

Improving Within Household Coverage

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Introduction¹

The Census Bureau will conduct a 2004 Census Test designed to evaluate the major methodological and procedural improvements under consideration for the 2010 Census. One of the overall objectives of the 2010 Census Plan, during the years 2001 through 2005, is to examine and propose future enumeration alternatives that will improve coverage of the population. To improve coverage of persons in households, the Census Bureau will explore changes to the census questionnaire and expanded followup interviews in the 2004 Census Test.

Background

The Census Bureau has a list of 31 residence rules that provide instructions on where people should be counted in the Census. This list is not given to the respondent. Instead, there is a two-column list on the questionnaire containing residence rules

instructions on types of people to include and not to include in the household.

On the 1990 census questionnaire the residence rules instructions were in the first question on the mail return form. The instructions listed types of people and living situations identifying whom to include and not include in the roster for the household. There were two coverage questions on the mail return questionnaire. The undercount coverage question asked if there were people not listed because the respondents were unsure about listing them. The overcount coverage question asked if the respondent listed anyone he or she was unsure about listing such as visitors staying there temporarily or people who usually live somewhere else.

If the respondent had problems deciding who should be included on the mail return questionnaire and marked one or both of these two coverage questions, the household was included in a followup. The households were followed up by telephone. The instructions to the interviewers explained how to resolve the situation, but did not provide a scripted series of questions to ask the respondent. When respondents could not be reached by telephone, the cases were sent for field visits. The telephone and field enumerators used the respondent's mail return questionnaire during the followup interview. Census Bureau staff conducted the interviews.

The enumerator questionnaires used in mail return and list/enumerate areas contained the same residence rules instructions and coverage questions as the mail return

¹ *This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone a Census Bureau review more limited in scope than that given to official Census Bureau publications. This report is released to inform interested parties of ongoing research and to encourage discussion of work in progress.*

questionnaires. The enumerator questionnaires were included in a phone followup, but not a field followup. Due to budget constraints, no formal evaluation was done of the effectiveness of the followup operation after the 1990 Census.

In 2000 the mail return questionnaire included a shorter list of types of people to include or not include in the count than in 1990. There were no coverage questions on the mail return questionnaire. A followup was conducted when the number entered in the count box did not equal the number of people listed on the form, called a count discrepancy. Large households (those with more than 6 people) were contacted during the followup as well to collect the remainder of the people in the household and their demographics.

The enumerator return questionnaire in 2000 did not contain a list of types of people to include or not include in the count for the household. There were coverage questions asked after all 100 percent data items were collected. The undercount coverage question asked if the enumerator missed any children, including foster children, anyone away on business or vacation, any roomers or housemates, or anyone else who had no other home. If there were people identified, they were added to the household. The overcount coverage question asked if any of the people listed were away at college, in the Armed Forces, in a nursing home, or in a correctional facility. If there were any people identified, a box was marked and the people were removed from the household. There was no followup for households that marked either of the two coverage questions because it was assumed the enumerator resolved any questions and people were added or deleted correctly.

Also during the 2000 Census an experiment was conducted testing the residence rules presentation, called the Alternative Questionnaire Experiment or AQE. The AQE changed the layout and wording of the residence rules instructions on the form. Evidence that roster format has an effect on erroneous enumerations and that the residence rules 'do not follow any simple logic and are far too lengthy to expect respondent's to absorb in full' (Gerber, et al.) supported modifying the form. The goal of the AQE was to determine if improving the roster instructions and format would result in 'enhanced readability [to] improve household coverage' (Gerber, et al.). Modifications to the roster were developed via cognitive testing. The AQE featured a double-banked list of rules with wording modifications, a person count box that was moved after the instructions, the inclusion of a direction to the respondent to read the instructions, and an outlined box around the instructions and count box.

Census Form Changes

The 2004 Census Test includes a mailed census form and nonresponse followup with enumerators. The test will be conducted in parts of Queens, New York and three counties in southern Georgia. Results from this test will not be assumed to be representative of the whole country. Testing will take place in the years prior to the 2010 Census to further study coverage issues brought forth by this research.

For the 2004 Census Test three changes have been made to the census form: the residence rules instructions have been modified, coverage questions have been added, and the large household roster has been expanded.

The residence rules instructions were modified to improve comprehension of who to include and not include in the household count. The modifications were made to the AQE version of the residence rules which had resulted in higher item response to the count box, significantly lower omission rates in the low coverage strata, and no significant difference in erroneous enumerations. The changes to the 2004 Census Test form include moving the 'Do Not Include'

column to the left and adding the phrase 'they will be counted at the other place' below the column heading. Also, the bulleted lists of people to exclude were reordered as were the lists of people to include to prioritize the situations that lead to the most errors. Other wording changes were also made. The instructions are as follows (note that the graphic has been expanded in this paper for readability):

Start here

1. Please use our guidelines to determine the number of people living or staying at this place on April 1, 2004:

Do NOT INCLUDE these people (They will be counted at the other place):

- College students who live away
- People who live or stay somewhere else most of the time
- Armed forces personnel who live away
- People who, on April 1, 2004, were in a:
 - Nursing home
 - Jail, prison, or detention facility

INCLUDE these people:

- Babies and children living here, including foster children
- People who stay here most of the time, even if they have somewhere else to live
- Roommates or boarders
- People who, on April 1, 2004, were staying here and have no other permanent place to stay

How many people were living or staying in this house, apartment, or mobile home on April 1, 2004?

Number of people =

Recognizing that the residence rule instructions don't cover all living situations and that some respondents don't read them we added two coverage questions to help identify households with potential coverage problems. Certain types of people are often missed in the census - children, adult relatives, and people who move frequently, for example. An undercount coverage question was included immediately after the household count box. The question is intended to help determine if someone was not included who should have been. It is worded as follows:

"Are there other people who live or stay at this place part of the time but are not permanent residents, such as live-in employees or children in joint custody?"

If a respondent marks 'yes' to this question he or she is then asked to provide a count of people who are at 'this place part-time.'

Other types of people are counted more than once in the census - typically people with more than one place to stay such as people with seasonal homes, college students, and children in joint custody. A question was developed for the census form to identify those people who may have been included in a household when they should not have been. An overcount coverage question is asked of each person listed (up to the 6th person). The purpose of this question is to help identify why a person was included in the household but possibly should not have been. The question asks if the person also stays elsewhere and is worded as follows:

'Does this person sometimes live or stay somewhere else?'

If the respondent answers 'yes' he or she is asked to mark a box intended to represent the types of places people stay that lead to

the most overcoverage: to attend college, at a seasonal or second residence, to be closer to work, for a child custody arrangement, or for any other reason not listed.

If a household has more than 6 people the names of those people (up to 12) are recorded in a roster. In the past only the names were collected. In the 2004 Census Test we will also collect the person's sex, age, date of birth, and whether he or she is related to the first person rostered. An overcoverage question is not asked for these people.

Evaluating the Updated Census Form

To evaluate how well these modifications to the census form work we will look at the responses on the questionnaire and conduct a followup of people to determine if there are coverage problems in their household.

An analysis will be conducted looking at the responses to the census form to answer the research questions: what was the response to the coverage questions, are households that mark a coverage question more likely to have count discrepancies, and what was the response to the large household roster?

In assessing the coverage questions we will look at the item nonresponse rate and the amount of people who marked 'yes' to either question. We will also tabulate the 'yes' responses by type of coverage problem as indicated on the form. We estimate that two to three percent of households will mark one of the coverage questions. We will determine if the 'yes' response households also have count discrepancies. If a count discrepancy is as good an indicator as the coverage questions we may not need them. If the coverage questions cause more count discrepancies (as compared to 2000 data) we

would need to eliminate or modify the coverage questions to avoid this problem.

Households that have more than six people will be analyzed to determine the item nonresponse rate to the roster and the additional demographic items.

We will conduct a followup to answer the research questions: how do coverage probes affect within household coverage, where do people with multiple residences prefer to be counted, and are people with multiple residences counted more than once?

For the purpose of assessing the residence rules and coverage questions the universe for the followup is all households who answer 'yes' to the undercount coverage question, all households in which at least one person answered 'yes' to the overcount coverage question, and a sample of households who answer 'no' to both the undercount and overcount coverage questions.

Undercoverage

The followup interview is designed to collect information about a person who is missing from the census roster. We will read the roster to the household respondent and ask, via a series of probes, if someone is missing from the roster. The probes used to identify missing people include asking about children living there, children at a boarding school, other relatives, roommates or boarders, non-relatives such as live-in employees and someone staying there while looking for a place to live, and a person staying there who has nowhere else to live. If someone is missing, their name, living situation, and some demographics will be obtained. We then ask questions to establish census residence for these people in order to

determine if they should be enumerated in the household as of April 1, 2004.

From data in the followup we will learn if the undercount coverage question worked well to identify households in which someone was not included on the roster. We will identify characteristics of these people and determine why there may have been uncertainty about whether or not to include them in the count or why they might have been deliberately left off the form. Through this research we will be able to estimate the number of people that could be added through undercount coverage questions in the future and the proportion of these people who would correctly be added to the household. This research may also discover improvements in the content and presentation of the residence rules instructions or wording of the coverage question on the questionnaire.

Overcoverage

The followup interview is also designed to collect information about a person in the household who has another place he or she could be counted. We use a series of probes regarding reasons people have more than one place to live or stay to determine the living situation of the person. The probes identify living situations such as a student in college, having a job that requires staying elsewhere, children in joint custody, people with vacation or seasonal homes, people who move between homes, and stays in group quarters such as jail, military barracks, and nursing homes. The address of the place a person stayed is collected and we determine how often the person stays at the other place to establish Census residence.

We will learn if the overcount coverage question worked well to identify people who could be counted at another place and the

proportion of people who should be counted at the other place.

Also, based on the magnitude of the erroneous enumerations for a particular residence rules instruction category, we may propose changing some of the residence rules or focusing only on specific living situations in future followups, for example.

People with multiple residences

One of the possible reasons for coverage errors is the complex residence rules used by the Census Bureau to determine where a person should be counted. Errors are sometimes made by respondents because they don't understand the instructions. Sometimes errors are made because the respondent wants to count or not count someone in their household even though it doesn't follow our rules. To better understand how people view their residency we will explore different terminology. For people with multiple residences, we will ask which place - the place they were counted in the census or another place - they consider to be their primary residence, permanent residence, legal residence, or temporary residence. We will also ask where they prefer to be counted and why. This information will aid us if we decide to revise the census residence rules for 2010. One of these terms could be used to convey the rules to the respondents. We will also determine where respondents want to be counted to determine how counter-intuitive the rules are.

After collecting data on alternative addresses a person could be counted we will determine geographically where the address of the other place is. We will determine if respondents are able to provide complete addresses and what proportion we can geocode. If the address is geocoded within the 2004 Census Test sites we will check to

see if the person was also counted at the other address.

Conclusions

Thus, in the 2004 Census Test we will continue to expand coverage improvement operations by testing residence rules instruction changes, coverage questions, and a redesigned coverage followup.

References

Gerber, Eleanor, Aref Dajani, and Mary Ann Scaggs. "An Experiment to Improve Coverage Through Revised Roster Instructions." U.S. Census Bureau. 2003.