

Coverage Improvement and Measurement in the 2010 U.S. Census: Innovation in Response to Census 2000

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1. Census Introduction

The United States takes a census of population and housing every ten years. Our next census day will be April 1, 2010. Basically, the Census Bureau mails or drops off a census form to every housing unit asking for names and demographic information of every person living there on or around census day. After respondents complete the form, they are asked to mail it back to the Census Bureau. After about two to three weeks, most nonrespondents are mailed and asked to fill out a replacement form.

If these mailout/mailback efforts fail (a 64 percent mailback rate is expected), the Census Bureau will send a census enumerator to interview residents of the nonresponding housing units. This followup will be the largest peace-time operation ever undertaken by the U.S. government. About 500,000 enumerators will be employed for the nonresponse followup operation.

The term coverage improvement refers to the Census Bureau's efforts to ensure that this and other enumeration activities are complete and accurate. Obviously, forms that have already been completed and received by the Census Bureau contain a wealth of information. The premise of a large part of the Census Bureau's 2010 coverage improvement effort is that some of this information can be used to help us improve the accuracy of the count. This paper will detail that innovative coverage improvement effort.

Additionally, after nonresponse followup and the coverage improvement efforts are complete, the Census Bureau will attempt to measure the completeness and accuracy of the 2010 census. This is accomplished through the Census Coverage Measurement program. In this program the Census Bureau interviews all the housing units in a representative sample of areas (blocks) around the U.S. The interview replicates the census interview and asks more detailed questions that enable staff to determine where each person interviewed should have been counted in the census. The Census Bureau compares (matches) the results of this interview to the census results to determine which people in the sample block were overcounted (i.e., duplicated or should have been counted at a different housing unit) and which were undercounted (missed in the census). This effort then allows the Census Bureau to estimate the coverage of the 2010 census.

From the results of the Census 2000 coverage measurement survey, the Census Bureau realized it had a major problem – much more duplication in the census than was expected. Just after Census 2000, for the first time, the Census Bureau was able to use computers to match the entire census against itself. It uncovered 5.8 million people who were “linked” to other people by this computer match and thus appeared to be duplicated. Unfortunately, the Census 2000 coverage

measurement program had measured only 2.0 million duplicates.

As a result, the Census Bureau began a major research program to find ways in the 2010 census to (1) improve coverage of the census by identifying and correcting errors, and (2) improve the coverage measurement program by more accurately determining where people should have been counted in the census.

2. Coverage Improvement

The Census Bureau's coverage improvement effort is multi-faceted. It includes programs to develop the Bureau's national address list – the frame for taking the census; improve our coverage of group quarters – institutional residences; and improve the enumeration of people living in housing units, for instance, through an improved presentation of residence rules, and a comprehensive language-assistance program.

But the largest part of our coverage improvement effort for the 2010 census, aimed at identifying and correcting errors, will be our Coverage Followup Operation, which grew out of concern about the overcount and undercount measurements from Census 2000, detailed above. Soon after Census 2000, a Research and Development Workgroup was formed to create an innovative new coverage improvement program for the 2010 census. One theme for this work was to make real-time use of information gleaned from the 2010 census forms. First, the Census Bureau would determine which of the forms exhibited coverage problems. Then by following up those cases, interviewers would ask more thorough questions to produce more accurate counts for the household. The problem cases fell into three groups: (1) questionnaires that contained inconsistencies, (2) questionnaires upon which the respondents themselves indicated potential problems, and (3) questionnaires that had people on the form already counted elsewhere in the census – duplicates.

People who have problems filling out the census form will be able to indicate what their problem was via questions included on the questionnaire designed to determine potential “Overcount” and “Undercount.” Then, in the Coverage Followup operation, the Census Bureau will phone these people to resolve the problem. Specifically, in this 2010 census operation, we will telephone people who indicated on their questionnaire that they did not know whether to include a child in college, an older person in a nursing home, or a person temporarily in jail. Including these people would cause Overcount problems. Operators will also telephone people who indicate they had Undercount problems, such as not including on their census form temporary residents or relatives living with them. These specific new coverage improvement approaches were determined during our testing to be very effective approaches to correcting coverage problems.

A second coverage improvement measure incorporated into the Coverage Followup operation will be to provide assistance to people who mailed back census forms that contained count inconsistencies. The Census Bureau asks at the beginning of the questionnaire how many people live or stay in the housing unit. Then in subsequent sections, specific information is requested for each person. If the number of people represented by the specific information does not equal the number given at the beginning of the form, the census form is included in Coverage

Followup. We will call back the household and ask a set of questions that resolve this discrepancy.

In Census 2000, for the first time the Census Bureau matched the census against itself to identify and remove some housing unit duplicates, along with the resultant person duplicates. Using the same process, coverage measurement found that there was still a high rate of duplication within the census. During the decade between Census 2000 and Census 2010, the bureau has experimented with matching census returns against themselves to identify potential duplicates and correct the census counts.

The most productive category of these cases, defined in terms of number of roster changes that resulted from the follow-up, was a particular category of housing unit cases. Housing unit potential duplicates cannot be resolved in Coverage Followup. Instead, these cases will be included in an operation called Field Verification, which yields the status of the housing unit. For housing units that are deleted in this operation, the person duplication will also be resolved.

In summary the Coverage Followup operation will include cases with some of the problems encountered in Census 2000 to produce a more accurate 2010 census. It will follow up particular census questionnaires that were returned to the Census Bureau with indicators of inaccuracies. The innovative decade-long research effort that produced this program is a good example of how the U.S. Census Bureau can respond to problems it uncovers through its research and evaluation program.

3. Coverage Measurement

The Census Bureau has also changed its Coverage Measurement survey in reaction to the errors uncovered when evaluating Census 2000. Specifically, many duplicated people were not found in the Census 2000 coverage measurement survey.

The goals and objectives that were set for the 2010 program were a reaction to this deficiency. First, in its coverage measurement interview, the Census Bureau needed to find all the addresses where a sampled respondent might have been counted, and it needed to get information to determine at which address the respondent should have been counted under Census Bureau residence rules.

Determining all the addresses where a person may have been counted is more straightforward if you are interviewing the person him/herself. The census coverage measurement interview in Census 2000 tried to reconstruct who was resident at the sample address on census day. Thus, the interview was sometimes conducted about people who had moved out. This approach will be changed in 2010: The coverage measurement interview will now include people who have moved into the sample address and not those who have moved out. Then, because the Census Bureau will be interviewing the persons themselves, we will be better able to determine all the addressees where a person might have been counted.

Secondly, the Census Bureau needed to use computer matching of the census against itself to determine if the coverage measurement sample people had been duplicated. When a person

counted in the census (in one of the coverage measurement sample blocks) is linked – by virtue of a match on name, birthday, race, sex, and other people in the household – to a person at another address, the Census Bureau will followup and call the “other person.” Then, without divulging any information about the possible duplicate, the Census Bureau will ask probing questions to determine where the person who was called should be enumerated.

These coverage measurement innovations should enable us to solve some of the problems regarding where people should be have been counted and whether they were duplicated.

4. Summary

In Census 2000 the Census Bureau uncovered problems in its counts and its coverage measurement program. In the early parts of the following decade before the 2010 census, a Research and Development Program on coverage improvement and coverage measurement was created to address these problems. These groups laid the foundation for innovations to be made and included in the 2010 census. These innovations include the Coverage Followup program that will use initial census information to lead to improvements in household-level coverage, and changes in the technology and methodology used in the coverage measurement program that will improve its accuracy and help guide improvements in coverage for future censuses.

5. References

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