

“You Really Have to Puzzle This Out”: Checking Residence and Coverage Duplications on a Census 2010 Questionnaire

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Abstract

The census must count everyone living in the United States just once and in the right place. This is a challenge in our diverse, mobile society: Census 2000 had an estimated 5.8 million duplicated persons (Mule 2002). Following the NAS Residence Rule Panel suggestion (NAS 2006) to try to identify duplications on the census form itself, the Census Bureau designed a 2010 Alternative Questionnaire Experiment overcount questionnaire to identify persons' alternate addresses and collect the residence rule data needed to indicate the address where they should be counted. This should make it possible to determine the right place to count persons with alternative addresses from answers on the census form itself during processing, rather than in a later telephone followup operation. This paper presents results of cognitive testing and coverage research with this experimental overcount census form in household types prone to duplication. During the debriefing, we also elicited descriptions of household members' living situations to check the extent to which patterns of answers on the questionnaires did identify persons' correct residences. We discuss respondent comprehension of the overcount question. We then assess how well the overcount sequence worked to distinguish those who did and did not “sometimes live or stay somewhere else” and recommend revisions to question wording and to the skip instruction. We then assess whether the questions worked to identify the person's correct residence, based on living situation information from the debriefing. We identify the types of individual and household living situations and mobility patterns that the question sequence picked up and those that were missed. We found that the experimental overcount sequence accurately identified the correct place for 12 of the 16 persons with two or more places. It also identified some persons with false negatives that would need followup to resolve. Based on these results, the experimental Census 2010 Overcount Questionnaire worked well in providing enough data to determine residence for most rostered persons who sometimes live or stay somewhere else. It has the potential to improve the Census Bureau's ability to count persons once, in the right place, at lower cost and in less time.

Key Words: *Census 2010, Census 2010 Alternative Questionnaire Experiment, Census Coverage, Census Duplication, Census Overcount Question, Erroneous Enumerations*

1. Introduction

Census 2000 was the first census in which a viable nationwide search/match operation was used to identify duplication of persons. The results of the search/match and the A.C.E. (Accuracy and Coverage Evaluation) survey found an unexpectedly high duplication rate: an estimated 5.8 million duplicated persons (Mule 2002). The estimated overcounts and undercounts were revised (Fenstermaker and Haines 2002). One of the factors in the underestimation of duplications was that the A.C.E. questionnaire was not fully effective in accurately identifying respondents' true residences.

The focus of the emerging Census 2010 Research and Development Projects on Residence Rules and Coverage Improvement since Census 2000 expanded from the prior emphasis on preventing undercounts (omissions) to include identification, resolution and reduction of overcounts (erroneous enumerations and other duplications) as well. The Census Bureau Working Groups on Residence Rules and on Coverage Improvement developed methods for several data collection operations to identify and reduce duplications that can lead to census overcounts. The groups decided to develop and test new undercount and overcount questions on the census form itself and to identify the types of persons and households at risk of erroneous enumerations. Iterative cognitive testing, a split-panel mailout test of alternative residence rule and coverage questions in 2005 (Heimel 2007), site tests in 2004 and 2006 (Krejsa, Linse, Karl and Van Vleck 2005, Krejsa, Linse, Kostanich, Heimel, Marshall, Banz, and King 2007) and the 2008 Dress Rehearsal (Govern, Kostanich and Heimel 2009) led to the final Census 2010 standard short form questionnaire with overcount and undercount questions.

In addition, the National Academy of Sciences Residence Rule Panel evaluated the proposed revisions to the residence rules and coverage questions (NAS 2006). They recommended developing and testing new questions to collect a person's alternative address and enough residence rule information to determine where the person should be counted in the census from the pattern of answers on the census form itself.

The Census Bureau followed this recommendation by developing an experimental Census 2010 overcount questionnaire booklet for use in the split-panel Alternative Questionnaire Experiment embedded within Census 2010. The experimental booklet is designed to identify persons with more than one address, collect that address, and use answers to residence rule questions to determine where that person should be counted. Such a questionnaire has the potential to improve the quality and accuracy of data on where people should be counted, because the information is collected right at the time of census completion when the information is fresh, rather than some months later during a phone followup when recall decay may have clouded the respondent's memory. It also has the potential to reduce the staffing costs and time in followup.

In this paper, we present the results of cognitive testing and coverage research with the experimental overcount question sequence in the experimental Census 2010 overcount questionnaire to be included in a split-panel test within Census 2010. We compare and contrast the use of the overcount question on the standard Census 2010 questionnaire and the experimental Census 2010 overcount booklet. We identify the additional questions on the experimental questionnaire designed to make it possible to collect persons' alternate addresses and determine those persons' correct places of residence from information on the census form itself during processing. We discuss the extent to which respondents understood the overcount question and how they interpreted it. We then assess how well the experimental overcount sequence worked to determine where to count each of the persons identified by the household respondent on the census form, first addressing those persons with an affirmative answer to "sometimes live or stay somewhere else," and then those with a "no" answer to that question. We then identify the types of individual and household living situations and mobility patterns that the overcount question sequence did pick up and those that were missed, based on additional information on persons' living situations that we collected in a debriefing after respondents had completed the form. We assess the readiness of the experimental form to be used in the 2010 test and suggest wording and formatting improvements.

2. Experimental Overcount Booklet

Both the standard and the experimental Census 2010 questionnaire include the overcount question, “Does this person sometimes live or stay somewhere else?” It also includes a

Figure 1: Experimental overcount question sequence (Questions 7 to 10)

1. Print name of Person 3

Last Name

First Name MI

2. How is this person related to Person 1? Mark ONE box.

<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law
<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate
<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner
<input type="checkbox"/> Grandchild	<input type="checkbox"/> Other nonrelative

3. What is this person's sex? Mark ONE box.

Male Female

4. What is this person's age and what is this person's date of birth?
Please report babies as age 0 when the child is less than 1 year old.
Print numbers in boxes.

Age on December 1, 2008 Month Day Year of birth

→ NOTE: Please answer BOTH Question 5 about Hispanic origin and Question 6 about race. For this census, Hispanic origins are not races.

5. Is this person of Hispanic, Latino, or Spanish origin?

No, not of Hispanic, Latino, or Spanish origin

Yes, Mexican, Mexican Am., Chicano

Yes, Puerto Rican

Yes, Cuban

Yes, another Hispanic, Latino, or Spanish origin — Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on. ↴

6. What is this person's race? Mark one or more boxes.

White

Black, African Am., or Negro

American Indian or Alaska Native — Print name of enrolled or principal tribe. ↴

<input type="checkbox"/> Asian Indian	<input type="checkbox"/> Japanese	<input type="checkbox"/> Native Hawaiian
<input type="checkbox"/> Chinese	<input type="checkbox"/> Korean	<input type="checkbox"/> Guamanian or Chamorro
<input type="checkbox"/> Filipino	<input type="checkbox"/> Vietnamese	<input type="checkbox"/> Samoan
<input type="checkbox"/> Other Asian — Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on. ↴	<input type="checkbox"/> Other Pacific Islander — Print race, for example, Fijian, Tongan, and so on. ↴	

Some other race — Print race. ↴

→ Continue to Question 7.

7. Does this person sometimes live or stay somewhere else?

No → SKIP to the next person, if more people live here.

Yes — Mark all that apply.

<input type="checkbox"/> In college housing	<input type="checkbox"/> At a seasonal or second residence
<input type="checkbox"/> In the military	<input type="checkbox"/> In jail or prison
<input type="checkbox"/> For a job or business	<input type="checkbox"/> In a nursing home
<input type="checkbox"/> For child custody	<input type="checkbox"/> For another reason

8. Please provide the full address of the other place where this person sometimes lives or stays:

House Number

Street Name

Apartment Number

Rural Route Address

City

State ZIP Code

County

If there is no street address or if this is a facility, please write in a description in the boxes below.

9. Where does this person live or stay most of the time?

The address printed on the back of this questionnaire

The address or location you listed in Question 8

Both places equally

Some other place

10. On December 1, where was this person staying?

The address printed on the back of this questionnaire

The address or location you listed in Question 8

Some other place

→ If more people were counted in Question 1, continue with Person 4.

series of checkoff response categories to indicate the type of living situation or place of that other location (Figure 1, question 7). On the standard census form, this is the sole overcount question—these answers are used as a flag for later phone followup several months later; there is no skip instruction.

In contrast, on the experimental form, the same overcount question is used as a screener to several additional experimental questions (Figure 1, Question 7). If the answer is yes, the respondent is asked to write in the alternative address and to specify whether the questionnaire's mailing address or the alternative address is, respectively, the person's usual residence and/or the place where the person stayed on Census Day ("Census Day location"). These questions to ascertain *de jure* (usual) residence and *de facto* (Census Day location) residence are intended to permit the determination of where the person should be counted in the census from data on the census form itself during processing. If the answer is no, the respondent is instructed to skip over these questions.

3. Methodology

For our cognitive testing, we aimed to target and recruit respondents who were likely to be in living situations or households found in past research to be at risk of miscounting. These included persons having more than one residence, such as college students, military personnel, persons tenuously attached to households, or recent movers, as well as minorities in general (Mule 2002). These also included large households and complex households with persons other than, or in addition to, nuclear family relatives, especially those including nonrelatives and distant kin, which have been identified as at risk of miscounting in past censuses and tests (e.g., de la Puente 1993, Ellis 1994, Schwede, Blumberg and Chan 2006, Schwede 2008).

We conducted 18 cognitive interviews in December 2008 and January 2009 in the Washington DC metropolitan area in our lab and in places more convenient to respondents. One of these respondents did not seem to understand the task and made numerous mistakes, so we removed her case and did our analysis with the remaining 17 respondents. We paid respondents a small honorarium.

Our small, non-random sample was diverse, with twelve women and six men who ranged in age from 21 to 70, with an average age of 36. Nine were white, six African American, and three Asian, with two of these also identifying as Hispanic. Eleven respondents were in rentals and seven were living in owned units. Household size ranged from one to eight persons, distributed as follows: one person in household (1 respondent), two persons (2), three persons (9), four persons (1), five persons (3), six persons (1) and eight persons (1).

Our respondents were also diversified in household types, as we had intended. Ten of our eighteen respondents were in a variety of family household types. Six respondents were in family households with "own children," with one of these also having a distant relative. Three were in family households with relatives other than children, and two of these had distant relatives (nephews). One last family household included nonrelatives.

The last eight respondents were in nonrelative households. Seven were in households of two or more nonrelatives, while the remaining one was in a single person household.

In our cognitive interviews, we asked respondents to complete the experimental questionnaire as they would if they were alone at home, while we listened, observed and audiotaped the interviews without asking scripted probes. When the respondent had completed the task, we asked a series of probes and also inquired about any questions that had seemed problematic. We then asked respondents to describe the living situations of each person in the household to enable us to identify any other places each person may

have stayed and to decide where each should be counted, according to the census residence rule and residence situations (Lamas 2009). The census residence rule basically states that persons are to be counted at their usual (*de jure*) residence—where they live and sleep most of the time—but if they have no usual place or are staying in certain types of group quarters on Census Day, they are counted in the (*de facto*) place where they are staying on Census Day. We later compared where we thought each person should be counted according to these rules with the answers to the overcount sequence on the form to see whether the respondents’ answers correctly classified each person as to whether they should be counted in the respondent’s household or somewhere else.

In this paper, we focus on whether respondents correctly completed the screener question and provided enough information to determine where each person should be counted; we also focus on the types of households and situations where the experimental sequence did and did not work. More information on the performance of the questions themselves and our recommendations for modifying them will be found in our final project report (Schwede, Sorokin, and Yelei forthcoming).

4. Findings

4.1 Respondent Understanding of the Overcount Question

The basic intent of the overcount question is to identify persons who may have another address and to gather some data on the other type of place or situation, used to determine, either from the experimental form or from followup to the standard and sometimes the experimental form, whether the person should be counted in this household or not. Seventeen of our eighteen respondents displayed a basic understanding of the overcount screener question, “Does this person sometimes live or stay somewhere else?,” but there were variations in how they defined it. Seven gave definitions that basically repeated the key verbs in the question, “live” or “stay,” that were close enough to the meaning of the question (for more on meanings of “live” and “stay” in previous research, see Gerber 1994 and Schwede 2006). Three defined the purpose of the question as an effort to determine a person’s “permanent residence” or “primary address.” Seven others defined this in terms of patterns of movement, such as splitting one’s time proportionally between two or more places, going back and forth repeatedly between two places, and stays elsewhere of a certain minimum time period, such as “at least two weeks.”

Here are some comments from respondents on this question:

[Y]ou really have to puzzle this out! If you guys are trying to make sure you get [an accurate count], you want to know if this person might happen to be somewhere else at the time they are doing the count. Unless you are doing a count all year long, I don’t know. If you are doing a count in summer, you might catch [my son] somewhere else; otherwise you’d catch him here. So I would say “No,” even though [six weeks at camp] is a prolonged time...Whew! I get to skip and I think I’m done! This was really interesting!”

“The question about ‘sometimes live or stay somewhere else’ is very broad. It can include a one-night stay in a hotel or live in a house for four to five years. Some categories here are locations, while others are for something else. It doesn’t compute in my mind.”

The respondents' answers identify a problem with this question. In not specifying a reference period or explaining how to measure "most of the time," the vague quantifier leaves this open to varying interpretations. It may produce large numbers of "yes" answers that do not signal viable alternative addresses for census purposes, increasing time and costs in followup.

4.2 Respondent Answers to the Screener Overcount Question

We now examine how respondents answered the basic overcount screener question, "Does this person sometimes live or stay somewhere else?" Table 1 shows breakdowns at two analytical levels: the breakdown of answers for the households of the 17 respondents are shown in the first row, and the breakdowns for all persons within the households are shown in the fourth and fifth rows.

Table 1: Answers to the Overcount Question: Does this person sometimes live or stay somewhere else?: By Respondent, and For Persons in the Household

	"No" for all persons in HH	Mixed: Some "Yes" and Some "No" Answers for Persons in HH	"Yes" answers for all persons in HH	Total
<i>Respondents</i>	11	5	1	17
<i>Persons in HH</i>				
Answer: Yes	-	11	5	16*
Answer: No	34	12	-	46**

* 6 respondents marked 16 persons in the household as "Yes" to this question

** 16 respondents marked 46 persons in the household as "No" to this question

We focus first on the seventeen respondents in the first row of the table who can be grouped into the three household patterns identified in the first three columns, based on answers they gave to the person-level questions on whether each person sometimes lives or stays somewhere else. The answer patterns are shown in the columns. In the first column, eleven respondents answered "No" to live or stay somewhere else for all of the persons listed on the census form. In the third column we see that just one respondent answered "Yes" for everyone in the household. The middle column shows that five respondents gave a mix of "Yes" and "No" answers for persons in their household.

We now turn to the lower rows in Table 1 that classify answers for each of the 62 persons listed in their households on the census form by our 17 respondents. A total of 46 persons—34 in the "All 'No'" column and 12 more in the "Mixed" column—were reported as "No" for sometimes live or stay somewhere else. In contrast, five persons in the one household with "All 'Yes'" answers, along with eleven of the persons in the "Mixed" households, were reported as "yes" to "sometimes live or stay somewhere else." Thus, six of our 17 respondents identified a total of 16 persons in their households who potentially have another place. These persons with "Yes" answers are the primary focus of this paper. We now to consider the pattern of their answers to determine where they should be counted according to the residence rules and whether the respondents' answers to the experimental questions captured that situation accurately.

4.1.1 Performance of the overcount screener question sequence for “Yes” answers

The overcount question sequence worked fairly well to identify “Yes” residences correctly, based on living situation information collected in the debriefings. Of the total sixteen persons for whom a “yes” answer was marked to the overcount screener question, twelve can be classified correctly with the overcount sequence. The sequence also identified some living situations known to be problematic from past coverage studies.

Of these twelve, two should clearly be counted at the “other address” that was written into the boxes. One of these was a college student living away. According to the census residence rule and residence situations document (Lamas 2009), college students living away should be counted at the other place, not at the parent’s house. This interview was conducted in our lab and the respondent did not have her address book with her. She could not provide the specific dorm information, but did fill in the name of the college, the town, and the state. Had she been doing this at home as in the real census, she said she would look up her daughter’s full address and write it in the questionnaire spaces. In the other case, the respondent wrote “in the military in Iraq” in the write-in boxes for the alternate address question for places without standardized addresses or for facilities.

While the alternate addresses written in by these two respondents for these two people from their households were incomplete, they were sufficient for us to determine from the experimental sequence that these persons should not be tabulated in these households. The student should be counted at the other place, while the overseas soldier would be included in his state’s count for apportionment, but not in the stateside enumeration.

We were able to determine that the remaining ten of twelve who were classified by respondents as sometimes living or staying somewhere else should be counted in the respondents’ households, according to the census residence rule and residence situations. Five of these were college students living in one apartment, while two nephews in two households were tenuously attached, but spent more of their time in this place than in any other place and were here on the Census Reference Day. Another person was alternating between this place and the other place, but should be counted in this one. A different person was not well known to the respondent, but should be counted in the respondent’s household. Finally, one respondent incorrectly answered “Yes” for herself as having another place she sometimes lives or stays, but she should be counted here.

For the remaining four of sixteen persons marked affirmatively for sometimes lives or stays somewhere else, the pattern of answers in the experimental sequence was not sufficient to make a clear determination as to whether they should be counted in the respondents’ households or in some other place. In these cases, the critical residence rule information intended to designate the person’s usual residence and/or where the person stayed on the census reference date is either blank (missing) or the respondent marked “Some other place” for both usual residence and for the December 1 place. However, during our interview with one observant respondent, we realized that two of these four cases of inadequate information may have been due to our oversight. Both the usual residence and December 1 place questions list in a response category, “The address printed on the back of this questionnaire.” Unfortunately, we had not printed any address on the back of this respondent’s questionnaire before the interview—when the respondent turned to the back to look for that promised printed address, he did not find anything there. Frustrated by this lack of expected information on the back of the questionnaire, he ended up marking “Some other place” for both questions. Later, in the debriefing, he

said that if his home address *had* been printed on the back of his form, he would have marked “address printed on the back of the questionnaire” for both persons. That would have been sufficient to resolve his two cases.

Hence there were just two of 16 persons marked as sometimes lives or stays somewhere else for whom we could not determine whether they should be counted in the respondents’ households or at the other places.

What we have learned from these cases is that critical questions need to be answered in specific ways in this sequence for persons designated as sometimes living or staying somewhere else to be classifiable as either counted here or counted at the other place. The usual residence question (9) should be marked as either “the address printed on the back of this questionnaire” or “the address or location you listed in Question 8” in conjunction with that address being filled in. One other combination of answers that is sufficient for residence classification as either in this household or in the other place is if the usual residence question is marked as “both places equally” and the Census Day location question is marked with either “the address printed on the back of this questionnaire” or the “address or location you listed in Question 8” with that address actually written into those spaces. In that case, the place where the person stayed on Census Day would be the place where he/she should be counted.

This suggests that phone followup may be necessary for persons in households that do not contain enough information in the *de jure* and *de facto* residence rule questions and in the address boxes to determine if each person should be tabulated in the census in this household or in some other place. In this small, non-random study, at least twelve of the sixteen persons with “yes” answers to sometimes live or stay somewhere else could be counted in the right place based on information supplied in the experimental overcount question series without the need for phone followup later. The 2010 split-panel test of this overcount booklet in the Alternative Questionnaire Experiment will enable us to determine whether this pattern is found for the wider population as well.

4.1.2 Performance of the overcount screener question sequence for the “No” answers

Table 2 documents how well the skip instruction worked for the “No” answers to the question, “Does this person sometimes live or stay somewhere else?” The table presents

Table 2: Performance of skip instructions for “No” Answers to “sometimes live or stay somewhere else,” by Respondent, and For Persons in the Household

	All skips correct	Some skips correct	No skips correct	Total
<i>Respondents</i>	7	2	7	16*
<i>Total Persons in HH</i>				
Answer: Yes	22	5	19	46**
Answer: No	-	2	19	21**

* 16 of 17 respondents marked “No” for one or more persons in the household

** Of the 46 persons with a “No” answer, 21 (46%) were not skipped correctly

data on respondents and households in the in the top row, as well as data on individual persons within those households in the lower rows of the table.

The skip instruction did not work well. Of the 16 who answered “No” to the overcount screener question for one or more household persons, seven missed skips for everyone in the household while seven others followed all skips correctly. Two started out missing the skips, but eventually saw the skip and followed it correctly for subsequent persons.

Of the 46 total persons for whom a “No” answer was recorded to “sometimes live or stay somewhere else,” seven respondents missed the skip for all 19 persons in their households, while two respondents missed the skip for two persons. Expressed in percentages, respondents missed the skips for 46% of all of the persons in households they reported as not having another place where they sometimes live or stay. Clearly, the skip instruction is not working effectively and needs revision.

In analyzing these results, we identified two missed skip navigation patterns. The first missed skip navigation pattern is helpful; it actually verifies the “No” answer to “sometimes lives or stays somewhere else.” In this pattern, the respondent misses the skip instruction, either leaves the other address question (Q8) blank or writes in the same address printed on the back of the form, as well as answers the usual residence (Q9) and December 1 place confirming either this address (printed on the back of the questionnaire) or the write-in address as the usual address. Seven of our nine respondents who missed the skip instruction followed this pattern and thus verified one or more “No” answers. Thus 15 of the 21 persons for whom the skip was missed can nonetheless be verified as living or staying most of the time here, based on the answer pattern. They can be correctly classified as living in this household.

The second missed skip navigation pattern answers are inconsistent with the designation of the person as not “living or staying somewhere else” in the overcount screener question. Two different answer sequences produced this inconsistent outcome. In the first, the December 1 place is marked as “the address printed on the back of the questionnaire,” but the usual residence question and the other address are blank. This does not allow us to determine from the questionnaire answers whether the persons do or do not have a usual residence elsewhere. To avoid missing these persons altogether in the census, we can count them in these households as of December 1 (according to the census residence rule that says that if they do not have another usual residence, they should be counted here), pending the results of the nationwide search/match unduplication operation. There is the possibility that some unknown number of people in the census with these answer patterns could have a usual residence elsewhere. If they were listed on a different census form in either a household or group quarter, they could be duplicated elsewhere. They may or may not be identified in the nationwide unduplication effort.

The second answer sequence producing residence data inconsistent with a “No” answer to “sometimes live or stay somewhere else” is if answers to both the usual residence and December 1 place questions are marked as “Some Other Place” with the other address question left blank. In this study, two persons with this experimental overcount sequence answer pattern would need followup to resolve where they should be counted.

4.3 Types of Household Living Situations Revealed by the Experimental Sequence

The experimental sequence worked well in revealing three general types of household living situations. The first is that of parents of college students and college students living in apartments. According to Census Bureau research, college students are the biggest category of persons who are overcounted in the census (Mule 2002). In our study, we had

two respondents with their children living away at college. One respondent did not read the residence instructions in the household population count question (Question 1) and as a result wrongly included her daughter in that count and also provided information for her in the individual person page section. In this case, the overcount question worked as intended. The respondent did notice the response category in the overcount question for “In college housing.” She did mark yes to the overcount question, marked “in college housing,” and provided a partial address—enough to indicate on the form that this young woman should be counted at the college, not here. In contrast, the other respondent with a son living away at college did read the residence instructions in Question 1 and obligingly left her son out of the count and did not list him in the person pages. However, when she read through the overcount question response categories for herself and the other two persons in her household, she became confused when she saw “in college housing.” She said this was inconsistent—the instructions said college students living away should not be listed on the form so how come this question has a category for those sometimes living or staying in college housing—no one should fall into that category. Some respondents, like this one, are very observant and will notice this seeming contradiction. However, in our experience in past cognitive testing projects with the census form, a large preponderance of respondents end up listing their college students on the form, even when they have read that they should not do so. The overcount question will be useful in identifying potential overcounts of college students living away.

The second general living situation identified in this study was households with tenuously attached relatives. Past research has shown that tenuously attached persons are at high risk of miscounting, either through omissions or being counted in more than one place (Gerber 1994, Schwede 2008). Using the respondents’ descriptions of the living situations of two young, tenuously attached men enabled us to verify that they should be counted in the respondents’ residence, but that was only because we had the additional information from the debriefing. Both of these young men actually had three different places. In both cases, the tenuously attached person was related to the respondent as nephew. In one case, the young man also stayed sometimes at his mother’s place, and other times at his father’s place. In the other case, the young man also stayed part-time at his brothers’ house and the rest of the time at his girlfriend’s house.

What we learned from these cases is that the experimental overcount sequence has a blindspot: it collects alternative address information on just one other address and some tenuously attached persons have two or more alternate addresses. We can get hints of this in some circumstances when respondents mark “Some other place” as their answer to the usual residence and/or Census Day place, but there is no provision for writing in the third address. Phone followup might be needed for persons in households with “some other place” marked to these key residence rule questions.

The difficulty is that tenuously attached persons move frequently, and by the time we contact them in a followup call several months later, the respondents may not be able to recall whether the persons were actually there or at some other place on Census Day. One of us identified a household with this pattern on the Cheyenne River Sioux Reservation in the 2006 Census Test only as a result of combining multiple sources of data (Schwede 2008). The young man was identified in the Census Coverage Measurement Operation as having been in his mother’s household around the time of the census, but a search for him in the actual census dataset did not find him in that household or elsewhere. Only after a special search for that young man was done with the final set of matched CCM-Census households did one of us learn he had actually been

counted in the census—at his sister’s house. Because his name was misspelled and his age was not recorded on his sister’s form, he was not identified in the search/match operation. Trying to add questions to ask about a third address would take up a lot of space on the experimental overcount booklet and make the residence rule questions difficult to understand and complete. It does not seem feasible to modify the experimental overcount sequence to add space for a second alternative address.

The third living situation in the study that we describe here is the general category of households in which respondents do not know, or do know and choose not to give, data on others in the household. We found several cases like this. In one of them, the respondent was extremely leery about revealing personal information on the census form. She provided very incomplete data on the five in the household: just first initial of the first name with age, but no birthdate, and race. Interestingly, she did answer the residence rule questions, marking both the usual residence question and the Census Day place as the address on the back of this questionnaire. Despite the very incomplete demographic data, her answers to the residence rule questions enabled us to determine that these five roommates should be counted here. However, the lack of sufficient name and birthdate information guarantees they would never be matched in the search/match unduplication. There is thus a chance one or more of these persons could be undetected duplicates in the census if they were also listed on someone else’s questionnaire in the census.

We also had two respondents who started marking “yes” to “live or stay somewhere else” but realized this meant they had to do extra work and provide addresses. For subsequent persons in the household, they deliberately mismarked the answer as “No” when it should have been “Yes.” One of these explained his behavior by saying he did not know the other addresses of his roommates and he did not want to waste time answering unnecessary questions, so he lied. The other said she did not know her roommates’ alternate addresses so she answered “No” to avoid leaving the spaces blank. These are clear cases of concealment to reduce perceived burden and/or avoid difficult questions.

A few respondents were foreigners who had alternate foreign countries. They told us that the address fields on the form do not fit the format for writing foreign addresses. They noted that there is no line to write in the name of the foreign country, so we get no data from the census form on those who have alternate addresses in other countries.

4.4 Living Situations Not Picked Up by the Overcount Sequence

In the debriefings, we identified two types of living situations that were not identified by the experimental overcount sequence. The first was a rare occurrence of an omission which can lead to undercounts, as much of a concern to the census as overcounts. When answering the household population count question on how many people were living or staying in the house, apartment, or mobile home on the census reference date, the respondent did not count a roommate. The roommate is a woman who stays at the respondent’s house during the week, but then goes to stay with her husband at their new home some distance away on the weekend. The roommate is staying in this area at her job until she can find a new job near her new home, but at present, there is no indication when she will leave this temporary situation. Since only those persons included in the household population count (Question 1) are listed again in the person pages requesting additional demographic data, the respondent does not have to answer the overcount question for the roommate, which would have helped flag her as having another residence

elsewhere. However, there was evidence of this extra person on the respondent's form; she did mark the "additional people staying on Census Day" category in the Question 2 undercount question to flag that a nonrelative is staying here. One could argue that the roommate will be counted at her new home, so the lack of her name on this respondent's form precludes the chance she will be duplicated or counted in the wrong place.

A more prevalent, and interesting living situation that was identified in the debriefing section of this study but not recorded in the experimental overcount sequence is the boyfriend/girlfriend situation, in which persons are going back and forth between their own place and the place of their boyfriend/girlfriend (or fiancé/fiancée). This pattern was identified in four of our 17 households. This is especially interesting because, to our knowledge, there have been no statistical studies examining potential associations between boyfriend/girlfriend mobility patterns and census duplications and overcounts, although there are occasional anecdotes from small-scale qualitative studies. There is no specific check box for such a mobility pattern and no way to disaggregate these cases from the miscellaneous "for another reason" category. In two cases, we deliberately recruited two respondents whom we knew from independent sources had at least one roommate who was going back and forth between the respondent's household and the boyfriend/girlfriend's house. Interestingly, during the cognitive interviews, neither of these respondents marked "Yes" as to whether any of the persons in the household sometimes lives or stays somewhere else. One of these, however, did indirectly allude to a situation like this during the debriefing, allowing the researcher the opening to probe. This respondent explained that she did not mark "yes" for her roommate because the relationship was too new and the stays elsewhere were not that frequent. It could end at any time, so she decided not to mark "Yes" to sometimes lives or stays elsewhere.

The respondents in the other two households with boyfriend/girlfriend situations also did not mark "Yes" to the sometimes lives or stays elsewhere question. One of these was the respondent himself who freely admitted in the subsequent debriefing that he routinely spends the weekends at his girlfriend's house. He said he did not mark "yes" because he did not think it was important enough to mention. He also mentioned in the debriefing that he interpreted his address as his "permanent address," where he received his mail, rather than on some calculation of the actual amount of time spent in one place or another, a variant on the definition of residence as "where I belong," rather than "where I stay" found in earlier residence research (Gerber 1994). In another household, a boyfriend of one of the persons often stays at the respondent's house with his girlfriend, even though he has his own place elsewhere. The respondent said that this man was in the household so much that he has been given his own shelf for groceries.

The alternate boyfriend/girlfriend living situation may be fairly prevalent, but it would be difficult to craft a response category to identify this situation on a census or survey questionnaire without offending or annoying respondents who consider that to be one's private business. The overcount question has the miscellaneous category "for another reason" that could be marked for this situation, should a respondent choose to do so. This is probably one of those living situations that will continue to be under-recorded.

5. Summary and Recommendations

In summary, we found in this study that some respondents basically understood the overcount question as asking for where a person's "permanent address" is. The vague

reference to “most of the time” without a specific reference period was noted by some. Others showed variation in interpreting this question in terms of minimum durations, repeating trips, splitting time proportionally, or in some cases, intention (such as the man who said that he did not consider his weekly stays at his girlfriend’s house to be significant enough to document). The skip formatting in this question did not work well and some respondents mistakenly wrote in their home address in Question 8, which was designed to collect the “other address.”

On the basis of these findings, we recommended question wording and question formatting changes to enlarge and emphasize the skip instruction and make it more noticeable by being distanced somewhat from the “yes” answer. We also recommended changing the wording of the alternate address question to emphasize the *other* address with underlining. These revisions were accepted by the team and included on the final experimental questionnaire for the Alternative Questionnaire Experiment in 2010.

We suggest that when new research and development efforts begin for Census 2020, consideration be given to revising the wording of the overcount question to better clarify the meaning of “most of the time” by developing and testing a reference period. It was too late in the Census 2010 R & D schedule to make significant changes to this key question as a result of this research.

We found that this experimental overcount sequence worked fairly well for determining correct residence and shows promise for future use. Twelve of the sixteen “Yes” persons’ residences could be correctly identified from the answers they wrote on the form, based on the independent living situation information we collected on each respondent during the debriefing phase of the interviews. Also, while the first version of the skip instruction itself did not work well, we could use the pattern of unnecessary answers after the skip instruction to verify that most of the persons should in fact be counted in the respondent’s household, rather than somewhere else. The greater the number of persons with more than one address for whom we can determine correct place of census tabulation from the census form itself, the more potential we have to reduce the telephone followup workload, saving money and time while improving the accuracy of the count.

The problematic pattern of answers for the experimental sequence is when respondents leave both the alternate address (Question 8) blank and the usual residence (Questions 9) and Census Day location (Question 10) questions blank or marked as “Some other place.” In some of these cases, the correct place to count the person might not be determinable; phone followup would be needed to resolve where the person should be counted.

We think the revised overcount sequence has the potential to improve data quality. The respondent is providing the alternative address information at the time of the census when it is fresh in mind. For the households with clear answers that can be used to determine residence directly from the forms during the processing stage, followup costs and time can be saved and recall decay can be lessened. We look forward to seeing the results of the split-panel test of the experimental overcount questionnaire in Census 2010.

Finally, we identified some types of living situations problematic to accurate census counting, such as identifying a college student and a military person living away who should not be counted in the respondents’ households, as well as ten others who should be counted at the census form address and some living situations with misreporting. We identified other problematic living situations that were not picked up on the overcount

form, such as the commuter work housemate who lived there for work during the week and at home with her husband elsewhere on the weekend. We also identified several respondents going back and forth between their boyfriend's/girlfriend's places and their own places that were not recorded on the form. This may be a mobile living situation that needs to remain in the unspecified "for another reason" category because it is sensitive.

We will be conducting a set of comparative qualitative studies of enumeration methods and coverage in different race/ethnic subpopulations to learn more about the interactions of living situations and coverage (Schwede forthcoming). We understand there will be another cognitive study in 2010 similar to this one to inform the results of the split-panel test. We recommend that more research be done in the area of living situations and coverage as we begin planning new research and development for Census 2020.

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