

## **POPULATION AND HOUSING CENSUSES: 1790 TO 1970**

This section provides background information on the history of census-taking in the United States, from the first census in 1790 to the complex computerized operation of 1970.

## Why a Census

Webster's defines a census as "a periodic governmental enumeration of population," the common conception of census-taking. Actually, a census can be a count of any class of identifiable entities--business establishments, housing units, farms, governments themselves, as well as people. Consequently, censuses are one of the most important means for a society to find out about itself. In the western world, census-taking goes back to ancient Rome. In the United States, census-taking goes back to the early seventeenth century, when the royal colony of Virginia conducted a census of population.<sup>1</sup>

Although other colonies carried out complete enumerations, the American Revolution set in motion a train of events necessitating a nationwide population census on a periodic basis. In order "to form a more perfect Union," the States adopted the Constitution in 1787, the first article of which stipulates that:

Representatives and direct taxes shall be apportioned among the several States which may be included within the Union, according to their respective Numbers. . . . The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and within every subsequent Term of ten years, in such Manner as they shall by Law direct.

Over the decades, the scope of census activities in America grew to include many facets of the Nation's life. Information from the censuses entered into important policy decisions and research and planning programs of all kinds.

### National Growth Leads to Permanent Census Bureau

The first nationwide population census was conducted in 1790 as required by the Constitution. Compared to modern censuses, the 1790 census was a haphazard operation. U.S. marshals were responsible for the enumeration, but were limited by their regular duties in the amount of time and attention they could devote. There were numerous difficulties resulting from travel conditions and public suspicion; it is not surprising that it took 18 months to complete the enumeration.

<sup>1</sup>Historical information in this and subsequent sections is largely drawn from (1) U.S. Bureau of the Census, *Fact Finder for the Nation*, pp. 2-7, and (2) National Archives, *Preliminary Inventory of the Records of the Bureau of the Census*, pp. 1-7.

This ad hoc, part-time quality continued to characterize census taking throughout the 19th century. A Census Office was formally established for the first time in connection with the census of 1850. However, it was a temporary office, disbanded when work on the 1850 census was completed and re-established for each census through 1900.

Responding to the growing pressures of a burgeoning population and demands for more quickly and more accurately reported data, the Congress took action in 1879 to place census collection on a more professional footing. The President was authorized to appoint supervisors of the census, who would recommend appropriate subdivisions of their districts and suitable persons to become enumerators. U.S. marshals were relieved of their census duties. In spite of this improved approach to census collection, serious problems remained. In 1890, the Superintendent of the Census expressed his difficulties thus:

. . . Although feeling justly proud of some of the achievements, the Superintendent of the Census acknowledges that much more remains to be done and that many imperfections exist; and in this the honest judgment of his collaborators concurs. These imperfections are not the results of dishonest work, of incompetent work; they are the result of the system under which the census is taken. Time enough is not allowed to start the machinery of this tremendous inquiry, embracing so many subjects and such infinite detail. The work (which, if properly done, would be sufficient for a life study of 40 to 50 bright specialists) is dumped upon the shoulders of a man taken from some other occupation, who was directed by an act of Congress to raise an army of 60,000 recruits, most of them necessarily raw, and perform the task. If he takes time to do it, the public becomes impatient. He puts it through rapidly, croakers rise up all over the land and declare the work cannot be correct. The remedy for all this is permanent Census Bureau, and already the intelligent public sentiment of all political parties is crystallizing in this direction. People are beginning to realize that the faults and errors of this census are not the shortcomings of any one man, but those of a system.<sup>2</sup>

<sup>2</sup>U.S. Department of the Interior, Census Office, *Compendium of the Eleventh Census: 1890, Part I - Population*, pp. xxxii-xxxiii.

The Census Bureau was permanently established by an act of Congress in 1902, based in large part on the recommendations of several governmental studies during the 1890's. The Census Bureau initially remained attached to the Department of the Interior, as had been Census Offices since 1850. In 1903, the Bureau was transferred to the Department of Commerce and Labor and remained within the Department of Commerce when the separate Department of Labor was established in 1913.

#### Change to Meet New National Requirements

To fulfill the purposes of congressional and tax apportionment specified by the Constitution, the decennial census needs only to provide the figures for the number of persons (before 1870 free and slave persons) in each State. From the beginning, however, the utility of the census as a vehicle for obtaining other kinds of information vital for rational policy-making was recognized. James Madison noted in 1789 that the Congress

...had now an opportunity of obtaining the most useful information for those who should hereafter be called upon to legislate for their country, if this bill was extended to embrace some other objects besides the bare enumeration of the inhabitants; it would enable them to adapt the public measures to the particular circumstances of the community.

Congress followed Madison's suggestion to the extent of adding questions on age and sex to the 1790 schedule.

As the Nation grew, the appetite for information kept pace. In 1820, questions on citizenship and industry were added to the population census schedule; in 1840, questions on education and disability; and in 1850, questions on marital status, place of birth, occupation, and value of real estate owned. Supplemental questionnaires also came into use in 1850, and these grew in scope. In 1890, there were 11 different areas of "social statistics," with 14 housing inquiries and over 190 dealing with population items. By 1890, the basic population questionnaire itself was a document of over 30 items covering a wide range of topics. While taking the population census in that year, the enumerators not only dealt with eight supplemental questionnaires, but also had to take the censuses of agriculture, manufactures, and mortality. Almost a full decade was required to process these censuses. Clearly, streamlining was in order.

The establishment of a permanent census organization contributed to competence and new developments in mechanization provided a more efficient operation. Prior to 1870, census results were processed by hand. In compiling the population data for the latter part of the 1870 census a "tabulating machine" came into use. It was a simple wooden device used to form condensed tables of figures or characters. During the 1880's Herman Hollerith, a Census employee, perfected a punchcard machine for tabulating census results. This device was used in the 1890 census and substantially increased the rate at which data could be tabulated.

In 1940, the Census Bureau introduced sampling to collect portions of the population data; this made enumeration less onerous for the public and processing less burdensome for the Bureau. In addition, other censuses were gradually separated from the population census and conducted at different times. (The census of agriculture, for example, is now taken in years ending in 4 and 9, and the economic census in the years ending in 3 and 7.) In 1940, however, a census of housing was conducted simultaneously with the census of population, and this practice has continued in subsequent decennial censuses. Still, the schedule has been kept to reasonable proportions.

In 1970, four households in five received a census form containing seven questions relating to each individual, three to make sure everyone was counted, and 13 relating to the house. For one household in five there were additional items. One household in 20 received a form which could total 89 questions, but these included inquiries about the house. Not all questions applied to every family.

As demands for census information on more subjects increased, so did demand for greater geographic detail. Traditionally, population census figures have been presented for the political units of the Nation--the States, counties, minor civil divisions (townships, towns, etc.), and incorporated places (municipalities, villages, etc.). In 1910, the Census Bureau heeded the urgings of Dr. Walter Laidlaw of New York City and others to provide data for small subdivisions of cities as a basis for studying neighborhoods. Census tracts were delineated in eight cities, and census results were tabulated for these small areas.

Successively, other non-political areal units, useful for studying social and economic behavior patterns, were established and recognized in

census tabulations. Standard metropolitan statistical areas were defined for the 1950 census and census county divisions for 1960. In 1970, data for approximate ZIP code areas will be assembled for release on computer tape.

#### **Recent Developments: The Computer Revolution**

The Bureau must convert hundreds of millions of items of raw data into meaningful statistical summaries in the course of a modern decennial census. The necessity for doing this quickly, accurately, and efficiently has stimulated Bureau efforts to mechanize and automate its work.

Near the end of World War II, the Bureau entered into exploratory discussions about the potential of an electronic computer--ENIAC--being constructed for the Army. A study contract was awarded, and then in 1948 a contract was signed for a UNIVAC system. In 1951, the first commercially-operated computer in the country was at work processing a portion of the 1950 census. The 1960 census was fully computerized. Over the years, the Bureau has added larger and faster machines to its hardware stock.

#### **Recent Developments: The Trend Toward The Bureau as Service Agency**

Before 1960, the Census Bureau was first and foremost a production agency; its product being a set of printed volumes summarizing the results of each census. (Unpublished small-area summaries and special tabulations were available on a limited basis.) The Bureau concerned itself with production problems--problems of complete and accurate enumeration, efficient and accurate processing. Its mission was accomplished when the books came off the press. Relatively little consideration was devoted to problems of data access and use. What kinds of people used census data for what kinds of purposes? Was the data output of the Bureau satisfactory to users' needs? Were books enough? The Bureau did not have complete answers to these questions.

By 1960, a service component was introduced into the Bureau's workload as a growing community of users voiced demands for more and better census products and services. Over the course of the post-World War II decades, the Nation's policy-makers, planners, and researchers became increasingly aware of troubling social ills--urban blight, highway congestion, overburdened educational systems, hardcore poverty, unemployment, and racial

discrimination. These problems required definition before the solutions could be rationally approached. Population and housing census data represented a storehouse of information for determining the nature and extent of social problems and a general understanding of American society.

The growing community of data users had certain information requirements which the Census Bureau could not satisfactorily meet if it continued primarily as a producer of printed reports.

Users required more numerous and detailed tabulations which presented data for small, census-recognized areas, such as blocks and enumeration districts. To meet this need with printed reports would have required an unmanageably large expansion in the number and size of the reports.

Users located in urban centers needed information for special geographic areas not recognized in regular census tabulations, such as school districts, traffic zones, or police precincts. Requests were received for breakdowns of categories and different cross-tabulations than presented in the regular publications.

Users wanted information in machine-readable form, suitable for efficient analysis to their own specifications. The published volumes could be coded, punched, and read onto tape by users, but only at considerable time and expense.

In short, the user community increasingly required a flexible census data base with a variety of access techniques to meet an expanding set of needs.

#### **Bureau Response: 1960**

The computer which enabled the Bureau to keep up with its census production responsibilities also made it possible for the Bureau to take major steps in serving user needs. The 1960 census was the first wholly computerized census operation. The 1960 census was also the first from which users in any significant numbers were able to receive special data products and services. (A few special projects were performed using 1950 census data.)

To produce the printed 1960 census results, the Bureau used microfilm copy of the questionnaires to create basic record tapes (BRT's) containing information about each household and

person enumerated. From these BRT's, summary tapes were prepared containing tabulations of population and housing characteristics for the various geographic areas recognized in census reports. Extracts of these tapes were run through high-speed printers to create the final published volumes. The basic record and summary tapes were necessary production tools; once created, they could also generate special data products and services in addition to the regular publications.

Users were quick in grasping the possibilities. Following the census, individuals and organizations from the government, business, and academic worlds came forward to sponsor special projects of various kinds at their own expense. Data products and services purchased by users included 1960 census summary tapes; special tabulations of the BRT (i.e., tabulations not contained in the printed reports or on summary tapes); public use samples on tape carrying individual characteristics of a one-in-a-thousand sample of the population (to protect confidentiality, identifying characteristics, such as name and area of residence, were not included); matching studies (data summaries produced by matching cases from user-furnished lists to census basic records); and maps, tables printed from summary tapes, and copies of out-of-print materials.

Special tabulations and services furnished to users covered the full range of subject matter and illustrated the creative potentials of census data. Representative special tabulations projects listed below demonstrate what can be done with census results:

The Department of Justice used a special tabulation of white/nonwhite income differentials in poll tax case litigation to support basic constitutional objectives.

The Engineer's Office of Bergen County, New Jersey, used a special tabulation of the county's low income families to plan low cost housing for the elderly.

The New York City Planning Board used special small-area tabulations of housing and households for New York City to analyze and project the city's manpower potential, job requirements, new housing needs, etc. (This is an example of a tabulation tailored to the user's special geographic requirements as opposed to special subject interests.)

A research center of a major university used a special tabulation of characteristics

of teenagers in a large city as part of a detailed analysis of factors associated with educational development and abnormal behavior.

In short, the demand for a broader range of census products and services was substantial after 1960. The Bureau found itself acquiring a new role of service agency to the user community.

But as with any new role, there were some problems and difficulties. The Bureau continued to owe first allegiance to its production responsibilities, including not only the decennial census, but other censuses and a heavy load of current surveys as well. Special projects sponsored by outside users had to wait their turn. Prolonged delays were sometimes encountered when special tabulations projects required new computer programming. Users contributed to delays by providing vague specifications or changing their specifications after tabulations were in the testing phase.

Users contracting for copies of summary tapes encountered problems of inadequate tape layout documentation and tape incompatibility (i.e., tape languages and characteristics not suitable for use on the sponsor's computer facilities). They sometimes discovered that the volume of material received from the census exceeded that which their computer facilities customarily accepted as input for a job.

The Bureau needed to improve its data delivery capabilities in order to adequately serve the Nation's data users. It also needed to provide the user community better information about available products and services and better education to meet the requirements of efficient data access.

#### **1970: The Bureau Becomes Data Deliverer as Well as Fact Finder**

On the basis of inquiries from users during the intercensal period, the Bureau is expecting the demand for a broad, flexible range of products and services to be heavy following the 1970 Census of Population and Housing. Accordingly, the Bureau is taking a number of steps to improve its data services capabilities just as it has long sought to improve data production capabilities. To plan developments for increasing the utility of the 1970 census data base, the Bureau created several new planning and research groups:

The New Haven Census Use Study Office explored ways of meeting local needs in the

New Haven community using the data base from the 1967 test census conducted there. The Use Study concentrated its efforts in the areas of user-oriented programing packages for producing special small-area tabulations, address matching, computer graphics, and automated address coding to append census geographic identification to local data files. It has prepared and issued several reports and program packages. (See Census Use Programs and Materials.)

The Data Access and Use Laboratory has contributed to the design and development of the data delivery system for the 1970 census. The Lab explores ways to more effectively meet the Nation's requirements for information from the 1970 census. Its current activities include the development of new data products, preparation of descriptive materials such as Small-Area Data Notes and the Census Users' Guide, support of the Summary Tape Processing Center program, and other efforts to assist data users. These and other programs and materials are described later, particularly in Census Use Programs and Materials.

The Tabulation and Data Delivery System Planning Group is composed of representatives from the Bureau's subject and processing divisions involved in the 1970 census and the Data Access and Use Laboratory. The group coordinates and oversees progress made by these divisions on 1970 census activities.

The experience of the Bureau with user needs has prompted a redefinition of the census product for 1970. There will be a broader data base from which data tabulations will be prepared for presentation in a variety of media (including, of course, printed reports which remain the most important medium of data access for many users). Developments to create a broad, flexible census data base include:

More data. There will be a few new subjects on the 1970 census questionnaire, such as activity 5 years ago, Spanish origin or descent, second home, etc. More importantly, as part of the regular publication program, there will be more items of information (representing primarily more cross-tabulations), particularly for small geographic areas. Computer tapes presenting summary data will contain substantially more items of data than will be printed.

Greater areal detail and flexibility. Data will be released for a larger number of small geographic areas, such as census tracts and city blocks, in more parts of the country as part of the regular tabulation program. The Bureau will also have the capability to produce special tabulations for user-defined areas.

Several media used for data delivery. Printed reports will be available on microfiche. Tabulations available on the printed page will also appear on computer tape, generally in greater detail. Microfilm display of the contents of a portion of the computer tapes will be released.

### References

John C. Beresford, "Projected Innovations in the Data Delivery System for the 1970 Census," *Demography*, IV, No. 2 (1967), pp. 753-758, describes some of the activities and projects of the Data Access and Use Laboratory.

National Archives, *Preliminary Inventory of the Records of the Bureau of the Census*, (Record Group 29), compiled by Katherine H. Davidson and Charlotte M. Ashby. (Washington, 1964). National Archives Publication No. 65-3.

U.S. Bureau of the Census, *Fact Finder for the Nation* (Washington, March 1965), summarized the history of census-taking in the United States and details the organization and activities of the present-day Census Bureau.

U.S. Bureau of the Census, *1970 Census Summary Tape User Memorandum No. 18*, "The Bureau's Continuing Role in Providing Data Access Services," August 1, 1969.