ROSTERING, RESIDENCE RULES, AND COVERAGE: WHERE WE'VE BEEN AND WHERE WE'RE GOING

Laurie Schwede, Statistical Research Division, U.S. Census Bureau, Washington, D.C. 20233-9100

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In late 1996, a high-level Census Bureau Team was asked by the Associate Director for Methodology and Standards to review the performance of the rosterbased approach to censuses. This method had been used since 1960, when census forms were mailed for the first time. They were given several months.

In the roster approach, the respondent is asked in Question 1 on the census form to list the names of persons who live or stay in the house, apartment or mobile home on Census Day. A list of residence rule instructions is provided to help respondents decide who should and should not be listed. Later in the form, the respondent is presented with five to seven person panels or columns (depending on the test), and asked to complete one for each person by writing in the person's name and marking answers to individual-level demographic questions. This rostering approach requires writing names more than once: on the front roster and in the person panels.

Improving "respondent friendliness" of the form

² The author thanks colleagues who contributed subtantially to this paper; Nick Alberti, for calculating item nonresponse rates for Census 2000 mailout forms for this paper and discussions on tradeoffs between response rates, item nonresponse, and coverage; Eleanor Gerber, Debbie Griffin, Chip Alexander (posthumously), Beth Nichols, and Karen Mills for giving the mid-1990s context for changes in rostering methods; Dave Sheppard for answering many questions on Coverage Edit Followups. They provided feedback and suggestions on new ways to interpret the results. The author also thanks Dave Whitford, Eleanor Gerber, Dave Sheppard, and Karen Mills for reviewing earlier paper versions. and shortening it were explicit Census Bureau objectives in the mid-1990s. Some thought that both the roster requirement of writing names more than once and the large space needed for the roster on the front page of the census form were not respondent-friendly and that a rosterless person count approach would be.

In the rosterless person count box approach, the respondent is not asked in Question 1 on the census form to list the names of persons, but to write in just the number of persons in the household. Later in the form, names are written for the first time in the person panels for persons 1 to 6, along with demographic data. A continuation roster at the end of the form collects just names for persons 7-12 without any demographic data. A continuation roster is not needed in the roster approach since all names are collected at the beginning of the census form. Followup operations recontact large households to get these people's demographics.

Improving response rates and coverage were the more fundamental Census 2000 test objectives. The Team, then, was to 1) review past studies to decide if the roster approach improved coverage significantly enough to justify any decline in response rates, and 2) recommend which method should be used in the rest of the Census 2000 testing cycle in the 1990s.

The Team reviewed studies and recommended that the rosterless person count approach go forward on the census short form, but both the roster and rosterless person count box approaches be used on the long form (December, 1996). That recommendation was subsequently adopted and implemented in Census 2000.

This paper has four purposes. The first is to compare the performances of the roster and rosterless person count box approaches to household enumeration in a series of Census Bureau research and development tests in the 1990s through Census 2000. Three indicators will be used in this comparison: mail response rates, coverage rates, and item nonresponse rates. The paper starts with a summary of the results of two mailout census tests available to the Team in the fall of 1996 when their short review period began, and then summarizes relevant research before and since then, up to and including Census 2000 evaluations, and research in he 2010 test cycle. The second purpose is to identify clear and consistent patterns across tests of mail response rates, coverage rates, and item nonresponse rates, which do not yield a clear choice. The third purpose is to discuss the advantages and disadvantages of each approach and the tradeoffs of choosing one or the other. The fourth is to suggest new research.

¹ This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone a Census Bureau review more limited in scope than that given to official Census Bureau publications. This report is released to inform interested parties of ongoing research and to encourage discussion of work in progress. The views expressed are those of the authors and not necessarily those of the U. S. Census Bureau.

Reports Existing at the Time of the 1996 Review

When the team started meeting in September, 1996, there were two mailout census test reports available that compared roster and person count approaches: the 1990 Alternative Questionnaire Experiment (AQE) (Bates 1991; Bates and deMaio 1992) and the 1996 National Content Survey, or NCS (Leslie 1996 and Griffin 1996). These tests are relevant to this paper's focus and will be discussed here. Other coverage evidence reviewed by the Team was from the Current Population Survey, the census and ethnographic studies (Hainer, Hines, Martin and Shapiro 1988), two small tests of alternative roster questions for the Survey of Income and Program Participation (Cantor and Edwards 1992; Kearney, Tourangeau, Shapiro and Ernst 1993), a qualitative study of respondents' ability to create rosters consistent with census residence rules (Gerber, Wellens, and Keeley 1996), and the Living Situation Survey, with an extended list of de facto and de jure residence probes (Schwede 1993; Sweet 1994; Martin 1996). The team also consulted with colleagues in the United Kingdom, Australia, and New Zealand.

1. The 1990 Alternative Questionnaire Experiment

The AQE was done with census long forms as part of the 1990 Census. The first five panels used the roster approach while the sixth used the rosterless person count box approach, along with several other innovations. The person count box panel did achieve a significantly higher mail response rate, but the results could not be attributed specifically to the person count box, so these results were not of much use. The Team noted that the simplified roster and rules in some panels did not hinder mail response, suggesting there was still leeway for the roster.

2. The National Content Survey in 1996

The March, 1996 National Content Survey (NCS) was of value to the Team: it had been designed to evaluate rostering methods. Seven short-forms were fielded, six of them rosterless. Form 1A was the only roster-based short form: it was the 1990 census form, included as the control, without any of the improvements made to it in the early 1990s when the focus had been on improving coverage exclusively within the roster format.

Of the six person count box short form panels, I discuss two. Form 1B had a person count box and a reduced list of reworded residence rule instructions and more white space; these innovations had come out of the earlier roster-based tests. Form 1F had a person count box and a short list of residence rule instructions.

The Leslie report (1996) compared mail response

rates in the NCS. A mail response was defined as a "questionnaire checked into the processing system. Some of these could be 'blank.'" Table 1 shows that Form 1B with the rosterless person count box and a reduced list of residence rules got significantly higher ($\alpha = 0.10$) mail response rates than Form 1A with the roster: at the national level (74.8% to 71.2%), and in

Table 1: 1996 National Content Survey: MailResponse Rates by Form Type			
	National	High Coverage Areas	Low Coverage Areas
Form 1A: Unchanged 1990 Roster	71.2%	75.9%	51.6%
Form 1B: Rosterless Person Count Box	74.8%	79.9%	53.4%

Source: Leslie: 1996

the high coverage areas (79.9 to 75.9%). In the low coverage areas, the person count approach mail response was slightly higher at 53.4% to 51.6%, but this was not statistically significant. Leslie warned about attributing differences in response rates to the presence or absence of any particular feature, since there were many different features incorporated into the panels of this test. However, given the lack of other data at that time, the higher mail response rates for the person count box form in this test were probably important in the Team's decision to recommend the person count box.

Griffin (1996) presented preliminary results of coverage in this test based on reinterviews of a sample of cases. While person count box Form 1B had somewhat lower omission rates than Form 1A nationally (1.3% to 1.7%), in the High Coverage Areas (1% to 1.4%) and Low Coverage Areas (2.7% to 3.6%), the differences were not statistically significant. However, Griffin notes that many of the persons omitted from the person count box forms were family members. She estimates that on form 1B with seven person panels, about 1.5% of the forms should have had names for persons 8 and above on the continuation roster but did not. This may indicate a potential coverage problem with the rosterless person count box approach in large households.

Recall that names are only recorded once on a person count box form: if they are missing in the person panels or on the roster continuation lines after all of the person panels have been completed, the names are not obtained on the mailout form and followup may be needed. With the roster approach, names are recorded right at the beginning as well as in the person pages; this redundancy would make the names of the last persons in large households more likely to be on the form and easier to follow up.

In terms of erroneous enumerations, the results were not statistically significant, though Form 1B had a somewhat lower rate than Form 1A nationally (1.5%) to 1.8% and in the High Coverage Areas (1.2 to 1.6%), but a slightly higher rate than Form 1A in the Low Coverage Areas (2.8\%) to 2.7\%).

Based in some part on these results from the 1996 NCS, the Team decided that eliminating the roster did not have a negative effect on coverage, recommending that the rosterless person count box approach be adopted for future testing in the Census 2000 research cycle. Griffin noted, however, that just one roster form–the unimproved 1990 form–was tested; an alternative roster might have performed better.

Studies Exclusively on the Roster Approach from the Early 1990s not Included in the Team Report

During the early part of the 1990s, there had been iterative development and testing of improved roster forms. In the 1994 National Census Test, two different roster questionnaires were tested. One was called the "Improved 1990 Form." It still had the 13 residence rule instructions from the 1990 Census roster question, but was improved in that it had much more white space on the form than the crowded 1990 form, due to simplifying instructions on whom to count, removing text before Step 1, simplifying and shortening instructions to fill in the roster, and omitting the long and difficult "whole household usual home elsewhere (WHUHE) question and instructions. The second, "Extended Roster Form" omitted all residence rules and asked the respondent in a concise and easy-tounderstand way to list all of the people living or staying there on the reference day. Four household-level inclusive coverage questions asked for additional people with ties to the household.

Pausche (1994) calculated the mail return completion rate, which seems to be the same as the mail return response rate used in the Leslie paper (Leslie, 7/10/02 personal communication), in Table 2.

Pausche's results seem to show that noticeable improvements in the design and wording of roster questions made to the 1990 roster may have yielded higher mail response rates in the early 90s comparable to those achieved by the 1996 NCS person count box forms in Table 1. However, in the 1996 NCS test, the unimproved 1990 census roster was the only roster included, apparently included just as the control form to evaluate the performance of the 6 person box forms.

Table 2: 1994 National Census Test: MailReturn Completion Rate by Roster Form Type			
	National	High Coverage Area	Low Coverage Area
Improved 1990 Roster	74.8%	79.4%	55.1%
Extended Roster	73.8%	78.4%	53.7%

Source: Pausche 1994

As a result of the 1994 Test, Griffin's Coverage working group designed a mockup of an improved roster with a shorter list of residence rules and more streamlined language that they recommended be used in subsequent tests of the roster. By comparing this mockup to the Form 1B person count question in the 1996 NCS, it appears that the recommended shorter list of residence rules and some of the more streamlined language were incorporated into the person count box form 1B. This suggests a preliminary decision had been made to replace the roster approach with the person count box approach for future testing.

Martin and Griffin sent a memo to Miskura (April 26, 1995) suggesting that further improvements to the roster might improve coverage.

A worksheet approach was used with a roster in the 1995 Census Test. After first listing persons in the roster, respondents were given some coverage probes and asked to go back to the roster and add names of omitted people and/or line out names of people listed who shouldn't have been counted there. According to McNally (1996), people tended not to go back to the roster to make these corrections. About 93% of those indicating the whole household usually lived elsewhere failed to go back to the roster and line out persons listed there. The worksheet approach was abandoned. This 1995 test was the last focusing exclusively on rosters.

Study Reports in the R and D Testing Cycle that Came Out After the 1996 Team Review

After the Team submitted its report, three important study reports came out. In 1997, Alberti wrote another paper with the NCS data, also finding no significant coverage difference. This paper, however, presented item nonresponse rates from the test for the first time. The item nonresponse rate is an important indicator of data completeness and quality. On the person count box forms in the NCS test, the entry of any number in the box signified item response; a blank was classified as a nonresponse. On the roster form, the listing of one or more persons' names was counted as a response; no name was counted as a nonresponse.

The unimproved 1990 roster questionnaire (Form 1A) performed far better than any of the person count box forms, as shown in Table 3. Roster form 1A had an item nonresponse rate of 3.1% while the person count box Form 1B item nonresponse rate was 9 times higher at 28.2%! Of the five remaining person count box census short forms included in the 1996 NCS, Form 1F did the best: a 9.3% item nonresponse rate, still 3 times higher than the 3.1% rate for the roster.

Table 3: 1996 National Content Survey: ItemNonresponse Rates by Form Type		
Form Type	Item Nonresponse Rate Estimates	
1A: 1990 Roster	3.1%	
1B: Rosterless Person Count Box	28.2%	
1F: Alternate Person Count Box	9.3%	

Source: Alberti 1997: Table 13

The much higher item nonresponse rates for the person count box approach raise concerns about the quality of data collected from rosterless person count forms.

The 1996 Community Census

The 1996 Community Census, just underway when the Team was working, was another test comparing the two approaches to obtaining respondent-supplied household counts in the Census 2000 testing cycle (Nichols 1998). It was done in a portion of Chicago and on two Indian reservations. The person count box version in this test included just two bulleted rules on whom to include and exclude followed by the person count box. On the extended roster form, the rostering task was broken down into four steps reminding respondents whom to list: an owner or renter, family members living here, non-relatives living here, and anyone else with no other place. The purpose of these steps was to prompt respondents to include types of persons known from previous research to be at risk of omission. During coverage reinterviews, information was collected to check the accuracy of the counts and to identify omissions and erroneous enumerations.

The comparative results in this test were consistent with our other test of roster and person count box approaches in terms of mail response and coverage in the Chicago site. The person count box form had a 43.6% mail response rate, significantly higher than the 40.2% for the roster form (Table 4). The person count box approach mail response rate was 3.4% higher. There were no differences on the Indian reservations.

Table 4: 1996 Community Census: MailResponse Rates by Form Type: Chicago Site		
Form Type	Mail Response Rates	
Extended Roster	40.2%	
Rosterless Person Count Box	43.6%	

Source: Nichols 1998: Table 1

As in the NCS, there were no statistically significant differences between the extended roster form and the person count box form in coverage, either in terms of omissions or erroneous enumerations. In this test, the extra roster probes and the minimal instruction approach on the person count box form did not differ in enumerating persons, according to Nichols. The two forms identified about the same number of people.

The two approaches in this Community Census were also consistent with the National Content Survey in terms of item nonresponse, as shown in Table 5. The roster had a 4.3% item nonresponse rate. Using Nichols' data, we calculated the item nonresponse rate for the rosterless person count box question as 11.8%.

Table 5: 1996 Community Census: Item Nonresponse Rates by Form Type		
Form Type	Item Nonresponse Rates Estimates	
Extended Roster	4.3%	
Rosterless Person Count Box	11.8%	

Source: Calculated from Nichols: 1998: Tables 2, 4

As in the Alberti analysis of the NCS data, the item nonresponse rate for the person count box in this Community Census was more than 2.5 times higher than for the roster approach.

The results from these two studies show a consistent difference in item nonresponse rates between the roster and the rosterless person count box approaches. Item nonresponse rates were not considered by the Team in their 1996 report.

Nichols suggested that the higher number of blanks on the person count box form could signal a potential coverage problem in that people who don't complete the person count box may not have read the preceding instructions about who should and shouldn't be listed.

This suggests it might be useful to compare coverage rates for those who do and do not answer the person count box, to identify coverage implications associated with item nonresponse.

In terms of other edit failures, Nichols notes that the count of persons on the roster was often higher than the number of "data defined persons" (the number of partially or fully filled in person panels).

The 1998 Census Dress Rehearsal

In the 1998 Census Dress Rehearsal in Sacramento, South Carolina, and the Menominee reservation, the short form used a person count box approach, while the long form used a roster approach. The results are not comparable in terms of mail response rates, since a lower rate would be expected for the long form because it was much more burdensome to complete. Alberti conducted a Dress Rehearsal evaluation of coverage edit followup (CEFU) in 1998. The purpose of the Coverage Edit Followup Operation was to identify and correct errors in the household size data, using computer edits to identify count discrepancies and large households for clerical review and, if needed, phone followups to correct the discrepancies. Although Alberti doesn't calculate item nonresponse rates, he gives data on the number of cases with blanks or zeros, enabling us to calculate them.

Alberti's objective in this paper seems to have been using Dress Rehearsal data to compare 11 different coverage edit criteria in terms of potential coverage improvement and associated workload in order to choose the most effective coverage edit criteria for future use in Census 2000 (Alberti 1998: 2, 13). We must keep in mind that these rates include answers of zero, as well as blanks, to the person count box approach, which we didn't have in the other tests, so the item nonresponse rate for the person count will be slightly higher than for the other tests discussed previously. Adding up the percentages of households with short census forms in strata S1 to S4 in Alberti's Table 7 with blanks or zeros in the person count box and at least one data-defined person in the person panels produces an approximate item nonresponse rate for the Dress Rehearsal person count box of 7.6%. In the same table, L1 is the sole stratum for long form households indicating no acceptable names on the roster but at least one data-defined person, yielding an item nonresponse rate for the long form roster of 3.9%. (Table 6). The 7.6% item nonresponse rate for the person count box in the short form is almost double the item nonresponse rate for the roster on long form, still high, but an improvement in spread over previous tests.

Table 6: 1998 Census Dress Rehearsal: Item Nonresponse Rates by Form Type		
Form Type	Item Nonresponse Rate Estimates	
Long Form Roster (Stratum L1)	3.9%	
Short Form Rosterless Person Count Box (Strata S1-S4)	7.6%	

Source: Calculated from Alberti 1998: Table 7.

Of the 605 households with a short form person count box with blanks or zeros (strata S1-S4) included in a phone followup sample, 454 (75%) were completed; about 4% of those completed would have resulted in a change to the household size. Of the 200 households with a long form roster and zeros or blanks in the person count box (strata L1),147 were completed; 7.5% of those completed would have resulted in a change to the household size.

In evaluating the costs and benefits of these results, Alberti noted that including the 7.6% of the Dress Rehearsal cases with blanks or zeros to the person count box (S1-S4) would more than quadruple the number of households to be included in the CEFU workload, with very small improvements in coverage quality. Without stating so explicitly, Alberti is showing the link between high item nonresponse and the concomitant costs of improving coverage accuracy. He recommends that households with blanks or zeros to the person count box not be included in the definition of count discrepancy cases for the Census 2000 CEFU operation.

Several additional Alberti findings are of interest. A clear pattern emerged when he used data from the clerical edits and phone followups to determine whether the count from the person count box or the number of data-defined persons from the person panels was more accurate. In all three Dress Rehearsal sites, the number of data-defined persons in the person panels was most accurate, regardless of whether the respondent-reported household size in the person count box was greater or less than the number of persons in the person panels. The respondent-supplied household size in the person count box was greater than the number of data-defined persons reported in person panels and continuation rosters on 70%, 53%, and 67% of the coverage edit failures for Sacramento, Menominee, and South Carolina, respectively. This suggests that frequent overreporting of the number of household persons in the person count box might be a factor contributing to the number of erroneous enumerations.

Census 2000 Evaluation Studies

Census 2000 Alternative Questionnaire Experiment

Using Census 2000 AQE data, Gerber, Dajani, and Scaggs (2003) analyzed Census 2000 Alternative Questionnaire Experiment test data and presented item nonresponse rates for the person count box approach on the actual Census 2000 form (the control) and on an experimental form with a person count box question that had been improved through cognitive testing. However, this study had a small sample (4,218) and didn't include large households of six or more persons (the large households went directly to the Coverage Edit Followup Operation, discussed below). The results of the Census 2000 AQE are thus not directly comparable with our previous studies.

Census 2000 Coverage Edit Followup Operation

The Census 2000 Coverage Edit Followup (CEFU) Operation Evaluation (Sheppard 2003) described the Census 2000 operation that identified and resolved count discrepancies between the person count box and the sum of data-defined persons on the roster panels and the continuation roster. Sheppard (personal communication) found that the count of data-defined persons was more accurate than the person count box number about 75% of the time. This is consistent with Alberti's 1998 Dress Rehearsal results, raising questions about the accuracy of data collected on household size with the person count box approach.

This CEFU did not include cases with blanks or zeros to the person count question, except when there were exactly 6 data defined person panels. The edit failure rate for count discrepancy cases with some numerical answer in the person count box (except for households with exactly 6 data-defined persons where blanks on the person count box were in-scope) was 1.4% overall, but higher for Asian (2.2%) and Spanish (2.5%) language forms. (Sheppard 2003: vii, 17). Because most households with blanks were out-of-scope, the Census 200 CEFU evaluation doesn't give item nonresponse rates for the person count question.

Census 2000 Item Nonresponse Rates for Mailout and Update Leave Short and Long Census Forms

Nick Alberti graciously offered to calculate the item nonresponse rate for Census 2000 mailout and update leave short and long forms for inclusion in Table 7. The Census 2000 item nonresponse rates for the United States, excluding Puerto Rico for the stated operations are: 4.4% (short form) and 9.6% (long form), with an overall item nonresponse rate of 5.2%).

Table 7: Census 2000 Item Nonresponse Rates for Mailout and Update Leave Forms Only (excludes Puerto Rico)		
Form Type	Item Nonresponse Rate Estimates	
Short Form Rosterless Person Count Box	4.4%	
Long Form: Person Count Box and Roster	9.6%	

Source: Special tabulation by Nick Alberti, July, 2003

Thus, had cases with blanks and zeros to the Census 2000 person count box question been included as a count discrepancy component in the CEFU, the followup workload would have quadrupled, as Alberti predicted, from 1.4% to 5.8%. Item nonresponse rates and costs of improving coverage are linked.

Census 2010 Research and Development Cycle

After Census 2000, the Residence Rule Working Group for Census 2010, led by Maria Urrutia, considered alternative roster approaches that might be tested in the 2010 testing cycle. Five forms were developed: two with person count boxes, two with rosters, and one with a format with a person count box on the front and an American Community Survey type roster grid on the inside. Westat researchers conducted cognitive testing with these forms and found that the person count box seemed easier to complete and was more accepted by respondents (Cantor, Heller, and Kerwin 2003). A number of respondents did not like having to write names twice on the roster. There is a methodological question associated with this finding. Following Census Bureau guidelines, respondents completed the forms in think-aloud cognitive interviews, with no verbal probing by the interviewer until the respondent had completed the form. After the respondent completed the form, in the debriefing, the interviewer mentioned to the respondents that the roster form required they write names twice and then asked the respondents to comment on how they felt about this. Pointing out the weakness of the roster and then asking how respondents felt about it may have led to overreporting of problems. Some respondents noticed the need to write names twice and raised this issue themselves, either while completing the form or when comparing the roster and person count forms; we don't know how many. There was no comparable debriefing question identifying a possible person count box flaw, then asking how respondents felt about it.

At the time of writing this paper, the Residence Rule Working Group is considering recommending a whole new approach for testing in 2005: starting with a *de facto* question on who lived or stayed in the housing unit on Census night, followed with *de jure* questions to determine usual residence. Experimental form(s) would thus use a roster-based approach, while a control and other experimental form(s) would use a person count box approach, if such a test is approved.

Summary, Conclusions, and Recommendations

In this report, we compared the roster and rosterless person count box approaches to obtaining respondentreported household population counts in terms of three important indicators: mail response rates, coverage rates, and, where possible, item nonresponse rates. The Team in 1996 did not have access to the item nonresponse rates from these tests when it chose the person count box. The addition of the item nonresponse rate to mail response and coverage rates as evaluation criteria makes the calculus of tradeoffs between the person count box and roster approaches more complicated. Consistent patterns emerged in the NCS and the Community Census.

On the one hand, in terms of mail response, the rosterless person count box approach did better: In both tests, mail response rates were a statistically significant 3 to 4 percentage points higher than for the roster approach. The benefits of higher mail response rates are reductions in staff, time, and costs needed to complete nonresponse followup operations.

On the other hand, in terms of item nonresponse, the roster question did much better: The item nonresponse rates of the rosterless person count box approach were at least 2.5 times to 9 times higher than those of the roster question in both the NCS and the Community Census, and around 2 times higher in the Dress Rehearsal. The Census 2000 short form item nonresponse rate for the person count box question of 4.4% is higher than the 3.1% rate for the unimproved 1990 roster in the 1996 NCS, and slightly higher than the 4.3% for the 1996 Community Census roster. The Census 2000 long form item nonresponse rate of 9.6% for the person count box was much higher than the roster-based forms in previous tests, and in roughly the same range as the experimental person count box results in the best 1996 NCS and Community Census panels.

The benefits of lower item nonresponse rates are better data quality, more complete flagging of missing person-level data, and better cuing for large household followup (Gerber, Dajani, and Scaggs 2003). Other benefits may be fewer cases falling through the cracks of a Coverage Edit Followup count discrepancy study due to blanks, and possible reductions in coverage errors, if Nichols (1998) is right that those leaving the person count box blank are more prone to completing person panels without reading residence rules.

Improving coverage is always a central goal for the Census Bureau. Coverage was a draw in both tests; there were no statistically significant differences in either the National Content Survey or the Community Census nationally, or in the High or Low Coverage Areas, in omissions or in erroneous enumerations.

Additional iterative research in the late 1990s improved the item nonresponse rate for the person count box in Census 2000 for the short form to 4.4%, but the long form rate was a high 9.6%. There was no phone followup in Census 2000 to reduce missing data.

Results from both the Census and Dress Rehearsal evaluation reinterviews show that counts from person panels of data-defined persons were more accurate than counts in person count boxes. This raises questions about data accuracy with the person count box approach.

We conclude with four suggestions for research. First, we recommend adding a component to future Coverage Edit Followup operations to learn about coverage and data accuracy in cases with one or more data defined persons in the person panels but a blank in the person count box. This could be similar to the 1998 Dress Rehearsal experiments by Alberti, but with larger sample sizes.

Second, we suggest add-ons to coverage studies for the 2004 and/or 2005 tests: reinterviews with samples of respondents who did and did not leave the person count box blank, as in Alberti's 1998 study. If coverage does not differ between the approaches, households with blanks would not differ from those with counts and we might conclude we are not missing or overcounting many. However, if coverage does differ, we need to learn how and design new research.

A third recommendation is to do new statistical research with actual Census 2000 long form data, since that form had both a person count box on page 1 and a roster of persons on page 2. We could compare the roster and person count box approaches on the same form by 1) item nonresponse and 2) consistency between the respondent-supplied count and the number of data-defined persons in the person panels for persons 1 to 6. We could also check consistency between the respondent-supplied count in the person count box and the number of persons listed on the roster for persons 7 and above, for whom there are no person panels on the long form. To our knowledge, such a consistency study has not yet been done with these long form data. This new research could not be used to reassess coverage in Census 2000, as person count box blank cases were out of scope for the Coverage Edit Followup Operation. Too much time has elapsed since April, 2000 to get meaningful or reliable information on coverage from any new coverage followup reinterview study in 2003.

Fourth, we suggest new discussions on the relative advantages and disadvantages of the roster and rosterless

approaches and their tradeoffs for the Census Bureau, and look forward to the possibility of conducting new split-panel tests of the two methods in 2005 as part of a collect de facto, tabulate *de jure* test.

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