

## CENSUS 2000: DEVELOPING A TRADITIONAL CENSUS PLAN

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### A. Introduction

In the spring of 1998, the United States Census Bureau embarked upon an intensive planning process to develop an alternative approach to conducting Census 2000 without the use of statistical sampling. This plan was publicly released in January 1999. Later that month, the US Supreme Court held that the Census Bureau could not use statistical sampling for reapportionment purposes, but left open the issue of using statistical sampling techniques for other purposes, such as state redistricting, allocation of federal funds and the Bureau's intercensal population estimates program. In response to that decision, the Census Bureau modified the plan for taking the Census by using a more traditional approach, and it is now implementing that modified plan.

This paper first describes the planning process and then discusses the current plan for conducting a traditional census.

### B. Focus of the Planning Process

A census without the use of statistical sampling has two fundamental differences: 1) Census Bureau staff would personally visit and collect data from all households not responding to the census by mail and 2) the accuracy of the data must depend solely on improved collection, rather than a combination of data collection and evaluation. Therefore, the planning effort focused on strategies to facilitate conducting the Nonresponse Followup operation and strategies designed to improve quality, in general, and coverage, in particular.

### C. Steps of the Planning Process

The planning process began with a review of 1990 Census methodologies and subsequent research to identify programs or operations that were candidates for consideration because of their applicability to the two broad strategies of interest. A compilation of potential operations identified through this process was submitted to the US Congress in April 1998.

An initial framework was developed showing how broad components of programs and operations might fit

together, integrating traditional methods with those components that are necessary for any census methodology. Twenty components were identified for further research by teams of Census Bureau staff; and charters describing the teams' goals and responsibilities were written.

In July 1998 the framework and 20 component charters were in place for consideration by staff teams. All Census Bureau divisions involved in the census were included in the teams which conducted the detailed research and analysis work. For 3 months over 200 Bureau staff participated. This exercise was an enormous drain on staff resources. Census Day was less than two years away and there was intensive work underway on implementation activities applicable to any census design. Additionally, the Bureau was engaged in processing and evaluating data from the 1998 Dress Rehearsal in preparation for Census 2000.

Each team proposed ideas for enhancements to the census plan, analyzing operational issues, evaluating the benefit to be achieved, estimating operational workloads and other cost assumptions, determining activity durations for scheduling purposes, and, finally, recommending those proposals considered by the team to be viable candidates for inclusion in the traditional census plan. The teams consisted of technical staff with expertise in the area of consideration. No limitations of resource needs or cost constraints were placed on the teams as they considered proposals. Therefore the operational analyses conducted were based on more operational and objective measures of data availability, processing capacity, availability of necessary technical knowledge, and the like.

The final step of the planning process was to evaluate each of the recommended proposals, winnow out those that would not be considered further, and to incorporate the resulting proposal into a comprehensive plan that was credible and met the goals for Census 2000. Each proposal was evaluated on several factors. The major factor was its capability to meet the Bureau's data quality goal, defined as reducing the differential and net undercounts while maintaining a minimal level of erroneous enumerations (in which an individual is counted as more than one person). Another important factor considered was the ease of implementation. In the years prior to the Census, the Bureau was restricted by staffing and other budgetary ceilings, both in its regional

offices and at headquarters. Any proposal that required additional experienced staff, was considered difficult to implement (not feasible), given that Census Day was only one year away. Two other factors were considered (though they bore less weight in evaluating and deciding on proposals): impact on public perception and data quality. Cost was not a consideration, provided the proposal was deemed beneficial in improving coverage.

This stage of the planning process was performed by the operational managers from those divisions with responsibility for Census 2000. These were the persons who had the expertise regarding potential coverage improvement gains and other quality measures, and were also the ones with detailed knowledge about the amount of effort required for implementation and availability of resources. The analysis of the proposals and the integration of the final components into a comprehensive plan took considerable time from the operational managers' work schedules during the month of October.

After receiving input from the executive staff of the Census Bureau, the final plan was compiled and made available to the Department of Commerce and then the Congress. Staff also developed a milestone schedule of major activities and a ballpark cost estimate. This cost estimate was a rough approximation because the specific details of each operation had not yet been worked out.

The US Supreme Court decision of January 1999 prompted the Census Bureau to immediately work out the detailed activities of the traditional census plan. The entire 4,000 line Master Activity Schedule was updated to reflect the new plan and details delivered to the US Congress in March. The President's Census 2000 budget request for fiscal year 2000 was revised and delivered to the US Congress by June. The updated plan is being implemented.

#### **D. Traditional Census Components of the Current Census 2000 Operational Plan**

There are major operations fundamental to taking a census irrespective of specific design options. For example, the Bureau has to develop a master list of residential addresses and assign those addresses to their proper geography for tabulation purposes. Content must be determined and questionnaires designed and printed to collect the agreed upon data. Field infrastructure and data processing systems need to be designed to collect and process the information. Data dissemination methods need to be established. The Bureau routinely develops an evaluation and research program to inform its planning process for the next decade. This paper deals only with

those components which are unique to the traditional census design or are enhancements to the components planned for the sampling census.

The traditional census components can be categorized into five major classes: 1) methods to improve public response, 2) methods to facilitate the Nonresponse Followup operation, 3) coverage improvement methods, 4) quality assurance and training enhancements, and 5) the accuracy and coverage evaluation program.

#### **1. Methods to Improve Public Response**

Methods to improve public response directly affect how much nonresponse followup the Bureau must plan for. Either the US Postal Service or Census staff will deliver questionnaires to most of the addresses in the United States. The Census Bureau projects that 61% of the households will mail these questionnaires back to the Bureau for processing. Thus, census staff need to visit the remaining 39%, or 45 million addresses, to collect the data in person. Needless to say, doorstep interviewing is labor-intensive and requires substantial staffing resources. Strategies that increase public response will directly result in decreasing the Nonresponse Followup workload, facilitating the operation.

The traditional census plan augmented two of the sampling census programs to improve public response: the partnership program, and the paid advertising and promotion program. The partnership program works with governmental entities and community organizations to foster awareness and gain cooperation. The traditional census plan increases the number of partnership staff to 644 so that the Bureau has the ability to foster cooperative relationships with additional governments and community organizations that represent historically hard-to-enumerate groups. The Bureau will also provide limited in-kind funding to support partners in generating awareness of and motivating participation in the census. Examples of such support include printing posters with the community's own logo that promote the Census and buying media time and print space from local media outlets. This is particularly important to small governments and community organizations that lack funds.

Census 2000 is the first census to use a paid advertising campaign rather than to rely on public service announcements to encourage households to return their questionnaires by mail. Motivation to return the census questionnaires is the primary message of the campaign. The traditional census plan expands the paid advertising campaign to include two new messages. The first is an

educational message. Its marketing target is the historically hard-to-enumerate areas of the country. The message is designed to educate the people in these areas about the benefits of the census and why it is important to participate in this major civic endeavor. It will be aired in November 1999 and will continue until the primary advertisement begins in January 2000.

The second paid campaign will run concurrently with the Nonresponse Followup operation. This message is designed to gain public cooperation with the census-takers conducting the personal visit enumeration at addresses for which a questionnaire was not returned. This motivational message is expected to facilitate the enumeration process and may result in improved coverage of persons at those addresses.

The Bureau will also augment its promotional program. Funding is available to expand into non-traditional advertising methods, such as placing posters about the census in community centers, religious centers, and local businesses. The Census Bureau is contracting for a public relations firm to develop a national publicity event that showcases the census throughout the U.S. by involving local participation and media.

The last enhancement under the promotional category is the Census in the Schools program. The Census Bureau has contracted with Scholastic, Inc. to develop a curriculum for elementary and secondary grade students to learn about the census and to use census data in classroom activities. Under the traditional census plan, curriculum materials for the 1999-2000 school year will be available to all teachers in elementary schools, and to all social studies and mathematics teachers in secondary schools. On or about Census Day, teachers will be sent fliers to send home with students describing the census and the importance of the participation of all residents in the census process.

## **2. Nonresponse Followup**

Unlike the sampling census plan, in the traditional census plan, census-takers will follow up on 100 percent of the households that do not return questionnaires by mail. This amounts to a 50 percent increase in workload over what was originally planned. In order to handle this increased workload, the Bureau must hire substantially more temporary workers to conduct the doorstep interviewing and more supervisory staff to supervise the increased enumerator staff. The Bureau estimates that it will employ 860,000 temporary workers during the height of Nonresponse Followup. To provide the infrastructure for the workload increase, the Census Bureau will open

44 additional Local Census Offices, for a total of 520. The time period for conducting the operation was expanded from 6 weeks to 10 weeks to enable the Bureau to contact and enumerate all households.

## **3. Coverage Improvement Methods**

An important aspect of the Census Bureau's plan for reaching all citizen and non-citizen residents is to build a Master Address File using a variety of operations that includes all residential addresses in the United States. In order to account for those housing units that will be built between January 15 and April 1, 2000 (Census Day), the Census 2000 plan includes an invitation for governmental units in mailout/mailback areas to provide a list of newly constructed addresses. The housing units identified by this New Construction operation will be visited during the Coverage Improvement Followup operation in July and August of 2000 (following Nonresponse Followup).

The questionnaire for the traditional census plan has been expanded to allow space for data for up to six residents per household. The sampling census mailback questionnaire only included space for five household members to respond. Since approximately 2.3 percent of households have six members and less than 1.5 percent have more, this improvement will greatly reduce the need for a large household followup. In addition, the quality of self-reported data is considered better than that obtained by an interviewer at a later time.

The largest operational enhancement in Census 2000 is Coverage Improvement Followup. This field operation occurs after Nonresponse Followup and involves the enumeration of several types of housing units. Census staff visit each address designated for followup, determine its status as of Census Day, and obtain the appropriate information on the housing unit and/or its residents. The large majority of the estimated 8 million units that will be visited in Coverage Improvement Followup are those identified during Nonresponse Followup for the first time as vacant or non-existent/deleted. The objective of Coverage Improvement Followup is to improve the census count of persons for housing units that were originally identified incorrectly as vacant or units that were incorrectly designated for deletion from our inventory of housing unit addresses. The Coverage Improvement Followup operation also includes enumeration of housing units with lost or blank mail return questionnaires and of those units identified by local governments during the New Construction operation and late address updates provided by other pre-Census Day operations in 2000.

The traditional census plan includes a Coverage Edit Followup operation by telephone for households that have too many members for the mailback questionnaire. This operation includes a coverage edit operation that is performed by the Bureau to see if there is a discrepancy between the number of persons reported at the beginning of a housing unit's questionnaire and the number for whom data have been collected. If additional persons are identified, census data are collected for them. In addition, the traditional census plan provides for coverage edits to ensure that the correct population count is obtained for all units.

Several other improvements were made in the traditional census plan that will enhance coverage of the population. A variety of special enumeration methods (also called "tool kit" methods because they can essentially be pulled out of a tool kit or reserve of methods that can be used to help fix problems that arise during the Census) will be implemented during Census 2000 in hard-to-enumerate areas. Tool kit enhancements in the traditional census plan include a significantly expanded use of "blitz enumeration" (a compressed time schedule enumeration, usually with a crew of specially trained enumerators) or paired enumeration (when census enumerators work together for safety) to help locate units, to persuade respondents to cooperate, and so forth. These and other targeted operations will be greatly aided by another "tool": the Planning Database that was developed for the traditional census plan. The Planning Database uses 1990 Census data to select sites and neighborhoods where extra efforts are needed for adequate enumeration of the population.

#### **4. Quality Assurance and Training Enhancements**

To ensure that major census operations result in high quality data, additional quality assurance measures will be implemented. For example, larger samples of questionnaires will be selected for a reinterview process during the major data collection operation, Nonresponse Followup.

Results of the reinterview will be compared to the original questionnaire data completed by the enumerator. If falsification is identified, appropriate action will be taken against the enumerator and his/her entire work unit will be re-done. Less serious errors will be discussed with the enumerator to prevent such errors in the future. The larger reinterview sample is designed so that all enumerators will have random samples of their work checked. This sample is in addition to the administrative test which targets enumerators whose cases must be rechecked because one or more characteristics of their

work (such as the vacancy rate, the proportion of single person households, and the rate of obtaining data from proxy respondents) is out of tolerance with the work processed from other enumerators in the crew leader district.

Crew leaders and/or their assistants will review all questionnaires completed by the enumerators for completeness. Feedback will be provided as appropriate so that future work from an enumerator reflects the desired level of quality. This review will look for cases where only partial data is collected, refusals that require additional followup, etc. Questionnaires will also be reviewed for potential coverage errors. The crew leader uses a checklist to review all questionnaires to assure that they are complete. Any questions or missing items are returned to the enumerator for resolution. In some cases, the enumerator attempts to determine more information at the housing unit if any reasonable options for doing so remain.

Training will be enhanced for those aspects of the data collection operation that lead to coverage improvement. For example, the enumerator training for Update/Leave operation (the questionnaire delivery method used in more rural parts of the U.S.) will allow more time for developing skills in map reading and recognizing housing units not readily visible from the street.

#### **5. Accuracy and Coverage Evaluation**

All modern censuses have included an evaluation survey designed to measure the accuracy of the population data. In Census 2000 the Census Bureau will conduct the Accuracy and Coverage Evaluation Survey (A.C.E.). This survey will consist of approximately 300,000 housing units, or twice the size of the corresponding 1990 Post-Enumeration Survey. This survey will be used to construct dual system estimates of coverage for post strata. Although the state-level census data delivered to the President for apportionment purposes will not reflect results from A.C.E., under the current plan all subsequent data products will. Therefore, data users will have access to the highest quality data for use in redistricting congressional and state legislative districts, analyzing the demographic characteristics of the Nation's population, estimating the population between censuses, and so forth.

#### **E. Current Status**

As of this time (August, 1999), the Census Bureau's FY2000 budget is under review by the US Congress. Many of the programs described require substantial funding increases from the level requested for the

sampling plan. The final plan is ultimately dependent on the outcome of the Federal budgetary process. The Census Bureau believes its current plan is the appropriate combination of operations and programs, and that Census 2000 will successfully meet the data needs of the Nation.

### End Notes

1. This paper reports the results of planning activities undertaken by Census Bureau staff. It has undergone a more limited review than official Census Bureau publications. This report is released to inform interested parties of this work and its effect on the Census 2000 plan, and to encourage discussion.
2. The authors wish to thank Carolyn R. Hay and Phillip M. Steel for their careful, professional review and helpful comments regarding this paper.

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