

## Results of Quality Assurance on the Person Interview Operation of the Accuracy and Coverage Evaluation of the Census 2000

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### I. Introduction

As part of the Accuracy and Coverage Evaluation (A.C.E.), household interviews were conducted at the housing units that were confirmed to exist within the A.C.E. sample block clusters. This was known as the Person Interview operation. The goal of the interview was to collect demographic and residence status information on the residents, both for the day of the interview and for Census Day, April 1, 2000. The information about the census day residents collected in the interview constitutes data for the population sample of the A.C.E. The interviews, which took place in the summer of 2000, were obtained using Computer Assisted Personal Interviewing (CAPI), either by telephone or in person. This paper examines the quality assurance results of the person interviews. Both the number of cases and number of interviewers failing the quality assurance check are reviewed and compared with the quality assurance results of the 1990 Post Enumeration Sample (PES) person interviews.

The Census Bureau made two main changes to the 1990 Post-Enumeration Survey design for the 2000 A.C.E. Person Interview. First, we moved from the paper based survey collection method used in the PES to CAPI. Second, the A.C.E. design permitted the use of telephone interviews to get an early start on interviewing without having to wait until the census field operations had been completed for an entire local census office. Early interviews reduce recall bias. Over 99% of the telephone cases were conducted with a household member and were classified as complete interviews or partial interviews which contained a sufficient amount of information.

To insure independence between census and A.C.E. interviews, only a subset of those households that had completed and returned their census forms were eligible for a telephone interview. To reduce potential address mixup situations in areas with city style addresses, telephone interviewing was limited to multi unit apartments with more than 10 units.

Automating the interviewing process increased the quality of data in several ways. The CAPI instrument and automated support system:

- automated the questionnaire skip patterns which eliminated interviewer errors in following complicated paths through the questions.
- incorporated data edits to ensure a predetermined quality of data before an interview could be completed.
- instilled a sense of professionalism in the survey; interviewers reported that the laptops made them feel and appear more official.
- allowed for rapid identification and reassignment of problem cases.
- allowed for a quick turnaround of completed interviews to headquarters and allowed for more timely feedback to the interviewers as the A.C.E. supervisors in the regional offices checked for quality.

The Census Bureau designed the Person Interview questionnaire to include distinct paths for:

- current residents of the housing units
- people who lived there on Census Day but moved out before the day of the A.C.E. interview

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- interviews from proxy respondents
- vacant or non-existent housing units, both for the day of the interview and for Census Day.

The Person Interview also included a complete Spanish translation, telephone and personal visit paths, and help screens to assist interviewers with various topics such as finding an eligible proxy respondent or locating the correct housing unit.

## **II. Quality Assurance Plan for the Person Interview**

The quality assurance plan for the A.C.E. Person Interview operation consisted of a reinterview, called the Person Interview Quality Assurance (PIQA) interview, of a sample of the original A.C.E. interviews. The PIQA workload consisted of a preselected random sample of five percent of the total Person Interview caseload and another sample consisting of cases targeted by the PIQA supervisors in the regional offices. These cases were targeted based on various indicators likely to predict insufficient data quality or potential fabrication. The targeted sample was intended to account for another five percent of the total workload.

### **Random Sample PIQA Cases**

The random sample was drawn before the A.C.E. interviews began. If, after the original interview, a case was determined to be a noninterview (no knowledgeable respondent could be found, or a refusal, or there was a language barrier), this case was not eligible for PIQA even if it was in the preselected sample. Such cases were usually reassigned or sent to the Nonresponse Conversion Operation. This operation utilized more skilled interviewers to attempt to convert noninterviews into interviews. Such cases were omitted from a PIQA check because they involve getting cooperation from a reluctant respondent and used interviewers whose work was adequately checked in the earlier telephone and personal visit phases of interviewing.

### **Targeted Sample PIQA Cases**

The cases in the targeted sample were selected by the PIQA supervisors. The supervisors based their decisions on computer generated reports that compared the work of interviewers within the same area and identified interviewers whose work was considered an outlier when compared to the other interviewers' work. The reports included the following indicators:

- percent of this interviewer's cases missing a telephone number
- percent of this interviewer's cases where the housing unit was determined to be vacant or the unit did not exist
- number of cases completed between 10 pm and 8 am
- number of days with more than 13 cases completed in one day
- percent of cases that were completed with a proxy respondent
- percent of cases that were missing information about outmover households. These are households that lived at the sample address on Census Day but have since moved.
- percent of cases that were partial interviews

Two other reports showed the supervisors a list of respondent names for all cases and a list of interviewers with little or no work selected for a PIQA reinterview. The first report allowed the supervisors to detect cases with suspicious or missing names and target these interviews for PIQA. The second assisted the supervisors in targeting interviewers with not enough work in PIQA. This aided in getting some of each interviewer's work checked as soon as possible.

### **PIQA Interviews**

The Census Bureau designed a separate CAPI questionnaire for the Quality Assurance interviews. The PIQA questionnaire included both telephone and personal visit paths as well as a full Spanish translation. The PIQA questionnaire also included a complete version of the original interview to allow PIQA interviewers to conduct the household interview on cases suspected of fabrication. This meant we did not have to assign another field representative at a later date to conduct the household interviews for such cases.

PIQA interviews were conducted either by telephone or personal visit. The purpose of this interview was to determine whether or not the original respondent was contacted by the interviewer. If, after an initial set of questions, it appeared that the respondent had not been previously contacted, the PIQA interview continued with a full household interview that replaced the original interview in all future processing.

### **Determining PIQA Failure**

Any case which required this replacement interview was investigated by the PIQA supervisors in the regional offices. The PIQA supervisor determined whether or not the case failed the quality assurance check.

In this investigation, some cases were determined to have replaced the original interview due to respondent or interviewer error, or due to instrument problems. Such replacement cases were not classified as PIQA failures. PIQA failures were cases determined to contain discrepant results. Discrepant results do not include honest mistakes made by interviewers or respondents. Therefore the number of cases confirmed to fail PIQA is smaller than the number of cases which were replaced by the PIQA interview.

To determine if there were discrepant results entered for a case, the supervisor might have contacted the PIQA interviewer, the original respondent, or on rare occasions, the original interviewer. Additionally, the supervisor might have used interviewer notes or records showing each keystroke entered into the instrument. Because these personnel issues were serious situations, the benefit of the doubt was given to the original interviewer in cases where the supervisor could not make a determination. However, the replacement interview was still used for all future operations in these cases.

If an interviewer's work failed the PIQA check, then all of that interviewer's completed cases were assigned to a PIQA interviewer and any unfinished cases were reassigned to a different PI interviewer. Interviewers whose work failed PIQA were not given any more A.C.E. work.

### **III. Assumptions**

- The PIQA plan centered on whether the original interviewer actually contacted the person who was reported to have been interviewed. When this was the case, the interview itself was assumed to be correct because the Person Interview questionnaire was designed to ensure data quality using data edits and automated questionnaire skip patterns. When this was not the case (i.e., the proper household was not contacted), a full reinterview was conducted.
- The PIQA plan was designed around the assumption that interviewers will either blatantly misrepresent the data or only rarely do so. Therefore we targeted discrepant results by

looking for inconsistent or conspicuous results identified using the targeting reports. Examples of inconsistent or conspicuous results include using the same name for respondents across cases, using famous names for household members, or completing cases too late in the day to really have been interviewing at someone's house.

Effectively identifying an interviewer who misrepresented only one or two of his/her cases out of a large workload of cases would require a prohibitively large random sample. Because later A.C.E. operations such as the Person Followup interview were expected to identify such cases, the PIQA plan did not attempt to identify these situations beyond what falls in the five percent random sample.

- The PIQA interview was assumed to be correct. There was no quality assurance of the quality assurance operation.

### **IV. Limitations/Methodology**

The tables presented in this analysis tally the results of the PIQA supervisors' decision on each case by total number of cases failing PIQA and by number of interviewers failing PIQA.

When a supervisor investigated the cases in question, he/she had two options. If it was evident that the case required a replacement interview due to an instrument problem or respondent error, the supervisor recorded that the case did not fail PIQA and entered notes into the automated tracking system. If for any reason, the supervisor either suspected the case was inaccurate or could not determine the status of the case, then the supervisor conducted a more extensive investigation.

These investigations utilized a standardized paper form tailored to the needs of the ACE investigation. This form included a series of questions to aid the supervisor in the PIQA investigation of the interviewer's work and allowed the supervisor to record his/her determination. Often, other cases of the interviewer were added to the investigation and these results were usually recorded on the same form.

The paper questionnaire had four outcomes for the cases investigated.

- Falsification confirmed - Fail

- Confirmed that falsification did not occur - Pass
- Not able to confirm, but still suspect interviewer of data falsification - Fail
- Not able to confirm, but do not suspect interviewer of data falsification - Pass

regardless of the mode of the original interview. Table 1 shows these results.

**How many interviewers failed PIQA?**

If an interviewer’s work failed the PIQA check then all of that interviewer’s work was either reassigned or sent to PIQA. Table 2 shows, by region of the country, the number of interviewers with one or more cases failing PIQA out of the number of interviewers whose work had some PIQA.

For this analysis, these four categories were collapsed into 2 categories, ‘pass’ and ‘fail’, as noted above. Occasionally, no determination could be made for a case and such cases were categorized as ‘undetermined’.

**V. Results**

**How many cases failed PIQA?**

The outcome of PIQA cases for each phase of the person interview operation (telephone, personal visit) is classified by whether the case was randomly selected or targeted by a supervisor for a PIQA interview. In the row entitled “Combined Totals”, the PIQA outcomes are presented showing the results for all PIQA interviews,

The last column shows the total number of interviewers for a region since occasionally an interviewer did not have any work in PIQA. This usually occurred because either the interviewer quit after only working a few cases and none were in the preselected random sample, or because all but a few of the interviewer’s cases were in the Nonresponse Conversion Operation (NRCO) and were not eligible for PIQA. Occasionally, this happened because the interviewer was a supervisor or was an experienced interviewer from another survey brought on to assist in the NRCO interviewing.

Table 1. Outcome of PIQA Cases by Method of Selection

<b>PIQA Results</b>	<b>Randomly Preselected</b>	<b>Targeted</b>
<b>TELEPHONE PHASE</b>		
Pass	4,398 (99.95%)	4,622 (99.52%)
Fail	2 (0.05%)	17 (0.37%)
Undetermined	0 (0.00%)	5 (0.11%)
<b>SUBTOTAL - Telephone</b>	<b>4,400 (100%)</b>	<b>4,644 (100%)</b>
<b>PERSONAL VISIT PHASE</b>		
Pass	10,309 (99.70%)	15,329 (98.83%)
Fail	17 (0.16%)	154 (0.99%)
Undetermined	14 (0.14%)	28 (0.18%)
<b>SUBTOTAL - Personal Visit</b>	<b>10,340 (100%)</b>	<b>15,511 (100%)</b>
<b>COMBINED TOTALS</b>		
Pass	14,707 (99.78%)	19,951 (98.99%)
Fail	19 (0.13%)	171 (0.85%)
Undetermined	14 (0.09%)	33 (0.16%)
<b>TOTAL</b>	<b>14,740</b>	<b>20,155</b>

Table 2. Number of Interviewers Failing PIQA by A.C.E. Regional Office

A.C.E. Regional Office	Number of interviewers with one or more interviews failing PIQA	Total number of interviewers whose work was PIQA'd	Percentage of interviewers failing PIQA	Total number of interviewers <sup>1</sup> (including supervisors)
Boston	1	581	0.2	610
New York	5	372	1.3	398
Philadelphia	2	464	0.4	501
Detroit	8	373	2.1	396
Chicago	0	389	0	402
Kansas City	2	405	0.5	411
Seattle	2	400	0.5	425
Charlotte	0	549	0	579
Atlanta	0	346	0	363
Dallas	16	568	2.8	593
Denver	2	617	0.3	625
Los Angeles	4	419	0.9	428
<b>TOTAL</b>	42	5483	0.8	5731

<sup>1</sup>248 interviewers (less than 5 percent) did not have a PIQA check of their work. This happened because 1) the interviewer worked very few cases and then quit, 2) most of their cases were already in NRCO, 3) they were supervisors who only did a few cases, or 4) they were experienced interviewers from other surveys brought on to help in NRCO.

**How were the interviewers that failed PIQA identified?**

Table 2 shows that 42 (0.8 percent) of the 5,483 interviewers whose work was checked, failed the PIQA check. Of these 42 interviewers who failed PIQA:

- 11 were identified in the random sample
- 24 interviewers were identified in the targeted sample
- 7 interviewers had work in both samples.

Again, we see the targeted sample appears to be effective in identifying interviewers likely to fabricate some of their work.

**1990 PES PIQA results compared to the 2000 A.C.E. PIQA results**

In the 1990 PES, all whole households identified as containing erroneous information, including types of erroneous information we would currently classify as honest mistakes, were called whole household fabrications. In 2000, our PIQA failure rate included only those households determined to contain discrepant results.

In 2000, if the PIQA interviewer determined that a respondent was not previously contacted by an A.C.E. interviewer, then the PIQA interviewer conducted a complete Person Interview to replace the original. There were 979 replacement interviews. PIQA supervisors in the regional offices investigated these cases.

The A.C.E. Quality Assurance operation determined from the supervisor's investigations of the replacement interviews that 190 of the 34,895 households checked failed the PIQA. Of these 190, 19 were from the preselected sample and 171 were from the targeted sample. Therefore only 0.13 percent of the randomly selected cases failed PIQA and 0.85 percent of the targeted cases failed PIQA. In 1990, the PES Quality Control operation found 420 whole household fabrications out of 56,000 households reinterviewed, that is, 0.75 percent of households failed the QC check (see Tremblay, 1991). Given the different PIQA designs, these numbers are not directly comparable.

## VI. Conclusions and Recommendations

The Quality Assurance of the Person Interview operation was successful in ensuring appropriate results from both the telephone and personal visit phases of the operation. Overall there were only 190 cases (0.13 percent of the randomly sampled cases and 0.85 percent of the targeted cases) cases that failed the PIQA. For all such cases a replacement interview was obtained and used in the survey. We effectively weeded out several interviewers whose work contained discrepancies. This was accomplished more so by targeting for problematic cases than through cases in the preselected sample. Because the failure rate in the random sample is quite low, the volume of errors in the Person Interview operation was under control.

We conclude that:

- Targeting cases to identify discrepant results was successful.  
The overall failure rate for the targeted cases (0.85 percent) compared to the randomly selected cases (0.13 percent) is remarkably different. This pattern holds for both telephone and personal visit interviews. This suggests the targeting was very effective in identifying cases that were likely to fail the quality assurance.
- The quality of the person interview cases not checked by Quality Assurance is high.  
Overall, 11.6 percent of the interviews had a PIQA interview (34,895 out of 300,913 interviews). Of the 11.6 percent with PIQA, the failure rate for the randomly selected cases was very small (0.13 percent) compared to the targeted cases (0.85 percent). The 95.1 percent of cases not in randomly selected PIQA can be assumed to have a remaining error rate similar to that of the randomly selected PIQA cases (0.13

percent). However, 171 of these remaining errors were already corrected in the targeted PIQA sample.

In addition, the Person Follow up operation in the person matching phase of A.C.E. was designed to identify and correct, to the extent possible, any remaining discrepant results after the match to the census roster. (See Childers et al, 2001).

- Automation enhanced the quality of the ACE Person Interview operation.  
Because of the data edits and automated skip patterns, as well as the quick turnaround time for PI cases to get assigned and completed in PIQA, automating both the original person interview and the quality assurance reinterview enhanced the overall quality and efficiency of the Person Interview operation (See Byrne et al, 2001).

## VII. References

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