

# RESPONDENT UNDERSTANDING OF DECENNIAL CENSUS RESIDENCE INSTRUCTIONS: THREE PRETESTING METHODS, THREE RESULTS

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## 1.0 Introduction

An accurate and complete count of persons is essential for the decennial census. Most of the household enumeration is based on self-administered questionnaires returned by mail. The respondent is provided a list of residence instructions on the front page of the form, which guides the respondent in determining whom to include or exclude on the form. The quality of the overall census count depends, in a significant sense, on how accurately the respondent reads and interprets these instructions for his or her household enumeration, or on how well the respondent's own natural decision rules for inclusion and exclusion coincide with those of the census residence instructions.

The purpose of this research was to compare and understand the nature of the response accuracy between two sets of residence instructions. The longer set of instructions had been used on the 1990 census questionnaires, and the shorter set, on the Census 2000 Dress Rehearsal questionnaires. Each instruction set had "include" and "do not include" headings, with examples of situations listed underneath. The longer set had 13 instructions (8 "include" and 5 "do not include" instructions). The shorter set had 7 instructions (3 "include" and 4 "do not include" instructions).

Earlier research had suggested that it might be effective to use a shorter set of instructions if the omitted instructions coincided with the respondent's natural decision rules or intuition for including or excluding people on the questionnaire. Therefore, some of the rules that were repeated on both the "include" and "do not include" lists for the longer set were eliminated for the shorter set. For example, on the longer set,

"College students who stay here while attending college" was under the "include" list, and "College students who live somewhere else while attending college" was under the "do not include" list. Both sets of instructions rest on the underlying concept of "usual residence," that is, the place where the person lives and sleeps most of the time.

The response accuracy of the shorter and longer versions of the instructions was tested using three different pretesting methods, namely: (1) group administrations of a vignette methodology, (2) focused group debriefings, and (3) cognitive interviews. This paper discusses the different kinds of information and insight provided by these three pretesting methods. The findings of this effort are discussed within the context of the differential use of pretesting methods. The singular dimension of the residence instructions compared to a lengthy questionnaire with a variety of questions provides a good opportunity for such a methodological assessment.

## 2.0 Methodology

The relative accuracy of responses using the two sets of residence instructions was assessed using a qualitative methodology that consisted of the following:

- **Group administrations of vignettes**, in which people in two groups (Group 1 and Group 2) were asked to answer questions about 17 vignettes. Vignettes, or brief narratives, present hypothetical people in ambiguous living situations, suggesting that there is more than one place where a person could be counted. Prior to the administration of the vignettes, Group 1 was asked to complete a household questionnaire containing the shorter set of residence instructions; Group 2 was asked to complete the same questionnaire with the longer set. The list of vignettes is shown in section 6.0 at the end of this paper.

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- **Focused group debriefings**, in which members of both groups were asked to think about and evaluate different aspects of the residence instructions and vignettes using a series of questions and an open-ended discussion.
- **Cognitive interviews**, in which five participants in each group were asked retrospectively to “think aloud” about how they reached answers to selected vignettes.

## 2.1 Participant Mix of the Groups Administered the Vignettes

Fifty-four people were assigned to one of two groups (28 and 26 persons for Group 1 and Group 2, respectively). The desired mix of participants was driven most by educational level, with 16 recruits having less than a high school education, 17 having only a high school education or GED, and 9 having only some college, and 12 having a college or postgraduate degree. The groups also had broad racial and ethnic representation as well as a wide representation of households by size and special circumstances, for example, persons away at college, persons in institutions such as nursing homes, persons with extended family living with them, and persons with roomers or foster children. A similar representation of characteristics was achieved for each of the two groups.

## 2.2 Group Administrations of the Vignettes

The vignettes provided an objective measure of accuracy to assess differences between the two groups. Most of the vignettes were based on previous work reported by Gerber et al. (1996); however, some were created specifically for this exercise to cover situations in the longer list of residence instructions. The vignettes were developed from ethnographic sources, including ethnographic interviews on residence (Gerber, 1990), a Living Situation Survey pretest report (Sweet, 1994), ethnographies commissioned by the Census Bureau to examine the behavioral causes of the undercount (de la Puente, 1993), and a report on the experience of Hispanics in the 1990 census (Kissam et al., 1993). This ethnographic basis for the vignettes ensured that they were perceived as “real” situations. As further reported by Gerber, the vignettes had neutral vocabulary and avoided technical census residence terms.

The facilitator read the vignettes aloud and also gave the participants a written version to read on their own. They recorded their answers after each vignette. There was no time pressure, and participants readily answered the questions on the vignettes without hesitation or complaints.

## 2.3 Focused Group Debriefings

Group 1 and Group 2 were each divided into three subgroups for the debriefings. The five who were to be cognitive interview participants formed one subgroup, and the rest of the participants were assigned to one of two other subgroups. All three subgroups were asked eight closed-ended, precoded debriefing questions about the vignettes and residence instructions. The facilitator read the debriefing questions, and participants also were given time to read them before entering their answers.

## 2.4 Cognitive Interviews

Ten participants were selected for the cognitive interviews, five from Group 1 and five from Group 2. The cognitive interview provided an opportunity to explore what was going through the respondents’ minds as they answered the vignettes. The retrospective “think aloud” technique was used, whereby the respondent was asked to reread the vignette and think aloud about what was going through his or her mind in answering the questions. The vignettes of focus were those for which the respondent had given an incorrect answer based on census-defined inclusion and exclusion criteria. The vignette answer sheet was scored prior to the interview, and the respondents were generally aware if they had a different answer from what the census designated as correct. A relaxed atmosphere was maintained, and interest was focused on understanding *how* respondents came up with their answers, not on the answers themselves.

## 3.0 Findings by Pretesting Method

### 3.1 Findings From the Vignette Administrations

The analysis of the vignette administrations showed a clear pattern: Group 2 (with the longer set of residence instructions) performed better overall than Group 1 (with the shorter set) in correctly answering the vignettes. (See section 6.0 for vignette list.) In addition, except for V10 (Kathy’s roommate), Group 2 scored higher on the individual vignettes. Three scores

reached significance (.05 level or better), as follows:

- The overall difference score:  $p < .002$ , with 65.4% of Group 1 answering correctly, compared with 78.6% of Group 2
- V7- Jack:  $p < .004$ , with 42.3% of Group 1 answering correctly, compared with 82.1% of Group 2
- V9- Dave/Johnsons:  $p < .001$ , with 69.2% of Group 1 answering correctly compared with 100% of Group 2

V1- Maria approached significance at  $p < .064$ , with 34.6% of Group 1 answering correctly, compared with 60.7% of Group 2.

Fisher's Exact Test (2-tail) was used for the individual vignettes. It tells if the result for a given vignette could have happened by chance. It is preferred to the chi-square test to assess significance levels for small sample sizes. The t-test was used for the overall score. It not only addresses what occurred by chance, but also aggregates across all vignettes and respondents. Therefore, if Group 2 consistently did a little better on most of the items, one would get a significant result using the t-test, as occurred in this case. Small differences can add up to a significant difference in the t-test.

Some variations between the shorter and longer instruction lists may have accounted for the differences in accuracy. For example, the longer instructions:

- Were more prominent on the page because of the form design and greater length of the form itself.
- Had more complete and fewer truncated sentences, which may have eased comprehension for those who read the instructions.
- Had greater redundancy, which provided more opportunity to encode the information. For example, Armed Forces personnel who were listed under both the "include" and "do not include" headings.
- Had less ambiguity by providing more explicit instructions, which required less respondent interpretation or judgment.
- Had more noun-first phrasing (that is, college student, newborn baby), thereby facilitating skimming of the instructions.
- Had features which better overcame respondents' natural tendency to include a person with the family unit, rather than where he/she lived or slept

most of the time.

- Had different design features and layout than the shorter list.

### **3.2 Findings From the Group Debriefings**

The debriefing participants were asked to discuss four open-ended questions. The dynamic of the group context brought out stronger, more extreme opinions and sometimes more tangential opinions (such as about the census undercount and racial issues) than the four questions. While a complete list of comments is not possible here, some examples are as follows:

#### ***Examples of comments from groups with shorter version of residence instructions***

- Why can't you say what you mean and be more direct?
- If you would emphasize the date of the census, then logic would hold.
- A person can read the instructions and still not understand them.
- If a person pays rent, they should be counted.
- The instructions are boring.
- A person might be pressed for time; there is no time to read them at home.

#### ***Examples of comments from groups with longer version of residence instructions***

- It would help to have larger, bolder print.
- There is some inconsistency in the rules.
- To be at one place for four days and the other for three is an "iffy" situation.
- People follow their own logic.
- I would skim the instructions.
- I do not need them [the Census Bureau] to tell me who to include in my household.

### **3.3 Findings From the Cognitive Interviews**

The results of the ten cognitive interviews provided insight into "how" respondents came to enter the answers they did regarding the vignettes. While the insight from these interviews showed little between-group differences, the results did show some overall respondent patterns for providing answers to the vignettes; which, in turn, uncovered patterns or "rules in effect" used to decide whether to include or exclude a person in a household.

While most participants did not carefully read the actual instructions, most participants did make consistent decisions based on these “rules in effect.” In other words, many people made up rules and then applied them consistently. The five most prevalent “rules in effect” comments made from participants in both Groups 1 and 2 are the following:

- A person should be listed with his or her family (especially spouse and children). Most participants made decisions based on this premise. A typical comment was “they should be listed where they live, you know, with their family; that is where they really reside.” Therefore, relatively high numbers missed the first two vignettes (V1-Maria and V2-Craig).
- You should follow the same rules as for doing your taxes. If you list a person on your tax form, then you should list that person on your census form. “Tax dependency should be the guiding principle.” “If you pay for them, you should get credit for them.” One participant also mentioned listing the person where he or she has a driver’s license. Both the tax form and the driver’s license follow a logic related to a “legal” or standard way of doing things.
- Exclude people living in temporary situations. Therefore, Carolyn’s mom (V4), placed in a nursing home on a “trial basis,” was felt to belong with the daughter, and one participant felt the Smiths in V6 should not be included with the Haywards since they were only staying there until their house was complete.
- You should include the person where he or she was as of April 18 (Census Day for the Dress Rehearsal), regardless of circumstance. For example, many participants missing V17 felt that the Wongs should be listed in Florida since they spend a significant amount of time there, and they were there on Census Day. One person asked, “What if the Wongs do not get a form in Ohio?”
- If a person is self-sufficient, then he or she should get his or her own census form. Therefore, Dave, the roomer in V9, “has his own mailbox and should have his own form since he is paying rent...he is not a freeloader.” Also, Sergeant Kathy in V8 gets her own paycheck, so she should get her own form. This type of comment was made from only one participant from each group. It also carries a sense of legality with it.

#### 4.0 The Three Pretesting Methods: Results Compared

The three pretesting methodologies--vignettes, group debriefings, and cognitive interviews--provided valuable but different insights into the differences between the two sets of residence instructions and the use of the residence instructions in general.

The *vignette method* provided perhaps the most accurate and objective basis of comparison, but their use had some positive and some less positive features as a methodology for assessing differences. The vignettes provided an objective accuracy score and enabled a more quantifiable comparison. They also provided each group member with an array of situations, which then permitted a more complete appraisal of his/her decision-making under varying household situations. The vignettes were also concrete and understandable to those with less than a high school education.

Nevertheless, the vignettes are somewhat artificial, and the circumstances under which the vignettes were completed were somewhat different than those under which the respondent would be answering in the census itself. Most respondents said that when they read the residence instructions, they read them more carefully when answering the vignettes than they would have if they had read them on their own form, particularly if completing it at home. This suggests that the situation might be worse for those completing the form for their own households, and that it would require a far greater number of respondents to capture and assess the range of situations presented in the vignettes. Therefore, it is important not to ignore the findings from the vignettes but rather to understand them.

Finally, the vignette methodology enables one to reach the outcome state “reporting” of the information processing model, while other pretesting methods often fall short of this. In this case, the accuracy of the respondent’s judgment to place a person in a vignette in a given household could be assessed. Tourangeau (1984) proposed that a respondent’s answer to a question is the result of four stages, namely: comprehension of the question, retrieval of relevant materials from memory, the processing of this information to form a judgment, and the selection of the appropriate response alternative. Eisenhower et al. (1991) added encoding to the model, whereby information of the event is recorded into the mind in

the first place - information may not be recorded, it may be incomplete or it may be distorted. The vignette methodology as a pretesting method permits assessment of the final outcome accurate or inaccurate reporting.

The ***focused group debriefing method*** provided greater insight into the vignette findings. It provided more information on motivating factors to read or ignore aspects of the instructions. It also provided the clearest indication of the strength of opinions. In the context of the group dynamic, more opinions about the instructions, vignettes, forms, and the census itself were shared. However, the discussion part of the debriefing produced fewer precise, more subjective results and, therefore, required greater care in interpreting. Precoded responses to eight questions collected from group participants prior to the focused discussion provided more precise measures of opinions.

Finally, the ***cognitive interview method*** provided a different kind of insight that would not have otherwise been uncovered. The cognitive interviews for the vignettes were retrospective "think alouds" with only general questions and a minimum of probing. Yet as soon as the respondents began to "think aloud," it was obvious that they were creating their own rules for deciding whether to include or exclude the person in the vignette at a given household. These "rules in effect" were given without hesitation and yet were not illuminated by any other methodology. The findings from the cognitive interviews did not point to differences between groups, but rather to an in-depth understanding of decision-making strategies used by participants from both groups regardless of the version of the instructions. Some of these cognitive findings suggested the following:

- Some respondents want to include an individual with his or her family, especially with a spouse and children, even if the individual spends the greater part of the time working elsewhere. They have an affiliation orientation.
- Some respondents have a "legal" sense that results in wanting to include persons on the census form if they are included on the tax form. One individual also was inclined to include the person in the place where the person had a driver's license.
- Finally, other respondents want a simple rule to follow. Two of these simple rules included: 1) all those living here most of the year; and 2) all those

living here as of the Census Day.

The cognitive interviews provided more information about how respondents encoded and comprehended the information from the instruction lists. In particular, the interviewer informed researchers of how "judgments" were made to include or to exclude a given person in a given household.

This paper has discussed the research on respondent understanding of the census residence instruction lists to illustrate how different pretesting methods provide different aspects for diagnosing measurement error. In this case, the group administration of the vignette methodology, the focused group debriefings, and the cognitive interviews provided valued but different kinds of results. The results from just one pretesting methodology would have provided only part of the answer and could have been misleading. However, the use of the results of the three methods provided a better basis for minimizing errors in respondent use and in interpretation of the residence instructions in the future. This, in turn, potentially could minimize measurement error and lead to a more accurate count for future decennial censuses.

## 5.0 References

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## 6.0 List of Vignettes

[Percent correct for Group 1 (shorter instructions) and Group 2 (longer instructions) and p values shown in parentheses]

1. Maria is a live-in housekeeper for the Smiths during the week, but spends weekends with her husband and children at their apartment. Where should Maria be listed on a census form? *Correct answer: with the Smiths*  
(Group 1- 34.6%; Group 2- 60.7%; p<.064)
2. Craig and his wife have a house in Pennsylvania. Craig's job is in Washington, DC, so he stays with his mom in DC, Monday through Thursday of the week. Where should Craig be listed on a census form?  
*Correct answer: Washington, DC*  
(Group 1- 23.1%; Group 2- 46.4%; p<.092)
3. Sergeant Jim is stationed in Alaska while his family has stayed behind in Maryland. Should Jim's wife put him on her census form? *Correct answer: no*  
(Group 1- 53.8%; Group 2- 67.9%; p<.403)
4. Carolyn's mom normally lives with her; however, on [date before Census Day in the census month] she has placed her mom in a nursing home on a trial basis for the next 3 months. Should Carolyn put her mom on her census form? *Correct answer: no*  
(Group 1- 30.8%; Group 2- 46.4%; p<.275)
5. Mary's daughter Alice has been away at college and has 3 more years until graduation. Should Mary put her daughter on her census form? *Correct answer: no*  
(Group 1- 57.7; Group 2- 75.0%; p<.250)
6. The Haywards are sharing their apartment with the Smiths until the Smiths' new house is complete. Should the Haywards list the Smiths on their census form?  
*Correct answer: yes*  
(Group 1- 46.2%; Group 2- 60.7%; p<.413)
7. Jack does not have a place of his own, but stays part of the time at his mother's house and part of the time at his sister's house. On [census day], he was at his sister's. Where should Jack be listed on a census form?  
*Correct answer: his sister's house*  
(Group 1- 42.3%; Group 2- 82.1%; p<.004)
8. Sergeant Kathy is stationed at a base near her mother's house, and stays with her mother. Should her mother put Kathy on her census form? *Correct answer: yes*  
(Group 1- 80.8%; Group 2- 89.3%; p<.460)
9. Dave rents a room at the Johnsons' house. Should the Johnsons list Dave on their census form?  
*Correct answer: yes*  
(Group 1- 69.2%; Group 2- 100.0%; p<.001)
10. Kathy's roommate moved in on [4 days before census day]. Should Kathy list her roommate on her census form? *Correct answer: yes*  
(Group 1- 88.5%; Group 2- 78.6%; p<.470)
11. Mary stayed with her friend Sue for the first 2 weeks in [census month] and then returned to her apartment in Seattle. Should Sue list Mary on her census form?  
*Correct answer: no*  
(Group 1- 92.3%; Group 2- 92.9%; p<.000)
12. Romero lives at home with his parents while attending college. Should they list Romero on their census form?  
*Correct answer: yes*  
(Group 1- 92.3%; Group 2- 96.4%; p<.604)
13. Ned is an eighth grader at a boarding school in another city but comes home for holidays and summers. Should Ned's parents put him on their census form?  
*Correct answer: yes*  
(Group 1- 69.2%; Group 2- 82.1%; p<.346)
14. Tonya and her newborn baby are still in the hospital. Should Tonya's husband list the baby on the census form? *Correct answer: yes*  
(Group 1- 96.2%; Group 2- 100.0%; p<.481)
15. Joan and Tommy's parents are divorced. Their father keeps a room for them at his apartment, and they are named on his lease. They spend weekends with him. Should Joan and Tommy's father list them on his census form? *Correct answer: no*  
(Group 1- 73.1%; Group 2- 85.7%; p<.320)
16. Esther has a foster child assigned to her by the city. The child has been there for 3 months, and Esther doesn't know how long the child will stay there. Should she list the foster child on her census form?  
*Correct answer: yes*  
(Group 1- 92.3%; Group 2- 96.4%; p<.604)
17. The Wongs have a vacation home in Florida, where they stay from January 5 to May 1. They then return to their house in Ohio. They receive a census form at their Florida house. Should they list their names on this form? *Correct answer: no*  
(Group 1- 69.2%; Group 2- 75.0%; p<.764)