Design of the Census 2004 Coverage Research Followup Questionnaire
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1. Introduction

The Census Bureau conducts several tests to evaluate the major methodological and procedural improvements under consideration for the 2010 Census. One of the objectives of the 2010 Census Plan is to improve coverage of the population. To improve coverage of persons in households the Census Bureau will explore changes to the census and follow-up interview questionnaires. This paper will describe the methods used to evaluate the Coverage Research Followup (CRFU) interview questionnaire and discuss the results that informed decisions regarding the questionnaire revisions in hopes of improving coverage in the future. The three methods of evaluation of the questionnaire that were used included cognitive testing, interviewer debriefings, and behavior coding. In this paper we will discuss in detail the results of these methods and suggested changes that hope to improve the questionnaire.

Keywords: Questionnaire design, Coverage Improvement

2. Background

An accurate depiction of the population is ultimately what the census should represent. In order to accomplish this task one followup operation in place is the CRFU. The 2004 CRFU is a dependent interview that was conducted by novice interviewers by telephone and personal visit in New York City and certain counties in Georgia. The telephone centers have more experienced interviewers where as in the field novice interviewers carry out the operations. In the census itself, respondents develop a roster of those who live in the household. This roster is used during the CRFU operation interview to assess the household members’ residency. The purpose of the CRFU is to identify if people were missed or counted in error because they should be counted at a different address and assess whether people were counted more than once in the census.

The CRFU instrument is a dependent person-based interview where questions are asked of the household member who filled out the census form about themselves and those in the household. The first step is to find this designated respondent. Once the correct person has been found, the roster of people who were listed on the census form is confirmed. The questions following probe for all types of missing people, ask about where college students live, where children in custody arrangements spend most of their time, where those who vacation spend most of their time, a general probe to see if anyone else in the household stays anywhere else any part of the time, and lastly, if anyone stayed in a facility where groups of people stay. The answers to these questions will determine residency and a more accurate assessment of where people should be counted.

If the CRFU instrument is improved, this will allow for increased accuracy of the coverage of people. With the underlying purpose of the CRFU in mind, an analysis was completed on each question in the CRFU instrument to determine if the question was understood, if it elicited the correct information to categorize a person’s residency, and to see what interviewers thought were problems with the instrument. These answers are obtained by the three methods of evaluation discussed in this paper.

2.1 Methods

2.1.1 Cognitive Pretesting

This was the first of three methods used to evaluate the CRFU. Largely qualitative in nature, cognitive pretesting is typically used in the early stages of questionnaire development, although it can be used concurrently with other methods to refine question wording or survey flow. The method is useful for exploring issues that may
occur for respondents at any point along the commonly recognized stages of the survey response process: comprehension, retrieval, judgment, and response (Tourangeau, 2000). Typically referred to as “cognitive interviews,” for interviewer-administered surveys the process often involves a cognitive researcher posing survey questions to a volunteer (called a “respondent”), generally in a laboratory setting. To gain insight into the response process researchers often instruct respondents to “think-aloud” (Ericsson and Simon, 1980) about how they arrived at their survey answers. The “think-aloud” technique can be applied concurrently or retrospectively. Researchers may also use other techniques to elicit verbal evidence of response process difficulties during the interview: follow-up probes; paraphrasing; and confidence ratings (Forsyth and Lessler, 1991). Results are often instrumental for informing the revision of particular questions or flow of the instrument.

During the spring of 2004 the actual operation version of the CRFU questionnaire was cognitively tested. The cognitive pre-testing was conducted, with approximately 50 respondents. Respondents from households of interest to this study were recruited for this research, such as respondents from households containing college students, children in custody situations, and snowbirds.

2.1.2 Interviewer Debriefings

This method uses interviewer feedback as a means to gather information about the types of problems interviewers encountered while administering the instrument, as well as any response issues they observed. This type of data is either collected verbally, in a group setting or through written responses to a structured questionnaire (DeMaio, T., Mathiowetz, N. Rothgeb, J., Beach M. E., Durant, S., 1993). Like cognitive interviewing, this method is also qualitative in nature, and so it is difficult to gauge the magnitude of a particular problem from this type of data. Additionally, the method relies on interviewer self-reporting, so it is difficult to detect the full range of potential administration issues, especially regarding the extent to which interviewers read questions as worded. The method can, however, produce very rich data useful for gaining insight into the interviewers’ and respondents’ experiences with the questionnaire in an actual survey environment.

After the telephone interviews of the 2004 CRFU instrument were complete, debriefings were conducted with telephone interviewers at two different phone centers, Tucson, AZ and Jeffersonville, IN. A manager at the telephone centers administered a structured questionnaire to each approximately 100 telephone interviewers total. The structured questionnaire contained open-ended and closed-ended questions that asked if interviewers or respondents had any troubles with any sections or questions of the questionnaire. This was used in an attempt to elicit information from the interviewers about their views of questionnaire problems.

2.1.3 Behavior Coding

Behavior coding is quantitative in nature, and is typically applied to a larger number of cases than either of the previously-described methods. The method’s strength lies in its ability to detect the prevalence of actual question administration and response problems identified in a field test of the instrument. The method involves the systematic application of codes to behaviors (in this case, verbal behavior) that interviewers and respondents display during the question/answer process, and is often used to identify problematic questions (Oksenberg, Cannell, and Kalton, 1991; Sykes and Morton-Williams, 1987). In an ideal interaction between an interviewer and a respondent, the interviewer asks the question exactly as worded and the respondent immediately provides a response that is easily classified into one of the existing response categories associated with the question. When the interaction deviates from this ideal, however, we begin to suspect there may be problems with the question and/or response options that may be causing administration or response difficulties (Fowler and Cannell, 1996).

For the analysis of the questionnaire 209 cases, 74 telephone and 135 personal visits, in both New York City and counties of Georgia were tape-recorded after permission to tape was granted by respondents.2 The tapes were coded by five Census Bureau telephone interviewers trained in project-specific behavior coding techniques. The framework of behavioral codes used for this project was designed to capture the

2 A convenience sample of interviews was collected; the process was not random.
interviewer’s question-asking behavior, the respondent’s first-response (or first-level) behavior, whether or not the respondent interrupted the question-asking (called “break-ins”), and if responses could reasonably be classified into one of the existing response categories. (See Appendix A for the coding framework).

2.3 Results

In the CRFU instrument there are 57 questions total. For this paper we present data on a specific subset of five questions that proved to be problematic in all three areas of investigation: cognitive testing, debriefing, and behavior coding. The interviewer behavior that is discussed most in this paper is the major change. This happens when the interviewer reads the question such that the meaning is changed. As for the respondent behavior that is discussed would be the clarification code. This is when the respondent asks ‘what do you mean?’ about a question just read.

Now let’s discuss the results.

Introduction: “Sometimes people are left out of the census. I’d like to make sure that we are not missing anyone who lived or stayed at (ADDRESS) on date, 2004. Other than the names I read to you were there…”

Purpose: At this point in the interview we have found the designated respondent and verified the pre-existing roster of those in the household. This is the introduction to the list of questions designed to add people that may have been missed on the roster of the census form. The main points that need to be expressed at this point are the interview address, the reference date, and the concept of the respondent thinking about other people who are not on the listed roster (e.g., “Other than the names that I read to you,…”) Two of the questions that follow this introduction are question numbers 2 and 3 below.

Cognitive Testing: When respondents were probed about the meaning of the introduction some could understand its purpose and reiterate in their own words the meaning. Other respondents wanted to know why there was a specific date. They felt that if they mentioned someone who stayed only that night or a few days that they should not be counted at their home.

Debriefings: Interviewers said that they would read the introduction and then short-cut the list of questions that followed. They said that people got annoyed at the redundancy of the questions. As for the list of questions, the respondents would break-in and answer the question before it was fully read. The respondent would tell you that there were only two people in the household, yet the interviewer had to read the rest of the questions.

Behavior Coding: It was read with major changes 35 percent of the time (see table 1). This means that introduction intent may have been affected. Most of the time the interviewer was trying to streamline the introduction skipping important aspects of the question. Some of the ways that the question was changed included “We just want to make sure that no one has been missed” or “I am going to read you a bunch of questions, you just answer yes or no”.

Summary: When this introduction was read as worded in the cognitive interviews the respondent understood it. But according to the behavior coding, when the introduction was administered in the field it was not conveying the correct information due to interviewer rewording or by respondents not being patient. A suggestion is to write this introduction with more concise wording that might encourage interviewers to read crucial aspects of this introduction (i.e., reference date of April 1). Since the reference period was omitted by interviewers here, consider making it more salient in the introduction by eliminating some superfluous text (i.e., first statement and reference year, “2004”). The sentiment of the first statement is reiterated in the second, so omitting it will not change meaning, and omitting the reference year (2004) should not present a problem since it has been established through the interview to this point.

Missed Children Question: “Any foster children or other children not related to you?”

Purpose: At this point in the interview the respondent should be thinking about children who stayed with them. This is the second question in the list of those probes for people who may have been missed. This question is
designed to add those children that the respondent may have missed on the original census form. Children who may be living with more than one person who are not directly related to them are those who we want to add in this question. After someone is added, a list of questions asked of this added person to determine residency. So even if someone is added who has been counted in more than one place the questions following will determine if they should be counted in this house or another house. Hence, counting them in the correct place and improving coverage.

Cognitive Testing: When asked what this question meant, respondents said that it was asking about children in custody situations. A couple of respondents said that a stepchild was not accounted for in this question. The category of ‘other children not related to you’ was not proper because they felt that step-children are in fact related. Respondents said that legal custody is how you determine where a child lives.

Debriefings: There was no specific reaction to this question. However, as discussed above, the interviewer was not able to fully read all the questions in this list due to the annoyed respondents.

Behavior Coding: When this question was administered it was read with a major change 33 percent of the time. The most common change was “Any foster children?” This suggests respondents were sometimes unexposed to the other half of the question, which contains an important category that is conceptually separate from “foster children.”

Summary: The biggest problem with this question is that people automatically thought of legal issues when this question was read. They also associated that we are talking about children who are related to them. We need the respondent to understand that we want to know where any child lives or sleeps, not who has ‘legal’ rights to the child. This is very difficult to convey to a respondent. With the question being read the majority of the time as “Any foster children?”, the other part of the question is never read. The respondent is breaking in during the question because they are annoyed with the list of questions that are being read. Also, the behavior coding suggests that the interviewers themselves may think that the categories are equivalent and are dropping the last one. A suggestion is to turn this into two shorter questions. Creating two questions would encourage interviewers to administer both concepts/questions, and hopefully disassociate the two to the extent that respondents would no longer interpret the question negatively.

Temporarily Question: “Other people who stayed here temporarily on date and have no other place to live?”

Purpose: This is the last question in the list of probes of those who may be missed. This question is designed to add those who are between homes or have no home of their own temporarily. People who are bouncing from home to home and are living in several places are those that we want to identify with this question. We need to make sure that they are counted somewhere and in the right place.

Cognitive Testing: Respondents felt that the types of people who fall under this question are those who have ‘no address of their own’ or ‘place to live’. A few felt that this was a ‘clean up’ question designed to catch those who did not fall into previous categories. Some said they would not count people who stayed for a short time and others said that they would because the question asked ‘temporarily’.

Debriefings: Respondents added mostly relatives who were there for a short visit when this question was asked. It seems that the respondent was not catching the phrase ‘and had no other place to live’.

Behavior Coding: There were major changes 26 percent of the time. Some rewordings included “And no one else?” or “No one living here temporarily?” Again this is the last question in a long list of what the respondent sees as similar questions so the interviewer may be trying to short-cut the question.

Summary: Respondents from the cognitive interviewing said that they would not count people who stayed for a short time while the debriefings implied that people were adding those who did stay for a short time; the respondents are doing both. We would rather have the respondent add the person who they are not sure about rather than not. Subsequent questions are asked about this added person and these would determine whether or not he/she should be categorized as living in this household.
Something bothersome about the behavior coding results is that the question was not being read as worded, dropping the second statement of ‘who had no other place to live’, or not read at all. “Anyone who had no other place to live and stayed here temporarily on April 1?” is a way that this question can be reworded to emphasize the concept ‘no other place to live’. Although interviewers may still shorten this question, just looking at general patterns of the novice interviewer across the questions in the behavior coding data.

Child Custody Question:
“Was any child in a shared custody arrangement or did (he/she) live part of the time at another residence? ”

Purpose: Now we are moving on in the interview to the section where information about other residence is collected for each of the roster members. This question probes for another place other than the CRFU listed address where children who are on the roster or have been added to the roster may have stayed. The hope is that we can identify children who spend time in more than one home not whether a child is in a legal arrangement.

Cognitive Testing: Respondents who were involved in this particular living situation found this question difficult. They felt custody meant sharing of a child by legal standards and noting that it meant equal control. The respondent used the term ‘legal standards’ which is interpreted as a ‘formal legal arrangement’ where the courts say who is the child’s legal guardian. ‘Equal control’ means that those who have legal rights will also share in expenses.

Debriefings: The interviewers stated that those both in the situation and not, did not understand this question. They were worried that the ‘other parent’ might have claimed the child on their form. The use of legal terms that correspond to taxes and dependents were prevalent in explaining what the question meant. Some respondents said that the question was vague.

Behavior Coding: The interviewer, 65 percent of the time, changed this question. Another statistic that stood out was the respondent behavior of asking for a clarification of the question 9 percent of the time. There was a general confusion of what was meant by ‘custody’. The interviewer was sometimes changing the question to: “Was any child in a shared custody arrangement?”

Summary: This question uses the word ‘custody’ which to the respondents meant equal control, or legal arrangement. If the question is not read as worded or the respondent interprets ‘custody’ to mean legal arrangement, then this is extracting information that may or may not reflect the living situation of the child. If the respondent interprets this legally then the child may be placed in the legal guardians household when really he/she may live and sleep somewhere else most of the time. Respondents seemed to interpret the question too narrowly and were more concentrated on the legality of the situation as opposed to where the child was living and staying most of the time.

Group Quarters Question:
“Was (name) staying in any of the following places on (date): a long-term medical care facility, military barracks or ship, a correctional facility, some other facility where groups of people stay.”

Purpose: This question is asked towards the end of the section about other residence. It is imperative to ask this question to each person in the household. Its main purpose is to determine whether a listed household member was in one of these facilities on census day. If this is the case they should be counted at the facility, rather than at their residence.

Cognitive Testing: The majority of the respondents who reacted to this question were in the military. They said that they did not stay on a ship or live in barracks and that they would mark ‘other facility’. Many said that military barracks is out of date and that they mostly live on off-base housing. They also said that even though they are deployed and live off-base in a different home, they would list the house that they would return to as their residence.

Debriefings: This question was noted as being tedious, wordy and repetitive. The question asks about the specific date of census day. The respondents on more than one occasion would say that they answered this question once already in the beginning of the survey.

Behavior Coding: This question was split into a series of questions in the behavior coding for the purpose of analysis. It is more accurate to report
the major change percentage from each of the four parts.
a. “Was (name) staying in any of the following places on (date): a long-term medical care facility, - 64 percent of the time.
b. military barracks or ship, - 33 percent of the time.
c. a correctional facility, - 16 percent of the time.
d. some other facility where groups of people stay.” – 18 percent of the time.

The majority of the alterations to the wording were because the interviewer asked this question in a general format for the whole household at once. (e.g., “Was anyone in the household…”), instead of asking this question for each person in the household separately.

Summary: There are some things that can be done with this question. A large number of major changes in the behavior coding occurred because the interviewer was not asking this question about each person in the household. To reduce the perceived repetition, this question could also be tailored to ask those who are age appropriate for the types of group facilities. For example, asking if a child is in the military is not necessary. Also, as seen in cognitive testing the general question of military barracks or ship was seen as out of date. This question could be broken down into more modern, concise terms that the military uses to reflect their living situation (e.g., off-base housing, on-base housing).

3. Conclusion

The three pre-testing methods used during the development of the CRFU questionnaire were instrumental in detecting critical administration, response, and design issues that should be addressed before the actual implementation of this survey. Given these findings, there are alterations that need to be made to the instrument for future Census Tests. These changes need to be made so that coverage is improved. The purpose of the instrument is to make sure that people are not missed, are not counted twice, and are counted in the right place. The questions should be worded such that they are easy for novice interviewers to read in a standardized manner (i.e., as worded, or with only minor changes) and written so respondents can understand question intent. It is important to avoid writing survey questions that encourage interviewers to make changes to the wording, because this may change the questions intent and in turn may elicit inaccurate information. The five questions that have been analyzed are those that stood out as being problematic in all three areas of analysis. There are other questions in the instrument that are being considered for change.

References


Appendix A

Framework of Behavioral Codes and an Explanation of their Analytical Function

Interviewer Behavior Codes (first-level interaction)

Code E/S: Exact Wording/Slight Change, interviewers read question exactly as worded or with slight change that did not affect question meaning or omit/change terms representing main concepts.

Code MC: Major Change in Question Wording, interviewer changes to the question that either did or possibly could have changed the meaning of the question (e.g., altered verb tense, omission of reference period, paraphrasing text or substituting similar words for main concepts).

Code V+: Correct Verification, respondent provided information earlier that interviewer correctly verified and respondent accepts.

Code V-: Incorrect Verification, interviewer assumes or guesses at information not previously provided (even if correct) or misremembers information when verifying and respondent disagrees.

Code I/O: Inaudible Interviewer/Other, interviewer exhibits some other behavior not captured under established codes or is impossible to hear.

Code OQ: Particular questions and introductions were required reading during each administration of the survey (no skip patterns present that would cause it to be omitted), and were recorded when interviewers omitted them during the interview.

Respondent Behavior Codes (first-level interaction)

Code AA: Adequate Answer, respondent provides response that meets the objective of the question and/or can is easily classified into one of the existing precodes.

Code IA: Inadequate Answer, respondent provides a response that does not meet the objective of the question, or cannot easily be classified into one of the existing precodes—often requiring interviewer to probe for more information.

Code UA: Uncertain Answer, respondent expresses uncertainty about the response provided and may be unsure about the accuracy of the information.

Code CL: Clarification, respondent requests that a concept or entire question be stated more clearly (expressing uncertainty about meaning).

Code RR: Question Re-Read, respondent asks interviewer to reread the question.

Code DK: Don't Know, respondent states they do not have the information.

Code REF: Refusal, respondent refuses to provide a response.

Code I/O: Inaudible Respondent/Other, respondent exhibits some other behavior not captured under established codes or is impossible to hear.

The following code for respondent interruptions, or “break-ins” (Code BI), was also used to capture respondent behavior, but this aspect of the interaction was coded separately, and in addition to, the actual nature of the response/feedback. This was done to ensure the actually nature of the response was captured, along with the interruption:

Code BI: Break-In, respondent interrupts the reading of a question or introduction (during the first-level interaction only, in other words, during the initial question-asking behavior).

Final Response Outcome Codes (ultimate answer)

The set of final response outcome codes are the same as the respondent codes used for the first-level interaction, with the exception that the following codes were omitted: question reread (Code RR) and clarification (CL). These codes were excluded from the “outcome” possibilities because we suspected these behaviors would only surface during the initial question reading and any persistent problems would center around the type of answer respondents ultimately provided. Thus, the possible “outcome” codes include: AA (adequate answer), IA (inadequate answer), UA (uncertain answer), DK (don’t know), REF (refusal), and I/O (inaudible/other).
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1 E/S = exact/slight change to question wording; MC = major change; V+ = correct verification; V- = incorrect verification; I/O = inaudible or other; and OQ = omitted question.

2 AA = adequate answer; IA = inadequate answer; UA = uncertain answer; CL = clarification requested; RR = question reread; DK = don’t know; REF = refusal; and I/O = inaudible or other.

3 Break-In = respondent interrupted the interviewer during the administration of the question. Denominator taken from the Interviewer Behavior N, and calculated separately from Respondent Behavior.

*Interviewers were trained to read these questions during each interview; they were required reading and interviewers were not to omit them.\*

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Those questions cells that are shaded are the figures, which are talked about in the paper.