

# Data Collection and Processing Procedures

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## ENUMERATION AND RESIDENCE RULES

In accordance with census practice dating back to the first U.S. census in 1790, each person was to be enumerated as an inhabitant of his or her “usual residence” in Census 2000. Usual residence is the place where the person lives and sleeps most of the time. This place is not necessarily the same as the person’s legal residence or voting residence. In the vast majority of cases, however, the use of these different bases of classification would produce substantially the same statistics, although there might be appreciable differences for a few areas.

The implementation of this practice has resulted in the establishment of rules for certain categories of people whose usual place of residence is not immediately apparent. Furthermore, this practice means that people were not always counted as residents of the place where they happened to be staying on Census Day (April 1, 2000).

### United States

**Enumeration rules.** Each person whose usual residence was in the United States was to be included in the census, without regard to the person’s legal status or citizenship. As in previous censuses, people specifically excluded from the census were citizens of foreign countries temporarily traveling or visiting in the United States who had not established a residence.

Americans temporarily overseas were to be enumerated at their usual residence in the United States. With some exceptions, Americans with a usual residence outside the United States were not enumerated in Census 2000. U.S. military personnel and federal civilian employees stationed outside the United States and their dependents living with them, are included in the population counts for the 50 states for purposes of Congressional apportionment but are excluded from all other tabulations for states and their subdivisions. The counts of overseas U.S. military personnel,

federal civilian employees, and their dependents were obtained from administrative records maintained by the employing federal departments and agencies. Other Americans living overseas who were not affiliated with the U.S. government were not included in the census.

**Residence rules.** Each person included in the census was to be counted at his or her usual residence the place where he or she lives and sleeps most of the time. If a person had no usual residence, the person was to be counted where he or she was staying on Census Day.

People temporarily away from their usual residence on Census Day, such as on a vacation or business trip, were to be counted at their usual residence.

**Armed forces personnel in the United States.** Members of the U.S. Armed Forces were counted at their usual residence (the place where they lived and slept most of the time), whether it was on or off the military installation. Family members of armed forces personnel were counted at their usual residence (for example, with the armed forces person or at another location).

Personnel assigned to each Navy and Coast Guard vessel with a U.S. homeport were given the opportunity to report an onshore residence where they usually stayed when they were off the ship. Those who reported an onshore residence were counted there; those who did not were counted at their vessel's homeport.

**Personnel on U.S. flag merchant vessels.** Crews of U.S. flag merchant vessels docked in a U.S. port, sailing from one U.S. port to another U.S. port, or sailing from a U.S. port to a Puerto Rico port were counted at their usual onshore residence if they reported one. Those who did not were counted as residents of the ship and were assigned as follows:

- The U.S. port, if the vessel was docked there on Census Day.
- The port of departure, if the ship was sailing from one U.S. port to another U.S. port, or from a U.S. port to a Puerto Rico port.

Crews of U.S. merchant ships docked in a foreign port (including the U.S. Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam), sailing from one foreign port to another foreign port, sailing from a U.S. port to a foreign port, or sailing from a foreign port to a U.S. port were not included in the census.

**People away at school.** College students were counted as residents of the area in which they were living while attending college, as they have been since the 1950 census. Children in boarding schools below the college level were counted at their parental home.

**People in institutions.** People under formally authorized, supervised care or custody, such as in federal or state prisons; local jails; federal detention centers; juvenile institutions; nursing or convalescent homes for the aged or dependent; or homes, schools, hospitals, or wards for the physically handicapped, mentally retarded, or mentally ill; or in drug/alcohol recovery facilities were counted at these places.

**People in general hospitals.** People in general hospitals or wards (including Veterans Affairs hospitals) on Census Day were counted at their usual residence. Newborn babies were counted at the residence where they would be living.

**People in shelters.** People staying on Census Day at emergency or transitional shelters with sleeping facilities for people without housing, such as for abused women or runaway or neglected youth, were counted at the shelter.

**People with multiple residences.** People who lived at more than one residence during the week, month, or year were counted at the place where they lived most of the time. For example, commuter workers living away part of the week while working were counted at the residence where they stayed most of the week. Likewise, people who lived in one state but spent the winter in another state with a warmer climate ("snowbirds") were to be counted at the residence where they lived most of the year.

***People away from their usual residence on Census Day.*** Temporary, migrant, or seasonal workers who did not report a usual U.S. residence elsewhere were counted as residents of the place where they were on Census Day.

In some areas, natural disasters (hurricanes, tornadoes, flooding, and so forth) displaced households from their usual place of residence. If these people reported a destroyed or damaged residence as their usual residence, they were counted at that location.

People away from their usual residence were counted by means of interviews with other members of their families, resident managers, or neighbors.

## **MAJOR COMPONENTS OF THE CENSUS 2000 PLAN**

The Census Bureau prepared the Census 2000 plan to ensure the most accurate decennial census legally possible. This plan included data collection from 100 percent of households and housing units. In addition, the plan included an extensive statistical operation to measure and correct overall and differential coverage of U.S. residents in Census 2000. This operation consisted of a scientific sample of approximately 300,000 housing units and used regional groupings to generate corrected counts. To ensure that Census 2000 will be both more accurate and more cost-effective than the 1990 Census, the Census Bureau reviewed its procedures with input from a wide array of experts. In addition, the Census Bureau and Department of Commerce officials held more than 100 briefings for the members of Congress and their staff on the plan for Census 2000. The result has been an innovative departure from past practices that substantially increased overall accuracy and addressed the differential undercount of children, renters, and minorities. At the same time, the new methods of enumeration saved money and delivered results more quickly. The major components of the plan for Census 2000 included:

### **1. The Master Address File**

To conduct Census 2000, the Census Bureau needed to identify and locate an estimated 118 million housing units in the Nation. The Census Bureau accomplished this goal by developing and maintaining the Master Address File (MAF). This vital operation took place with the assistance of the U.S. Postal Service (USPS); other federal agencies; tribal, state and local governments; community organizations; and by an intensive canvass of selected areas. The resulting file was more comprehensive than ever before.

In 1990, the Census Bureau relied on address lists purchased from vendors. As these lists were originally generated for marketing purposes, they proved to be less accurate in low-income areas. As a result, during the 1990 census, housing units were missed often enough to contribute notably to the undercount problem. Plans for Census 2000 were designed to address weaknesses found in the 1990 address list. The Census 2000 MAF started with the USPS address list, a list that does not discriminate against certain areas because of their marketing potential. Partnerships with state and local officials, community organizations, and tribal governments also played an important role in making sure the MAF is accurate; the local officials who knew the areas best helped develop the MAF. Finally, the Bureau made intensive efforts to create address lists in rural areas well in advance of the census.

**City-style addresses.** The USPS uses the term “city-style” for an address such as “123 Main Street,” even though such an address may occur in small towns and increasingly along country roads. In areas where the USPS delivers mail primarily to city-style addresses, the Census Bureau created the MAF by combining addresses from the 1990 Census Address Control File with those addresses in the USPS Delivery Sequence File (DSF). The DSF is a national file of individual delivery point addresses. As part of a cooperative agreement, the USPS provided the Census Bureau with updated DSFs on a regular basis. The Bureau then located these addresses in its computer mapping system called TIGER® (Topologically Integrated Geographic Encoding and Referencing). If an address could not be located, the location was researched and resolved through an office operation or through assistance from local partners. As a result of this research, the Bureau identified new features and corrected and added address ranges to the TIGER® database.

**Noncity-style addresses.** In late 1998 and early 1999, the Census Bureau launched a comprehensive effort to canvass areas where most residences did not have city-style addresses. Over 30,000 canvassers visited approximately 22 million residences without a street address to enter their locations in the TIGER® system. The combination of innovative use of computer data and technology along with these visits allowed the Bureau to construct the most accurate address list ever, giving field enumerators more time to meet other challenges presented by the 2000 count.

**Remote areas.** In a few extremely remote and sparsely settled areas, census enumerators created the address list at the time of the initial census data collection while canvassing their assignment area and picking up or completing unaddressed questionnaires that the USPS previously had delivered to each household.

**Nontraditional living quarters.** A separate operation built an inventory of all facilities that were not traditional living quarters; for example, prisons and hospitals. The Bureau interviewed an official at each location using a Facility Questionnaire. The responses to the questionnaire identified each group quarters and any housing units associated with the location. The Bureau classified each group quarters and its associated housing units at the location according to whether they would be enumerated as part of special place enumeration or through regular enumeration. The Bureau added these group quarters and housing units to the MAF and linked them to the TIGER® database.

**Local government partnerships.** The Bureau relied on local knowledge to build the MAF. State, local, and tribal governments; regional and metropolitan planning agencies; and related nongovernmental organizations were encouraged to submit locally developed and maintained city-style address lists to the Census Bureau to enhance the MAF. The Bureau matched the local lists both to the MAF and TIGER® database and verified the status of each newly identified address through ongoing matches to updated address information from the USPS, other independent sources, and its own field operations. The Local Update of Census Addresses (LUCA) program was a partnership that allowed local and tribal governments to designate a liaison to review the portion of the MAF that covered their jurisdiction to help ensure its completeness. After processing the LUCA input, the Census Bureau provided feedback on the status of the adds, deletes, and corrections of addresses to the liaisons. The updated address list then was used to deliver census questionnaires.

## **2. Public Outreach and Marketing**

In 1990, the mail response rate dropped in spite of the Census Bureau’s support of a public service announcement (PSA) effort that aired donated advertisements. Part of this drop was caused by the Bureau’s inability to ensure that PSAs were broadcast at optimum times and in appropriate markets. An evaluation of the 1990 PSA campaign noted that the ads were seldom placed at optimal times because decisions about when to air PSAs rested with local radio and television stations. Sixty percent of the U.S. population received 91 percent of the census advertising impact; 40 percent received only 9 percent. Based on its studies of prior outreach campaigns, the Bureau concluded that the professional control of a paid media campaign would produce the best results. Census 2000 launched a vigorous public outreach campaign to educate everyone about the importance of being counted. Among the improvements in public outreach and marketing were:

**Partnerships/targeted community outreach.** The Census Bureau built partnerships with local and tribal governments, businesses, and community groups to get the word out, to endorse the census, and to encourage constituents to respond. Beginning in 1996 and expanding in 1998, the Bureau hired government and community specialists to build relationships with local community and service-based organizations, focusing on groups representing traditionally undercounted populations. The Bureau deployed an extensive outreach program to reach schools, public sector employees, American Indians, and religious organizations. Businesses, nonprofit groups, and labor organizations also were asked to endorse participation and to publicize the census through employee newsletters, inserts with paychecks, and through communications with members and local chapters.

**Direct mail.** The census questionnaire and related materials delivered to individual addresses carried the same themes and messages as the overall campaign.

**Public relations.** The Census Bureau used public meetings and the news media to inform the public about the value of the census and to encourage response. Communications specialists were assigned to each field office to perform media outreach, to respond to media inquiries, and to coordinate the dissemination of the Census 2000 message. In many communities, the Census Bureau established local broadcaster/news director committees to emphasize Census 2000 to television viewers and radio listeners through broadcast segments and editorials in newspapers.

**Paid advertising.** The Census Bureau planned a targeted campaign to reach everyone through ads in newspapers, magazines, billboards, posters, radio, and television. A private advertising firm designed and implemented the Census 2000 advertising campaign. The Census Bureau conducted a first-ever paid advertising campaign, including a national media campaign aimed at increasing mail response. The campaign included advertising directed at raising mail response rates among historically undercounted populations, with special messages targeted to hard-to-enumerate populations. Advertising also focused on encouraging cooperation during the nonresponse follow-up procedures.

**Media public relations.** The Census Bureau assigned media specialists to the regional census centers to cultivate local press contacts and respond to local media inquiries.

**Promotion and special events.** A variety of special events, including parades, athletic events and public services television documentaries were cosponsored by state, local, and tribal governments and by community organizations and businesses to motivate people to respond.

**More ways to respond.** In 2000, in addition to mailing the census questionnaires, the Census Bureau made the forms available in stores and malls, in civic or community centers, in schools, and in other locations frequented by the public. A well-publicized, toll-free telephone number was available for those who wished to respond to the census by telephone. People also had the option to respond to the short form via the Internet.

**Multiple languages.** In 2000, as in all prior decennial censuses, questionnaires were in English (the Census Bureau has made Spanish-language questionnaires available in the past). However, for the first time in a decennial census, households had the option to request and receive questionnaires in five other languages (Spanish, Chinese, Korean, Tagalog, and Vietnamese). In addition, questionnaire assistance booklets were available in 49 languages.

### **3. Questionnaire Mailout/Mailback**

In Census 2000, the questionnaire mailout/mailback system was the primary means of census-taking, as it has been since 1970. The short form was delivered to approximately 83 percent of all housing units. The short form asked only the basic population and housing questions, while the long form included additional questions on the characteristics of each person and of the housing unit. The long form was delivered to a sample of approximately 17 percent of all housing units.

USPS letter carriers delivered questionnaires to the vast majority of housing units that had city-style addresses. In areas without such addresses, enumerators hand delivered addressed census questionnaires to each housing unit. In very remote or sparsely populated areas, enumerators visited each housing unit and picked up or completed unaddressed questionnaires that the USPS previously delivered to each unit.

#### **4. Collecting Data on Populations Living in Nontraditional Households**

During a decennial census, the Census Bureau not only counts people living in houses and apartments, but also must count people who live in group quarters and other nontraditional housing units, as well as people with no usual residence. These units include nursing homes, group homes, college dormitories, migrant and seasonal farm worker camps, military barracks or installations, American Indian reservations, and remote areas in Alaska.

Some of the methods that were used for these special populations are listed below:

- The Census Bureau designed an operation for Census 2000 called Service-Based Enumeration (SBE) to improve the count of individuals who might not be included through standard enumeration methods. The SBE operation was conducted in selected service locations, such as shelters and soup kitchens, and at targeted outdoor locations.
- Another special operation counted highly transient individuals living at recreational vehicle campgrounds and parks, commercial or public campgrounds, marinas, and even workers' quarters at fairs and carnivals.
- The Census Bureau worked with tribal officials to select the appropriate data collection methodologies for American Indian reservations.
- Remote areas of Alaska, often accessible only by small airplanes, snowmobiles, four wheel-drive vehicles, or dogsleds, were enumerated beginning in mid-February. This special timing permitted travel to these areas while conditions are most favorable.
- The Census Bureau worked with the Department of Defense and the U.S. Coast Guard to count individuals living on military installations, and with the U.S. Maritime Administration to identify maritime vessels for enumeration.

#### **5. Collecting Long Form Data to Meet Federal Requirements**

The census is the only data gathering effort that collects the same information from enough people to get comparable data for every geographic area in the United States. The Census Bureau has used the long form on a sample basis since 1940 to collect more data, while reducing overall respondent burden. The Census 2000 long form asked questions addressing the same 7 subjects that appeared on the short form, plus an additional 27 subjects which were either specifically required by law to be included in the census or were required in order to implement other federal programs.

#### **6. Retrieving and Processing the Data From the Returned Forms**

The Census Bureau contracted with the private sector to secure the best available data capture technology. This technology allowed the Census Bureau to control, manage, and process Census 2000 data more efficiently.

The Census 2000 Data Capture System has been a complex network of operational controls and processing routines. The Census Bureau recorded a full electronic image of many of the questionnaires, sorted mail-return questionnaires automatically, used optical mark recognition for all check-box items, and used optical character recognition to capture write-in character based data items. The system allowed the Census Bureau to reduce the logistical burdens associated with handling large volumes of paper questionnaires. Once forms were checked in, prepared, and scanned, all subsequent operations were accomplished using the electronic image and data capture.

#### **7. Matching and Unduplication**

One of the main goals of Census 2000 was to make it simpler for people to be counted by having census forms available in public locations and providing multiple language translations. Responses also were accepted over the telephone and, for the short form only, on the Internet. These options made it easier for everyone to be counted, but increased the possibility of multiple responses for a given person and household. Advances in computer technology in the areas of computer storage, retrieval, and matching, along with image capture and recognition, gave the Census Bureau the flexibility to provide multiple response options without incurring undue risk to

the accuracy of the resulting census data. Unduplication of multiple responses in past censuses required massive clerical operations. Modern technology allowed the Census Bureau to spot and eliminate multiple responses from the same household.

## **8. Geographic Database Development—TIGER®**

The Census Bureau's TIGER® (Topologically Integrated Geographic Encoding and Referencing) system provided the geographic structure for the control of the data collection, tabulation, and dissemination operations for Census 2000. The TIGER® system links each living quarter to a spatial location, each location to a specific geographic area, and each geographic area to the correct name or number and attributes. The database constantly changes; for example, when new streets are built and the names and address ranges of existing streets change. To ensure that the TIGER® database is complete and correct, the Census Bureau works with other federal agencies; state, local and tribal governments; and other public and private groups to update both its inventory of geographic features and its depiction of the boundaries, names, and attributes of the various geographic entities for which the Census Bureau tabulates data.

The Census Bureau obtains updates to the features in the TIGER® system, including associated address ranges, from its various address list improvement activities, from partnership efforts like the Local Update of Census Addresses (LUCA) program, from digital files provided by some local and tribal governments, and from local and tribal governments in response to a preview of the census map of their jurisdictions.

As a part of updating the TIGER® system, the Census Bureau conducted boundary surveys in 1998 and 1999 to determine the boundaries that were in effect on January 1, 2000, which were the official Census 2000 boundaries for functioning governments. The Census Bureau also relied on other programs to update the TIGER® boundaries data, including a program that allowed local or tribal officials to review proposed Census 2000 boundaries a program that allowed local and tribal participants the opportunity to delineate Census 2000 participant statistical areas (block groups, census county divisions, census designated places, and census tracts) and additional programs that offered participants the opportunity to identify other areas for which the Census Bureau would tabulate data (for example, traffic analysis zones).

## **9. Field Offices and Staffing**

The Census Bureau opened a national network of temporary offices from which employees collected and processed the data for Census 2000. Establishing the office network required, for most offices, the leasing of office space, purchasing furniture and equipment, purchasing and installing computer hardware and software, and establishing voice and data line connections. The plan for the office structure included:

- **12 Regional Census Centers (RCCs).** Through a network of Census Field Offices, the RCCs managed all census field data collections operations, address listings, and address list enhancement for city-style address areas; coordinated the LUCA program; produced maps; updated TIGER®; worked with local participants in the Public Law 94-171 Redistricting Data Program; and recruited temporary staff.
- **402 Census Field Offices (CFOs).** Opened in September 1998, these offices helped with address listing; conducted local recruiting; and performed clerical review of completed field address listing work.
- **520 Local Census Offices (LCOs).** These offices produced enumerator maps and assignments; conducted local recruiting; conducted outreach and promotion; conducted group quarters and service-based enumeration activities; conducted update/leave and list/enumerate operations; conducted nonresponse follow-up, coverage improvement follow-up, and address verifications; and performed the block canvass operations.
- **3 New Data Capture Centers (DCCs).** These centers checked in mail returns, prepared questionnaires, and conducted data capture.
- **1 National Processing Center (NPC).** In addition to performing the functions of a Data Processing Center, it processed address listing data and performed coding of questionnaire data.

To conduct a successful Census 2000, the Census Bureau recruited and tested hundreds of thousands of applicants for a wide range of positions, such as local census office managers, enumerators, partnership specialists, media specialists, and clerks. This required an extraordinary recruiting effort throughout the country. Every job applicant was required to pass a written test and was screened for criminal history. Applicants selected for employment had to take an oath of office and sign an affidavit agreeing not to disclose census information.

Many factors converged to present the Census Bureau with unprecedented challenges in hiring, retraining, and training the necessary employees for Census 2000. To address this challenge, the Census Bureau implemented several new approaches:

- Innovative methods of setting pay and incentives.
- Expanding the potential labor force by working with other federal agencies and state agencies to reduce barriers presented by various income transfer programs, and encouraging recipients of these programs to work for the Census Bureau. Consistent with these efforts, the Census Bureau hired more welfare-to-work employees than any other federal agency.
- Earlier and expanded training for enumerators.

#### **10. Data Collection: Basic Enumeration Strategy**

To ensure that the Census Bureau obtained a completed questionnaire from every household, or as close to that as possible, the Census Bureau developed a ten-part, integrated enumeration strategy.

- The first part of this strategy ensured that a questionnaire was delivered to every housing unit, by one of three data collection methods:
  - **Mailout/mailback.** U.S. Postal Service delivered questionnaires to every “city style” housing unit with a street name and house number.
  - **Update/leave.** Census enumerators delivered questionnaires to housing units without street names and house numbers to be mailed back, mainly in rural areas, and corrected and updated the address list and maps for any additions or errors.
  - **List/enumerate.** In remote and sparsely populated areas, enumerators visited every housing unit and completed the enumeration as delivered.
- The second part of this strategy provided people with assistance, as needed, to complete and return their questionnaires.
  - **Telephone questionnaire assistance (TQA).** The Census Bureau operated a toll-free TQA system, in English, Spanish, and several other languages, providing automated touch-tone answers to common questions, personal operator answers to those requesting it, and special service for the hearing impaired to assist them in completing a short form. Callers also could request a questionnaire.
  - **Internet.** Respondents were able to access an Internet Web site to both receive assistance and, for short forms, submit their responses.
  - **Questionnaire assistance centers.** The Census Bureau opened Walk-In Questionnaire Assistance Centers in convenient locations to assist respondents with filling out questionnaires in person. Bilingual staff was available in these centers.
  - **Questionnaire assistance guides.** Questionnaire Assistance Guides were available in 49 languages.
- The third part of this strategy provided a means for people who believed they had not received a questionnaire or were not included on one. Part of this operation was targeted to members of historically undercounted groups. The major element of this operation was the distribution of “Be Counted Questionnaires.” The Census Bureau distributed these questionnaires at public locations, such as Walk-In Questionnaire Assistance Centers and some public and private facilities, staffed with bilingual competencies when appropriate. These forms were available in English, Spanish, Korean, Chinese, Vietnamese, and Tagalog.

- The fourth part of this strategy was designed to enumerate people who did not live in traditional housing units, including group quarters situations, such as nursing homes and college dormitories; people living in migrant farm worker camps, on boats, on military installations; and federal employees living overseas. This part of the strategy was expanded further because the Census 2000 Dress Rehearsal results indicated that, compared to 1990, many more people did not live in traditional housing units.
  - **Group quarters enumeration.** This operation identified the location of all group living quarters and made advance visits to each group quarter. Census staff listed all residents in April 2000 and distributed questionnaire packets.
  - **Transient night operation.** Transient Night enumerated people living a mobile lifestyle by visiting and interviewing people at racetracks, commercial or public campgrounds and those for recreational vehicles, fairs and carnivals, and marinas.
  - **Remote Alaska enumeration.** This operation sent out enumerators to deliver and complete questionnaires for people living in outlying or remote settlements in Alaska.
  - **Domestic military/maritime enumeration.** The Census Bureau, in cooperation with the Department of Defense and U.S. Coast Guard, identified living quarters and housing units on military installations and ships assigned to a U.S. home port and used appropriate enumeration methods.
  - **Overseas enumeration.** The Census Bureau, in cooperation with the Department of Defense and other departments, counted federal employees assigned overseas (including members of the armed forces) and their dependents, for apportionment purposes.
- The fifth part of this strategy targeted people with no usual residence or address. This operation was conducted at selective service locations, such as shelters and soup kitchens and non-sheltered outdoor locations.
- The sixth part of this strategy deployed special data collection methods to improve cooperation and enumeration in certain hard-to-enumerate areas.
  - Regional Census Centers used the planning database and their knowledge of local conditions to identify appropriate areas for targeted methods. A team of enumerators then went to targeted areas, such as areas with high concentrations of multiunit buildings, safety concerns or low enumerator production rates, and conducted team enumerations.
  - Mail response rates and maps were available to local and tribal officials so they could work with Census Bureau staff to identify low-response areas and implement additional outreach and publicity efforts and targeted enumeration efforts.
  - In partnership with local and tribal governments and community-based organizations, local census offices established Walk-In Questionnaire Assistance Centers in locations, such as community centers and large apartment buildings, to provide assistance in English, Spanish, and other and foreign languages.
  - The Be Counted Program made unaddressed questionnaires available in the Walk-In Assistance Centers and other locations.
  - Letters were mailed to managers of large multiunit structures and gated communities informing them of upcoming census operations.
  - In preidentified census blocks, census enumerators canvassed the blocks, updated the address list, and delivered and completed census questionnaires for all housing units.
  - In preidentified blocks originally classified as “Mailout/Mailback” areas, enumerators delivered the questionnaire and updated the address list (Urban Update/Leave).
- The seventh part of this strategy, coverage-edit and telephone follow-up, reviewed completed questionnaires for potential missing, incomplete, or inconsistent data.

- **Coverage edit.** The Census Bureau checked completed questionnaires for discrepancies between the number of persons reported and the number of persons for whom information was provided, forms returned where population count was blank, and forms for certain households that contained complex living arrangements.
- **Follow-up.** Telephone clerks contacted and reinterviewed the households with discrepancies identified after mail returns were data captured; field staff resolved discrepancies found on enumerator returned questionnaires.
- **Content edit.** Computer operations identified missing or incomplete responses to population or housing units and used statistical imputation to complete the information.
- The eighth part of this strategy, nonresponse follow-up (NRFU), was the effort to secure a response in Census 2000 from every housing unit and resident. One hundred percent of nonresponding households were followed up.
  - In the initial period, the Census Bureau used reminder publicity urging people to return their questionnaires.
  - Following the period of mail response, nonresponding households were identified and listed.
  - Enumerators visited all nonresponding addresses to obtain a completed questionnaire for each household.
  - In mailout/mailback areas, enumerators also followed up 100 percent of housing units identified as nonexistent or vacant by the U.S. Postal Service.
  - In update/leave areas, enumerators followed up 100 percent of housing units where the Census Bureau was unable to deliver questionnaires.
  - The Census Bureau conducted quality assurance checks of NRFU to ensure the completeness and accuracy of the operations.
- The ninth part of strategy involved additional operations to improve the coverage of Census 2000.
  - In mailout/mailback areas, enumerators revisited addresses for which questionnaires were returned in NRFU reporting the housing unit as vacant or delete and which were not initially identified by the U.S. Postal Service as undeliverable as addressed.
  - In update/leave areas, enumerators revisited addresses for which a questionnaire was returned as vacant or nonexistent in NRFU, but the questionnaire was not returned as undeliverable during the update/leave operation.
  - In both mailout/mailback and update/leave areas, mail returns checked in but not data captured were rechecked and, if necessary, revisited.
- The tenth part of this strategy was unduplication, which involved reviewing and selecting person information when more than one questionnaire data set was reported for a single address. Dress Rehearsal results showed that the multiple ways in which people could respond to the census increased the possibility of more than one response being submitted for a given person or household. Automated matching technologies allowed the Census Bureau to resolve situations where more than one form was received for an address.

## 11. Special Populations

### American Indian and Alaska Native Areas and Hawaiian Home Lands

The Census Bureau based its strategy for enumerating the populations in the American Indian and Alaska Native Areas (AIANAs) and Hawaiian home lands on building partnerships for:

- **Address list development.** The Census Bureau used U.S. Postal Service's Delivery Sequence Files in AIANAs and Hawaiian home lands where there were city-style addresses. In other areas, the Census enumerators used the "update/leave" method where a form is left with the respondent for return by mail. In more remote areas, the census enumerator actually delivered the

form and conducted the census interview all in one visit. Tribal governments had an opportunity to participate in the LUCA program. The Census Bureau worked with tribal officials to select the appropriate data collection methodology for each area.

- **Geographic programs.** There were many programs available to review and define geographic areas (see [Appendix A](#) for more details).
- **Marketing.** Census Bureau staff and tribal liaisons compiled lists of available media for paid advertising and promotion. The Census Bureau also enlisted the help of tribal liaisons and locally established “Complete Count Committees” to assist with promotional activities.
- **Field operations.** The Census Bureau worked with tribal governments to assist in all levels of field operations, including training local staff in cultural awareness, assisting in recruiting efforts, and identifying locations for census questionnaire assistance centers.
- **Data dissemination.** While most data were processed in the same way as data for rest of the nation, the Census Bureau worked with tribal governments to meet their data needs.

### **Puerto Rico**

The Census 2000 operations in Puerto Rico were comparable to activities in the 50 states and the District of Columbia. The Census Bureau worked in partnership with the government of Puerto Rico to ensure that Census 2000 data met the federal legal requirements.

- **Build partnerships at every stage of the process.** The Census Bureau entered a Memorandum of Agreement with the governor of Puerto Rico which outlined mutual roles and responsibilities. In consultation with the government of Puerto Rico, census questionnaire content was developed to meet the legislative and programmatic needs of Puerto Rico. A separate advertisement and promotion campaign was conducted in Puerto Rico to build awareness of the census and boost participation. Address list development allowed Puerto Rico to participate in the LUCA program.
- **Census questionnaires.** Census questionnaires were readily available in Spanish and also in English, if requested. In Puerto Rico, only update/leave method was used to distribute questionnaires. However, questionnaires also were placed in Walk-In Questionnaire Assistance Centers and other locations identified through consultation with local partners.
- **Use of technology.** The Census Bureau made use of the same technological advances that were used in the United States. Many operations performed clerically in 1990 were automated. Data users have access to Census 2000 data products through the Internet using the American FactFinder (AFF) system. The AFF offers a separate user interface utilizing the Spanish language for Census 2000 Puerto Rico data.
- **Special techniques to improve coverage.** The update/leave methodology for census data collection was used for the first time in Puerto Rico. Census enumerators updated the Master Address File for Puerto Rico while delivering questionnaires. Respondents had the opportunity to complete the census questionnaires and return them by mail.

### **Island Areas**

The Census Bureau conducted the Census 2000 operations in American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands (collectively referred to as the “Island Areas”) in partnerships with the government of each area. These partnerships ensured that Census 2000 data met federal legal requirements, as well as the specific needs of each area. The Census 2000 operations in the Island Areas were built around the following:

- **Data collection.** Data collection in the Island Areas used the list/enumerate method. This decision was based on recommendations from Island Area representatives and an analysis of the various data collection methodologies. Unlike stateside list/enumerate procedures, the Census Bureau delivered Advance Census Reports before the list/enumerate operation and asked respondents to complete the form and hold it for enumerator to pick up.

- **Build partnerships at every stage of the process.** The Census Bureau developed and signed a Memorandum of Agreement with the governor of each Island Area that outlined mutual roles and responsibilities. In consultation with the governments of the Island Areas, census questionnaire content was developed to meet the legislative and programmatic needs of each Island Area. A separate advertisement and promotion campaign was developed for each Island Area to build awareness of the census and boost participation.
- **Census questionnaires.** Census questionnaires and other forms were readily available to respondents in convenient locations identified through consultation with local partners.
- **Use of technology.** The Census Bureau made greater use of the telephone to provide assistance to respondents with questions about Census 2000. Data users have access to Census 2000 data and products through the Internet using the American FactFinder system.

## **12. Telecommunications Support and Automated Data Processing**

Using dedicated links and other secure lines, the Census 2000 telecommunications network linked all census offices including: Census Headquarters in Suitland, Maryland, the 520 Local Census Offices, the 12 Regional Census Offices, the 12 Regional Census Centers, the Puerto Rico Area Office, the Maryland Computer Center in Bowie, the National Processing Center in Jeffersonville, Indiana, and the three contracted Data Capture Centers (Phoenix, AZ, Pomona, CA, and Essex, MD). The Census Bureau also established communication links with planned commercial telephone centers to assist with the Telephone Questionnaire Assistance program and the coverage edit follow-up program.

The use of electronic imaging reduced the logistical and staffing requirements of handling large volumes of paper questionnaires. Some components of data capture were performed by private-sector partners. The Census Bureau used commercially available advanced hardware and software rather than limiting itself to creating in-house solutions.

The most significant features of the Data Capture System included (1) work divided among four centers, (2) full electronic imaging and processing of questionnaires, (3) automated sorting of mailed responses, (4) optical mark recognition for check-box data, (5) optical character recognition for write-in data with automated processes to resolve difficult cases, and (6) quality assurance checks.

## **13. Quality Assurance**

To detect, correct, and minimize performance errors in critical census operations, the Census Bureau developed individual quality assurance plans for all activities that could contribute to errors in outcome, such as misprinted census forms, inaccurate maps or address lists, faulty intelligent character recognition, inadequate training of enumerators, and miskeyed entries.

## **14. The Census 2000 Dress Rehearsal in 1998**

A good dress rehearsal is crucial to a successful census, and the key to any dress rehearsal is making it as much like the actual event as possible. The Census Bureau conducted Census 2000 Dress Rehearsal in three sites: Sacramento, California; Columbia, South Carolina along with 11 surrounding counties in north central South Carolina; and the Menominee American Indian Reservation in northeastern Wisconsin.

Since the summer of 1996, the Census Bureau worked closely with local officials and community-based organizations in each of the three sites to plan and build the various infrastructures needed to ensure a successful dress rehearsal. These joint activities included refining the geographic database, building and refining the address list, and working with community and tribal organizations to plan effective outreach and promotion efforts. Also, the Census Bureau recruited staff in all three sites to complete address list development and verification.

The dress rehearsal allowed for a thorough demonstration of the most critical procedures for Census 2000. These procedures included address list development; marketing and promotion; and data collection, processing, and tabulation. The dress rehearsal plan also demonstrated the use of statistical sampling in four major census operations: nonresponse follow-up, housing units designated as undeliverable as addressed by the U.S. Postal Service, integrated coverage measurement (ICM), and the long form survey.

## **15. Data Dissemination Through the Internet**

The census provides a wealth of data that researchers, businesses, and government agencies are eager to use. Taking advantage of modern computer and Internet capabilities, the Census Bureau planned to make data from Census 2000 more readily available than any previous decennial census data. The Census 2000 data are tabulated using the Data Products Production (DPP) system and disseminated using the American FactFinder (AFF) system on the Internet, in addition to CD-ROMs and DVDs. The AFF provides an interactive electronic system to allow data users to access data products, documents, and online help, as well as to build custom data products.

The Census Bureau solicited the advice and recommendations of data users throughout the planning, design, and testing stages of the AFF system (initially known as the Data Access and Dissemination System (DADS)). The system is accessible to the widest possible array of users through the Internet and all available intermediaries, including the nearly 1,800 data centers and affiliates, the 1,400 Federal Depository libraries and other libraries, universities, and private organizations. It also allows users to create customized products, such as tables, charts, graphs, and maps for census geographic areas of their choice, and access metadata that provide documentation and explanatory information for data subjects and geographic areas.

## **16. Evaluation and Preparation for 2010**

After the completion of Census 2000, the Census Bureau plans to conduct a variety of post census evaluation studies, as it has after all the previous censuses. These studies will help data users, both within and outside the Census Bureau, to assess the data and plan for the 2010 Census. The evaluation studies generally rely on demographic analysis, statistical methods, and ethnographic analyses.