982. The CTS had to be canceled, in January 1988, after the government reduced the fiscal year 1988 funding for the economic censuses and many other federal projects because of the mandated deficit-reduction guidelines established by the 1986 Gramm-Rudman-Hollings Deficit Reduction Act (Public Law [P.L.] 99-177).

For *construction industries*, the Bureau introduced a conceptual change. Previous censuses collected receipts as the primary measure of construction activity; but, for 1987, it collected the “value of construction work done.” (Receipts could be different from the value of work done, since work can occur in one year and receipts in the prior or succeeding year. In practice, receipts for most contractors approximated “value.” For key industries, however, such as operative builders and developers, receipts and work done might be different. In addition, receipts did not include work a contractor performed for its own account and use, which could be substantial.) The number of construction questions increased from 8 to 24, tailored to particular industries, so that respondents might complete the questionnaires more easily and provide more detail data, especially for the kind of construction work performed and the type of construction involved (e.g., residential and commercial).

Finally, the agency expanded its efforts to capture construction activities of establishments not classified as construction establishments by the SIC system. The Bureau added force-account construction questions to the census of manufactures questionnaires for the chemical, petroleum, and steel industries. (Force-account construction is construction work performed by an establishment primarily engaged in some business other than construction, for its own account and use, and by employees of the establishment.) Additional information on secondary construction activity was also collected by adding questions to manufactures questionnaires covering steel industries and installation of metal and wood

buildings, and to the census of retail trade questionnaires covering hardware and building supply stores.

The Bureau published more comprehensive data on manufacturers that exported, and improved production statistics to make them more comparable with foreign trade statistics. It did this 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.³¹

For 1987, 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 requested that the Bureau measure the cost of foreign-made materials used by domestic manufacturing plants to produce goods. Many data users asked for information on the foreign content of each material input consumed in an establishment, but the agency found that this information was not easily reportable and, in many cases, not available. Therefore, the 1987 ASM asked about 55,000 establishments for information on the aggregate amount of materials, parts, and supplies purchased from foreign countries.

For 1987, the Bureau added several recordkeeping inquiries to 12 questionnaires covering industries where partial fabrication was prevalent, such as apparel; motor vehicles; footwear; electronics industries, such as computers and semiconductors; motors and generators; toys; and sporting goods. The responses permitted a better understanding of what was being reported in domestic statistics. If misreporting was widespread and companies in these industries were including foreign costs of materials, fabrication, or labor in their domestic statistics, the census could miscalculate value added.

The agency dropped special inquiries on metalworking operations from the census questionnaires. Finally, because of budgetary constraints, published concentration data appeared at the four-digit industry level but not at the five-digit product class level as in the past.

The 1987 Economic Censuses saw significant data-processing changes. With the acquisition of several minicomputers, analysts now had interactive access to micro-records and summary data. These additional analytical tools reduced the amount of paper listings and improved data quality.

Another processing improvement involved upgrading the agency's automated photocomposition system—the TIPS II. Placement of laser printers in each of the subject-matter divisions (Business, Construction, and Industry) that were compatible with the photocomposition system significantly reduced the time required to produce photocomposed proof copies of data tables and, therefore, contributed to the release of the final publications several months earlier than was done for the 1982 censuses.

Finally, the Bureau established the Economic Programming Division, in January 1987, to better utilize computer programming personnel. All employees working on the census or census-related surveys, such as the Annual Survey of Manufactures, were consolidated into one division. This permitted streamlining many programming activities, and computer staff moved among projects as required.

Other important changes occurred in geographic presentation. Effective June 1983, the Office of Management and Budget established a new set of metropolitan areas—metropolitan statistical areas (MSA's), consolidated metropolitan statistical areas (CMSA's), and

primary metropolitan statistical areas (PMSA's)—to replace the two former types of metropolitan areas—standard metropolitan statistical areas and standard consolidated statistical areas. The Census Bureau used the two-level system to report data for 21 metropolitan areas for the 1987 Economic Censuses: It designated each area, as a whole, as a CMSA consisting of two or more PMSA's. Metropolitan areas that were not subdivided into PMSA's retained their designation simply as MSA's.

The Bureau instituted changes in its publication program. In prior censuses, published preliminary reports preceded final reports. In the manufacturing and mineral censuses, preliminary industry reports were followed by preliminary geographic series, and then the final industry and area reports. For the 1987 Census of Manufactures, the Bureau discontinued the preliminary geographic series. It consolidated the 443 industry preliminary reports (published for the 1982 censuses) into 83 bulletins covering related manufacturing industries. The preliminary U.S. summary report included data at the four-digit SIC level, while the state reports contained information only at the two-digit SIC level. The final industry series was also available in 83 bulletins, followed by the final geographic area and subject series.

The census of construction industries continued to published preliminary industry and final industry and final geographic area reports.

For 1982, the censuses of retail trade, wholesale trade, and service industries had a preliminary industry series followed by final geographic area, industry, and special reports. For 1987, there were no preliminary industry reports produced; rather, two-page press releases appeared for each state approximately 6 weeks before the publication of the final state reports. (The press releases were not preliminary reports, but highlighted data published in the 584 reports. Of this number, 125 were preliminary reports and 459 were final publications.)³²

1992

Several important changes were implemented for the 1992 Economic Census. This census marked the most significant expansion in the census scope in 50 years. For the first time, 1992 covered financial, insurance, real estate industries, communications, and utilities. Also, the Census Bureau included for 1992 those transportation industries not covered in the 1987 program; that is:

- Standard Industrial Classification 40, Railroad Transportation;³³
- Standard Industrial Classification 41, Local and Suburban Transit and Interurban Highway Passenger Transportation;
- Standard Industrial Classification 45, Transportation by Air; and
- Standard Industrial Classification 46, Pipelines, Except Natural Gas.

Thus, about 95 new industries were added, increasing coverage to about 98% of economic activity up from 75% for 1987. Based on the results of the 1989 Recordkeeping Practices Survey;³⁴ the 1989 Transportation, Communications, and Utilities test census; and the 1989 Financial, Insurance, and Real Estate Industries test census,³⁵ the Census Bureau used a statistical unit other than the establishment for some of the financial, insurance, transportation, and utilities industries. The agency continued to collect employment

and payroll data for each location, but obtained revenue and expense data at the legal-entity level within a state.

Across the censuses and between industries, the basic output measures varies from sales for retail trade establishments, to: (1) operating receipts for taxable service establishments, (2) revenue for tax-exempt service establishments, (3) value of shipments for manufacturers, and (4) value of construction for construction establishments.

Among the newly covered industries, there were various industry-specific output measures. Several of these industries had, as operating revenue, items which for most industries were nonoperating such as rents, interest, and investment income, as well as gifts, grants, and contributions. For the 1992 Census of Financial, Insurance, and Real Estate Industries, the Census Bureau requested total revenue. The supplemental inquiry requesting major sources of revenue separated the components to allow users to tailor output measures for their own use. These sources of revenue also provided important information for identifying secondary activity. For the 1992 Census of Transportation, Communications, and Utilities, the Bureau asked for operating revenues basis data. However, the broadcasting and cable industries questionnaire contained a supplemental inquiry on nonoperating revenue.

Gross receipts or sales (less returns and allowances) has been the usual dollar volume figure obtained from the Internal Revenue Service for census use. For 1992, the Census Bureau also requested administrative gross rents and interest income from the Internal Revenue Service for partnerships and corporations. 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.

In general, census data were made available for the nation as a whole, states, metropolitan areas, counties, and places. Some retail trade and service industry data were made only available at the ZIP-Code level. For the newly covered industries for 1992, the statistics were made available for the United States and states. For some new industries in the transportation, communications, and utilities and financial, insurance, and real estate industries group, the data also were provided for selected metropolitan areas.

Section 501 of the Internal Revenue Service Tax Code grants exemptions from taxation for certain activities, including credit unions, some kinds of insurance companies, fraternal beneficiary societies, and public broadcasting. While planning for the 1992 Economic Census, the Census Bureau considered whether tax-exempt entities required special treatment in the expanded areas. Since most of these industries derived their revenue in much the same way as their taxable counterparts, the Bureau decided that there would be no differentiation in the basic tabulations.

The lack of data on the contribution of services to the volume of exports had been recognized for some time, and there was increasing interest in collecting export data for the non-goods producing sector. In the 1982 census, therefore, the Bureau requested data on exported services for the first time from selected service industries. In 1987, other industries were added. For 1992, the agency 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.

Construction³⁶ expenditures were requested for several industries where construction was known to be a potentially significant secondary activity. The item was put on questionnaires sent to real estate owner-operators, land developers, pipeline companies, and communications and utility companies.

In general, the basic content remained substantially the same as that for 1987, with the following enhancements: In the census of manufactures, the number of purchased services was expanded from three to eight, and the Bureau collected additional information on the auxiliary questionnaire. Also, the instructions to those who received a questionnaire for 1992 were clarified. 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, thus reducing reporting burden and improving the response rate. As a result of the 1988 Women-Owned Business Act (P.L. 100-533), the Census Bureau collected information on women-owned corporations for the first time for 1992.

In an effort to improve and accelerate response, the Bureau implemented several initiatives, including the following:

- Use more effective direct-mail techniques.
- Standardized the size of most economic census questionnaires. They were 8 x 14 inches, but a few questionnaires remained at 8 x 11 inches. The census of manufactures and mineral industries no longer used 10 x 17-inch questionnaires.
- Instructions were improved and transmittal letters were streamlined.

For 1992, the agency increased the emphasis on mandatory reporting. Outgoing envelopes were overprinted with a message indicating that a Census Bureau questionnaire was enclosed and that response was required by law. The mandatory message was tried in the 1989 test census and proved effective in increasing the response rate.

The Census Bureau implemented more effective follow up strategies, including the use of questionnaire follow up for single-establishment companies and, for the first time, questionnaire follow up for multiestablishment companies through the use of automated printing technologies. (The time, space, and cost associated with manually assembling mailing packages for large complex companies had made questionnaire follow up for them infeasible.)

A proactive company contact program was implemented. In December 1991, the agency mailed an information booklet to the 10,000 largest companies, alerting them to the upcoming 1992 Economic Census. The booklet provided the companies with some key information. In addition, the 1,000 largest companies were targeted for special handling. They were offered a single Bureau contact person, and the companies were asked to reciprocate by identifying a contact within their respective companies.

In November 1992 (about 1 month before the Bureau mailed the questionnaires), analysts called each company contact person at the 1,000 largest companies to alert them that the questionnaires would soon be mailed and called again in January 1993 to be sure the firms had received the census packages. First that did not respond by April 1993 were contacted again by telephone. For those companies that did not report by late June, Bureau analysts again encouraged reporting and/or collected the data by telephone. For 1992,

much greater emphasis was placed on the data-collection operation; for instance, an 800 telephone number appeared on all questionnaire mailings.

Finally, the Bureau developed and used for the first time an electronic data interchange standard for use only in the 1992 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.³⁷

CONCLUSION

Over the past 187 years, the information in the economic censuses has increased in direct proportion to the growing complexity of the nation's economy. At one time, this meant continually escalating demands on respondents; more recently, several efforts have eased their burden: reporting by mail, redesigned questionnaires, and increased use of administrative records. Nevertheless, data users in the administration, in Congress, and in the private sector often have pressed for even more statistics and detail. The advent of electronic data processing made filling users' requests potentially easier, but budgetary constraints just as often forced compromise—cutbacks in detail here, entire programs canceled there. Yet, the published reports from the economic censuses continue to provide an unequalled panorama of the country's economy from early 19th century to the present. The structure and practices of the nation's business and industry continue to evolve; the censuses will evolve with them, just as they have since 1810.

NOTES OF THE EXISTENCE OF ARCHIVAL DATA

While the published reports from the economic censuses from 1810 to 1992 are readily available in libraries, the researcher who wishes to use the basis records behind these reports, that is, records of individual firms, for historical or analytical purposes faces no easy task. Fragmentary returns for manufactures from the 1810 Decennial Census exist on microfilm (as part of the population records) and may be seen at National Archives and Records Administration centers and in libraries that acquired copies. Industry schedules for some states for 1850 through 1880 also may be found on National Archives and Records Administration microfilm and/or in manuscript form in state depositories. From time to time, Congress authorized destruction of virtually all the economic census records from 1890 through 1939 (without microfilming), as they were taking up costly storage space. Punchcards likewise were destroyed for the same reason. Thereafter, the National Archives, to which old files had been offered, made such decisions. Magnetic tape came into use with the 1954 and later censuses, and the basic records were kept only in that form (without name identification). Records in the National Archives and Records Administration's hands are opened for public use after 50 years.³⁸ The older tapes are virtually useless, however, because technological advances made the equipment needed to "read" them obsolete years ago. Thus, only when the basis records from the 1972 Economic Censuses become available at the archives in 2022, for example, might the researcher have direct access to a significant body of material.

NOTES AND REFERENCES

1. As this article went to print, the collecting of economic data for 1997 was underway.
2. 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 Bureau used the term "economic census" primarily to assist its promotional activities and because data users frequently did not understand what "economic censuses" meant.
3. For details on the economic censuses taken between 1810 and 1890, see Carroll D. Wright & William C. Hunt, *The History of Growth of the United States Census...* (Washington, DC: GPO, 1900), p. 20 ff.
4. See Wright & Hunt, *The History of Growth of the United States Census...*, p. 22.
5. See Wright & Hunt, *The History of Growth of the United States Census*
6. The 1840 census marked the first evidence of official concern with the need to regard economic census data as confidential. Subsequent censuses had similar instructions.
7. See Wright & Hunt, *The History and Growth of the United States Census...*, p. 40.
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; however, in more recent years, the Census Bureau has generally used the term "questionnaire" in the economic censuses.
9. See Wright & Hunt, *The History and Growth of the United States Census...*, pp. 59-67.
10. The 1850 Decennial Census collected some data on telegraph facilities.
11. The special schedules asked questions (but fewer and in less detail) of steamboat companies (21), express companies (30), telegraph companies (24), and telephone/telegraph companies (16).
12. 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 ascertain and 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) gave a description of the geography and topography of Alaska; (4) furnished an 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. U.S. Census Office. Tenth Census of the United States: 1880. Vol. VIII, Part II, *Population, Industry, and Resources of Alaska*. (Washington, DC, GPO: 1884).
13. 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.
14. 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.
15. See *Legislation Relating to the Bureau of the Census* (Washington, DC, GPO: 1917), p. 23.
16. See *Census Bureau Legislation, Department of Commerce and Other Executive Departments* (Washington, DC, GPO: 1936), pp. 13-14.
17. See *Legislation Relating to the Bureau of the Census*, pp. 18-19.
18. As noted earlier, one major difference in coverage was that whereas the first four biennial censuses of manufactures included only firms reporting annual production valued at or above \$5,000, the Bureau returned this cutoff to \$500 for the 1930 census, inasmuch as this was the decennial enumeration.
19. Field enumerators canvassed approximately 15,000 sawmills, which had highly mobile and sporadic operations.
20. These were the forerunners of the present Office of Management and Budget-designated metropolitan statistical areas—one or more counties around 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.
21. 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).
22. Earlier censuses taken by the Bureau covered only specific areas of transportation, such as the censuses of water transportation taken periodically between 1880 and 1926, and the censuses of street railway, trolley bus, and affiliated motorbus operations covered by the early censuses of electrical industries taken at 5-year intervals between 1902 and 1926.

23. For a detailed account of the 1963 Economic Censuses, see *1963 Economic Censuses: Procedural History*.
24. In 1967, Congress modified Title 13 of the *U.S. Code* (the law under which the Bureau operated), so that the period covered by the economic censuses would be the years ending in “2” and “7” instead of “3” and “8.” This revision was introduced to distribute more evenly the staff and computer workload generated by the economic and demographic censuses.
25. For 1963, the NTS was called the Passenger Transportation Survey. As did its predecessor, the NTS measured national and regional travel patterns and their relationship to the socioeconomic characteristics of persons who traveled.
26. For a detailed account of the 1967 Economic Censuses, see *1967 Economic Censuses: Procedural History*.
27. For a further description, see *1972 Economic Censuses: Procedural History*.
28. The changes are contained in the publication *History of the 1977 Economic Censuses*, chapter 10.
29. For a description of these three methods, see chapter 2 of the *History of the 1982 Economic Censuses*.
30. For a detailed account of the 1982 censuses, see *History of the 1982 Economic Censuses*.
31. In January 1989, the United States adopted the Harmonized Commodity Description and Coding System (Harmonized System) as the nomenclature for classifying both exports and imports. The Harmonized System collects information based on the metric standard.
32. For a detailed account, see *History of the 1987 Economic Censuses*.
33. Data for railroads collected by other agencies were included in the Census Bureau’s publications, but were excluded from the 1992 Economic Census data-collection operation. This also applied to Standard Industrial Classification 45 with respect to large certified passenger air carriers.
34. In December 1990, the Bureau completed its 1989 Recordkeeping Practices Survey report. The survey targeted large multiestablishment companies and tested the collectability of data items already on the economic census questionnaires, as well as proposed new items. Analysis of the survey’s responses revealed problems collecting data for some of the latter, including breakouts of employment by function at the establishment level, space utilization, etc. On the other hand, companies found relative little difficulty in reporting detailed information on purchased services.
35. The two test censuses obtained an 80-percent response rate. (For more detailed information, see “1989 Transportation, Communications, and Utilities Test Census” and the “1989 Financial, Insurance, and Real Estate Industries Test Census,” Chapter 2, *History of the 1992 Economic Census*. (Washington, DC: GPO, 1980.)
36. The Bureau also conducted a construction industries test census in 1989, in which questionnaires were sent to 6,000 construction company addresses. The test covered such things as alternative questionnaire design and question sequence. (For more detailed information, see “1989 Construction Industries Test Census,” chapter 2, *History of the 1992 Economic Census*.)
37. While participation was limited to retail trade for 1992, the Bureau adopted the electronic data interchange standard for reporting in the 1993 and subsequent Company Organization Survey. For details, see *History of the 1992 Economic Census*.
38. Title 44, *United States Code*, Section 2104; National Archives and Records Service, *Guide to the National Archives of the United States* (Washington, DC: GPO, 1977), p. 106. The comparable period for population and housing census records is 72 years.