

RESEARCH REPORT SERIES
(*Survey Methodology* #2008-5)

**“CENSUS BUREAU” vs “UNKNOWN CALLER” -
Caller-ID Displays and Survey Cooperation**

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Report Issued: April 8, 2008

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**“CENSUS BUREAU” vs. “UNKNOWN CALLER”:
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ABSTRACT:

Survey sponsorship is known to play an important role in eliciting survey cooperation, and research also suggests that government-sponsored surveys enjoy higher cooperation rates than non-government surveys. The U.S. Census Bureau generally seeks to take advantage of this fact, and its particular name recognition, when contacting American households and businesses to conduct its census and survey operations. Thus the Census Bureau responded with some alarm when it was discovered that outgoing calls from its telephone call centers were displaying “UNKNOWN CALLER” on Caller-ID systems, an unanticipated result of displaying a toll-free number for respondents’ return calls. In the fall of 2005 the Census Bureau took action to remedy the situation, and return to a “US CENSUS BUREAU” Caller-ID display. This paper reports on an evaluation of the extent to which the intended change actually occurred, as well as a before-and-after investigation of the impact of the procedural change on respondent cooperation. The implementation evaluation consists of the results of test calls from each of the Census Bureau’s three telephone call centers to the Caller-ID-equipped home telephones of two Census Bureau field staff in each state (approximately 300 calls, in total). These calls reveal a very hit-and-miss implementation of the intended display – “US CENSUS BUREAU” or a close variant appeared in only 56% of the calls – with substantial variation across different states and regions. To assess the impacts of the Caller-ID “switch,” we examine two Census Bureau surveys – the Telephone Point of Purchase Survey (TPOPS), a survey using random-digit-dialing sampling methods, and the American Community Survey (ACS), a survey that uses telephone interviewing as a first stage nonresponse follow-up to a mailed questionnaire. We find some evidence, in both survey contexts, of small positive impacts on both the efficiency and extent of contact with potential respondents, and on the likelihood of cooperation with an initial telephone interview. Evidence concerning the impact of the switch on cooperation with a subsequent TPOPS interview request (attrition) is decidedly mixed, however.

keywords: attrition, auspices, call attempts, contact, efficiency, nonresponse, refusal, sponsorship, telephone interview

*This is an extended version of a paper presented as a “methodological brief” at the 62nd Annual Conference of the American Association for Public Opinion Research, Anaheim, CA, May 17-20, 2007.

1. INTRODUCTION AND BACKGROUND

Surveys operate in technological and socio-cultural environments that are always subject to change – change which can affect survey processes in either positive or negative ways. A recent example of an important change in the telephone interviewing environment, for example, has been the advent of Caller-ID technology. In addition to signaling the presence of an incoming call, Caller-ID also delivers to appropriately equipped call recipients information about the source of the call. Caller-ID first became commercially available in the US in 1988. Since that time, subscription to Caller-ID service and ownership of the appropriate equipment has grown steadily, such that a recent Pew Center study (2004) estimated that in 2003 52% of US households used some form of Caller-ID service. Tuckel and O’Neill (2001) present evidence that suggests a substantially higher rate – 67%.

Historically, US Census Bureau telephone call center procedures were such that Caller-ID households who received a call from the Census Bureau were likely to see “CENSUS BUREAU,” along with the originating telephone number, on their Caller-ID display. In 2004, however, as a result of anecdotal evidence of a problem with the existing procedures, the agency initiated a change. The problem resulted from the fact that telephone center calls originated from standard, toll numbers. Those toll numbers, along with “CENSUS BUREAU,” were displayed on Caller-ID systems, and thereby elicited occasional complaints from respondents who noticed the agency name and the toll number on their Caller-ID equipment, elected to call back the number, and were subsequently charged for the call. To address this concern, the telephone centers began using toll-free numbers to place outgoing calls. While this solved one problem – the toll-free number on the display meant that respondents were no longer subject to charges for return calls – it had the unexpected effect of replacing the “CENSUS BUREAU”¹ component of the Caller-ID display with “UNKNOWN CALLER.”¹

The discovery of the unintended consequence of the procedural change led to concern that displaying “UNKNOWN CALLER” rather than the Census Bureau name might have negative consequences for the agency’s substantial telephone survey operations. This concern stemmed from several considerations:

- (a) Call screening. Many Caller-ID users rely on the technology to help them screen out undesired calls. Link and Oldendick (1999), in a survey of South Carolina telephone households, estimate that over 37 percent use Caller-ID, together with answering machines, as a means to screen incoming calls. They also report that households were significantly more likely to say they were hesitant to answer a call when text on the order of “OUT OF AREA” or “LISTING UNKNOWN” appeared in their Caller-ID display.
- (b) Advance notice. For most Census Bureau telephone surveys, the household is contacted prior to the survey, for example by an advance letter or a mailed questionnaire. In such circumstances, potential respondents may be expecting a call, and not having “CENSUS BUREAU” identified as the caller may be particularly counter-productive. In addition, for

¹ We find that the exact text of Caller-ID displays is both variable and unpredictable. Here we ignore slight differences, and use these labels to represent categories of text displays of a similar nature.

households that have the service, the Caller-ID display can be viewed as a form of “compact advance letter” that helps legitimize the authority of the survey and purpose of the call (Callegaro, McCutcheon, and Ludwig, 2006). This may be especially important for telephone surveys where there is no advance contact of the traditional sort, such as surveys using random digit dialing (RDD) techniques for sample selection.

- (c) The Census Bureau as a trusted “brand name.” Knowledge of a survey’s auspices has long been recognized as an important factor in survey cooperation. Thus, the switch from “CENSUS BUREAU” to “UNKNOWN CALLER” was also troubling since the means to identify the Census Bureau as the survey sponsor was no longer available. Dillman (1978), for example, stresses the importance of sponsorship as a crucial factor influencing survey outcomes. According to his “Total Design Method” for mail surveys, higher response rates are achieved when the sponsor name is clearly communicated in prenotices, survey introductions, and the like. This theory has been supported in several empirical studies (Dillman, 1991; Yammarino, Skinner, and Childers, 1991; Fox, Crask, and Kim, 1988). As the data collection agent for the decennial census and numerous large-scale demographic and economic surveys, the Census Bureau enjoys a fairly high level of name recognition and public trust (Poneman, 2006). Indeed, it is widely understood that government agencies obtain higher cooperation rates than other survey organizations (Groves and Couper, 1998). In fact, this has been shown to be the case for both mail and internet surveys (Walston, Lissitz, and Rudner, 2006; Heberlein and Baumgartner, 1978).

Concern about the absence of the Census Bureau name led Census Bureau staff to investigate possible options that would again permit displaying the name on potential respondents’ Caller-ID equipment. Discussions with telecommunications vendors suggested that the only viable option was to return to the original methodology, with telephone center calls originating from standard toll numbers. Accordingly, on October 28, 2005, the telephone call centers switched back to the former procedures, which allowed for the “CENSUS BUREAU” name to again appear on Caller-ID displays.²

This paper summarizes research we carried out in an attempt to understand the impact of what we are calling the Caller-ID “switch” (the return to the “CENSUS BUREAU” display) on the Census Bureau’s telephone survey operations. In section 2 we summarize our methodology. First we describe a small study whose purpose was to estimate the extent to which the switch actually resulted in the intended “CENSUS BUREAU” Caller-ID display. Our main focus, however, is an assessment of the likely impacts of the switch, which consists primarily of a before-and-after examination of call outcomes for two quite distinct telephone surveys – the Telephone Point of Purchase Survey (TPOPS) and the American Community Survey (ACS).

² Additional new procedures were implemented in an attempt to avoid the problem that led to the initial decision to use toll-free numbers for outgoing telephone center calls. First, interviewers were encouraged to include the toll-free number in any voice-mail messages left at sample households. In addition, respondents who happened to call back the displayed toll number heard the following brief recorded message: "Thank you for calling the US Census Bureau. The call you received was from one of our interviewers. If they left a message, please use the toll-free number in the message to return the call. If they did not leave a toll-free number, a census interviewer will attempt to contact you again."

Section 3, comprising the bulk of the paper, presents our results. We offer a general summary and some concluding thoughts in Section 4, including suggestions for further research.

2. METHODOLOGY

Our assessment of the Caller-ID switch is twofold. First, we wanted to assess how often the desired transmission actually occurred. Second, we wanted to gauge survey cooperation measures that may have changed as a result of the switch.

2.1. Caller-ID Display Evaluation

To assess whether the *displays* were transmitting properly, we arranged for a national call placement test involving all three of the Telephone Call Centers (TCCs) and selected field interviewers' home phones equipped with Caller-ID. Two field interviewers were selected within each state, each of whom received a call from each TCC. For each call they recorded the date, destination, local telephone carrier, location from which the call originated, and what was displayed on the Caller-ID machine. Two rounds of testing were conducted – the first round in December 2005, followed by a second round in March 2006 – resulting in a recorded outcome for approximately 300 calls made to a receiving number with Caller-ID capability. (See Landman, 2005, for more details on the test design.)

2.2. Evaluation of Caller-ID Impacts

To assess changes in *behavior* as a result of the displays, we use a “before-the-switch” and “after-the-switch” method of evaluation, focused on such measures as response rates, contact rates, and number of calls before first contact. We examine these measures for two telephone surveys with very different implementation methodologies – the Telephone Point of Purchase Survey (TPOPS) and the American Community Survey (ACS).

Because the methodologies of the two surveys are so different, we suspected that the impact of Caller-ID might differ as well. For example, by the time a household is contacted by telephone in the ACS, it has potentially received three pieces of advance correspondence from the Census Bureau. The situation is very different for TPOPS cases (at least for those in sample for the first time), which, for the most part, receive no advance contact prior to the call. Additionally, by design, the CATI sample in the ACS are “first stage” nonrespondents whereas TPOPS first-time-in-sample cases are not. At least one study (Callegaro, McCutcheon, and Ludwig, 2006) documented major differences between the impact of Caller-ID displays for telephone surveys derived from list samples versus those derived from RDD methods.

2.2.1. TPOPS Evaluation

The TPOPS is a quarterly survey with a sample consisting of telephone numbers selected by random-digit-dialing (RDD) methods. The purpose of the survey is to obtain the names and locations of retail, wholesale, and service establishments at which consumers purchase goods and services. For eligible phone numbers an interview is attempted in four consecutive quarters.

With the exception of cases that can be reverse-matched from a phone number to an address, TPOPS cases are contacted by “cold call,” that is, the household has no advance notice that they have been selected for the survey. For the matched cases, an attempt is made to mail an advance letter³. The survey takes an average of 12 minutes to complete.

To assess the effects of the Caller-ID switch on TPOPS, we concentrate primarily on quarters of data that constitute a “clean” split between before and after the switch took place. These include Quarter 3, 2005 (in the field from July 11 through September 31) and Quarter 1, 2006 (in the field from January 9 through March 5). We examine additional quarters of data, including 2005 Q1-Q2 and 2006 Q2-Q4, to assess whether the switch had an impact on attrition rates over time and to try to control for any seasonality effects. For the most part we ignore data from 2005 Quarter 4 since the switch occurred in the middle of the field period (October 11 through December 4), and we also limit our analysis of TPOPS cases to those in sample for the first time.

2.2.2. ACS Evaluation

The ACS is a large national survey that collects demographic, housing, and socioeconomic data. A unique sample is selected each month and data are collected over a three-month period using self-enumeration through mailout/mailback, and CATI and computer-assisted personal interviewing (CAPI) for non-response follow up. The self-enumeration procedure includes several mailing pieces: a prenotice letter, a mailing package that includes a letter and the ACS questionnaire, and a reminder card. A replacement questionnaire is mailed out if the original is not returned within a prescribed amount of time. An attempt is made to obtain telephone numbers for all households that do not respond by mail. If a number is located, nonresponse follow-up is first attempted by CATI. On average, the CATI interview takes about 38 minutes to complete. See www.census.gov/acs/www/ for more details about the ACS program.

To study the impact of the Caller-ID switch for the ACS, we concentrate primarily on two months of data from the CATI phase just before and just after the switch – October⁴ and November 2005. However, to help put changes between October-November 2005 in context, we also present baseline data from the same months one year earlier, October-November, 2004. We conclude that there was an impact of the Caller-ID switch only if the pattern of change between October and November 2005 differs from the 2004 pattern.

2.3. Limitations

Our ability to draw causal inferences about the Caller-ID switch is weakened by the fact that we lack a controlled experiment. On October 28, 2005, the display change was made for *all* calls coming out of all three TCCs. However, a host of other variables could be the cause of differences before and after the switch. For example, prior to 2006 Q1, TPOPS advance letters were mailed to only some of the address-matched sample, but afterward were given to *all* cases

³ Full implementation of the advance letters began in 2006 Q1. Prior to that quarter, the advance letter was part of a controlled experiment.

⁴ We are able to treat October as the “before” month because all calls were completed before the October 28 switch date.

with an address⁵. Additionally, most Census Bureau surveys have witnessed a general decline in response rates over time – so the mere passage of time, even a very short period of time, might be expected to show some changes in respondent behavior. Finally, differences observed between different months – even two adjacent months – could represent seasonal effects (e.g. differences in at-home patterns) rather than changes in Caller-ID display. Also, there is no way to tell what Caller-ID message was actually displayed, and which sample cases have and do not have Caller-ID capability. Lastly, ACS implemented some important procedural changes between 2004 and 2005 that increased sample size, involved a different mix of urban and rural cases, and added new sample areas (and thus resulted in hiring a substantial number of new interviewers; see www.census.gov/acs/www/downloads/tp67.pdf for more information). These changes could affect our analysis in unknown ways.

3. RESULTS

3.1. Caller-ID Display Results

We first summarize data which address the question of the extent to which the switch in procedures in late October 2005 actually resulted in “CENSUS BUREAU” being displayed on Caller-ID equipment instead of “UNKNOWN CALLER.” The results are based on test calls made to field interviewers as described earlier. We note again the limited geographic spread and small number of cases included in our assessment of the Caller-ID implementation. We examine and use the data from the assessment because, frankly, they are the only data we have, but we do so with full appreciation of the limits that must be placed on confidence in their reliability.

First, we calculated the frequency with which “CENSUS BUREAU” (or a close variation) was displayed. The results were somewhat surprising. According to our test, only a slim majority of the time (56%) was “CENSUS BUREAU” displayed – the rest of the time some other display was recorded by the call recipients. These other displays included city and state of the telephone call center that initiated the call (e.g. HAGERSTOWN, MD), the toll telephone number, “UNKNOWN CALLER,” and “OUT OF AREA.” Further analysis indicated substantial variation of the display depending on the interviewers’ local phone carrier and Census Regional Office (RO)⁶.

The best performing carrier was Qwest – interviewers with this service reported seeing “CENSUS BUREAU” displayed 94 percent of the time. At the bottom of the list was Bell South, where “CENSUS BUREAU” was displayed only once out of 21 calls (about 5% of the time). Regionally, the Seattle RO reported the most success, with close to 91 percent of the interviewers from states in this region reporting that they saw “CENSUS BUREAU.” At the other end were the three Southern regions, Charlotte, Dallas, and Atlanta, here the Census name was reported to appear only 38, 5 and 0 percent of the time, respectively⁷.

⁵ We remove this confounding factor for the TPOPS analysis by restricting our analysis sample – see section 3.2.

⁶ Because certain carriers are more prevalent in certain geographic locations, these findings are very likely correlated.

⁷ See Landman (2006a) for a breakdown of the major phone providers and all regional offices, and the detailed results of the call placement test.

Obviously, the overall results are very disappointing from the perspective of clearly and effectively communicating survey sponsorship. However, a study by Link and Oldendick (1999) suggests that the results are probably not atypical. In their study of households in South Carolina, the authors report that the intended display of “UNIV. OF SOUTH CAROLINA” appeared only around 15 percent of the time, and that over half the time, the display appeared instead as “OUT OF AREA” or “LISTING UNKNOWN.” Oldenburg (2006) suggests that the lack of caller identification results when a phone company cannot locate a caller’s name in its own database and chooses not to pay the fee for accessing an external database to retrieve the name. Regardless of the reasons why, our best estimate is that about half of the households that subscribe to Caller-ID, still did not see the Census Bureau name even after the switch⁸.

The uneven and limited success of transmitting the Census Bureau name also makes more difficult the task of evaluating whether it had any impact. In addition to other factors that may have impacted cooperation rates around the time of the switch (seasonality, changes to field implementation methods etc), we are also faced with the fact that the “after” condition did not occur across the board. To try and address this problem, we analyze the data two ways – both nationally and among primary sampling units (PSUs) located within the Seattle RO. Based on results from the call test, this area best represented the “CENSUS BUREAU” Caller-ID condition and, as such, we hypothesized that any effects we might see nationally would be amplified for this region.

3.2. Impact of Caller-ID on TPOPS Contact and Cooperation

In this section we discuss the effects of the caller-id switch on TPOPS survey outcomes, by examining indicators of contact with sample households and their cooperation with the TPOPS interview. TPOPS, as mentioned earlier, is an RDD survey in which households are contacted and asked questions about their buying habits. Households for which sufficient address information can be obtained are sent an advance letter notifying them that they will be contacted to participate in the survey.

The Call History file (CHF), which contains outcome codes and variables set by the Census Bureau’s “webCATI” system, was the primary source of information for this analysis. This file contains records of every call made to sample households. Using the CHF we were able to identify households that were eligible to be interviewed.

The TPOPS sample is selected and administered according to calendar quarters. Because of the distinct possibility that quarterly interviewing patterns might be subject to seasonal effects, we also compare estimates of our various outcome measures from the quarter after the switch with those from the same quarter one year earlier. In our primary analyses we restrict the cases examined to those that were in sample for the first time, and to households that could not have been sent an advance letter because of insufficient address information. (This latter restriction

⁸ Calls made from the Census Bureau’s telephone call centers to actual survey sample households may field different results, since workloads are never evenly distributed among states as this study was.

was necessary in order to avoid the confounding effects of a major change from 2005 to 2006 in the method by which advance letters were sent out.)

In addition to contact and cooperation with the first interview attempt, the other research question we address in this evaluation is the effect, if any, of the Caller-ID switch on survey attrition. We do this by looking at attrition levels at the second TPOPS interview attempt among households that had a completed first interview. An added difficulty with this analysis is that data from the 2006 Q2 interviewing period (April-June '06) were unusable because of procedural changes which affected survey contact and cooperation measures and which were confounded with the Caller-ID switch.

Lastly, the TPOPS analysis was carried out on all cases across the nation and separately for interviews conducted in the Census Bureau's Seattle Region. As noted, the Seattle Region became a part of this analysis because during the Census Bureau's test calls, the Seattle region performed better than other regions when it came to displaying the name "CENSUS BUREAU" on Caller-ID systems.

3.2.1. Calling efficiency

A necessary first step in the telephone survey process is making contact with sample households. Our assumption in returning to the "CENSUS BUREAU" Caller-ID display was that it would do a better job of motivating potential respondents to pick up the phone than would "UNKNOWN CALLER," resulting in reduced effort to reach respondents and reduced effort to complete the TPOPS interview. In this section we examine the impact of the Caller-ID switch – as measured by before and after comparisons – on various indicators of contact and calling efficiency.

Average Number of Call Attempts prior to Contact [Table 1a]

The results in Table 1a are consistent with the hypothesis that the Caller-ID switch improved call efficiency. In the table we see a small but statistically significant drop in the average number of calls required until one was answered, from 1.6 calls in the quarter before the switch to 1.3 calls afterwards. The 2005 Q1-2006 Q1 comparison is also significant, suggesting that the immediate before-and-after difference is not attributable to some seasonal difference between the 3rd and 1st quarters. The pattern of the Seattle-only results is very similar to that for the nation as a whole – a significant decrease, after the Caller-ID switch, in the number of calls prior to contact with a live person at the other end of the line.

Average Number of Calls until interview Completed [Table 1b]

The reduced effort required to reach sample households seems to have carried over into a reduction in the level of effort required to complete a TPOPS interview. As shown in Table 1b for the nation as a whole, the average number of calls it took to complete an interview dropped to 3.5 in 2006 Q1, significantly lower than the 5.1 calls required immediately before the Caller-ID switch. As with the previous results, the fact that the average calls to complete an interview also declined relative to the same quarter of the previous year lends support to the notion that the

2005 Q3-2006 Q1 difference is a real effect of the Caller-ID switch, and not just some seasonal artifact.

The same trend that we see at the national level is also apparent in the Seattle Region. The Caller-ID switch brought about a significant reduction in the number of calls it took to complete an interview, regardless of whether we compare the “after” results with the immediately preceding quarter, or the same quarter from the previous year.

3.2.2. TPOPS Survey Cooperation

Refusal Rate [Table 2a]

Our first measure of cooperation is the extent to which potential respondents refused to participate in the TPOPS interview. In Table 2a, at the national level, the results suggest that the switch had a significantly positive impact on refusals, which dropped from 21.0% in 2005 Q3, immediately before the switch took place, to 18.9% after the switch (2006 Q1). The immediate post-switch refusal rate was also lower than the rate from the same quarter of the previous year (20.8%), which lends additional support to the conclusion that the 2005 Q3-2006 Q1 difference represents a real impact of the Caller-ID switch, and not seasonal variation

The results for the supposedly “best case” Seattle region do not correspond with the national-level findings. There the Caller-ID switch does not appear to have yielded any reduction in refusals, as can be seen in the nearly identical refusal rates across all three relevant quarters.

Cooperation Rate [Table 2b]

Table 2b examines cooperation rates – in essence, the interview completion rate among contacted eligible units – before and after the switch. The results are quite parallel to the refusal rates discussed above. We see a significant increase in cooperation after the Caller-ID switch at the national level, but no such impact for the Seattle-only results, where the “after” cooperation rate, while not distinguishable statistically from the other rates, is actually, by observation, the lowest of the three estimates.

Response Rate [Table 2c]

Our “bottom line” concern about the Caller-ID switch was its effect on response rates. Consistent with the refusal and cooperation rate results, in Table 2c we see that, at the national level, the TPOPS response rate immediately after the switch (39.4%) was significantly higher than the rate in the full quarter before the switch (35.6%). That this difference is unlikely to be a result of seasonal variation is evidenced by the fact that we observe a similar significant difference in the 2005 Q1 and 2006 Q1 comparison.

The Seattle region, on the other hand, shows no significant difference between the “before” and “after” response rates in either the immediate comparison (2005 Q3 vs. 2006 Q1) or in the comparison of the two estimates from the same quarter one year apart.

Attrition at the 2nd Interview [Table 3]

As noted above, another objective in carrying out this research was to examine the possible impact of the Caller-ID switch on attrition in response to subsequent requests to complete a TPOPS interview. Specifically, once a household has completed its first interview, is there an effect of the new “CENSUS BUREAU” display on the likelihood that they will also complete a second interview? The results of our analysis (in this case, for just the nation as a whole) are shown in Table 3; the picture they paint is unclear and inconsistent. First, immediately following the Caller-ID switch we see what appears to be a negative effect – the second interview completion rate in 2006 Q1 for cases which had completed a first interview in 2005 Q4 (67.0%) is significantly lower than the second interview rate before the switch, in 2005 Q3 (70.1%; first interviews completed in 2005 Q2). However, at the next post-switch opportunity to examine second interview completion rates⁹, 2006 Q4, we see a very different result – one which suggests reduced “attrition,” and thus a significantly positive impact of Caller-ID. Again, these conflicting results do not lend themselves to easy interpretation.

3.3. Impact of Caller-ID on ACS Contact and Cooperation

In this section we assess the impact of the Caller-ID switch on telephone contact with potential ACS sample households and their cooperation with the request to complete an ACS interview by telephone. Recall that ACS telephone interview cases consist of households which (a) fail to fill out and return a mail-out, mail-back ACS questionnaire, and for which (b) a telephone number can be identified. Typically, ACS achieves a mail response rate of approximately 57%; among the nonresponse cases approximately 57% are assigned to telephone follow-up after being linked to a telephone number (see Whitford, 2007).

Our data source for ACS was the Call History File (CHF), which contains a record of every call made to the telephone numbers associated with ACS mail nonresponse sample households, set by the Census Bureau’s webCATI system. From this we created a call history for every case, excluding cases which were determined not to be eligible for the ACS interview, and also excluding individual records which did not represent answerable calls (e.g., those which reached a Fax machine, a not-in-service or could-not-be-completed-as-dialed number, a “fast busy” signal, various non-call ACS telephone interview administrative actions, etc.).

As noted above, the Caller-ID “switch” was implemented across-the-board on October 28, 2005. Thus, we had only one viable option with regard to an evaluation strategy – a before-and-after examination of ACS telephone interview outcomes. As is generally the case with non-experimental research designs, this one has limitations due to the confounding of “treatment” differences (i.e., the different Caller-ID displays) with timing differences (telephone interview calls in October vs. November). We attempt to account for any possible “seasonal” differences in telephone interview outcomes between October and November by also including in our analyses a baseline comparison of October and November 2004 ACS calls. We attribute

⁹ Recall that 2006 Q2 procedures differed in important ways from those used in surrounding quarters, making those data unfit for use in the present analysis. The differences affected all cases, regardless of the number of times they had been in the TPOPS sample previously.

October-November 2005 differences to the Caller-ID switch only if that difference did not also appear as a “seasonal” difference in the 2004 baseline results. Conversely, we also attribute an impact to the Caller-ID display switch if a baseline difference between October and November in 2004 changed to a *non*-difference in 2005¹⁰. Note that this analysis strategy ignores differences across 2004-2005, which appear fairly frequently in the results and which are generally in the expected direction – less positive outcomes in 2005 than in 2004, in keeping with well-documented nonresponse trends across a wide variety of government surveys (see Landman, 2006b). Our assumption (unsupported by any data) is that these longer-term trends are a background constant which do not affect month-to-month “seasonal” differences.

Finally, as with the TPOPS analysis, in addition to national estimates we also present separate estimates for cases located in areas of the U.S. that are covered by the Census Bureau’s Seattle RO (Alaska, Idaho, Oregon, Washington, and northern California). Because the intended Caller-ID display switch seemed to be most effectively and completely implemented in that region of the country, we expected to see the clearest effects there.¹¹

3.3.1. Contact with potential respondents

An essential first stage in the survey response process is making contact with the respondent (Groves and Couper, 1998). In fact, this is the point at which Census Bureau staff felt that the “CENSUS BUREAU” Caller-ID display would have the greatest advantage over “UNKNOWN CALLER” – it would motivate more people to pick up a ringing telephone. In this first results section we examine various indicators of the extent to which the Caller-ID switch accomplished that goal.

Ever answered a call [Table 4]

The extent to which a call was ever answered seems to have been positively affected by the Caller-ID switch. At the national level, the proportion of cases which ever answered a call was about two percentage points higher in November 2005 (87.6%), after the switch to the “CENSUS BUREAU” display, than it had been in October (85.5%), before the switch. The absence of any October-November difference in 2004 suggests that the 2005 effect is not merely some sort of seasonal difference between October and November in the likelihood that a call will be answered, but is in fact a result of the Caller-ID display switch.

The pattern of results for the Seattle RO cases mirrors that for the U.S. as a whole – a significant increase in the proportion of cases who ever answered a call in November 2005 (87.9%) compared to October 2005 (86.2%), in contrast to no October-November difference in 2004.

¹⁰ Note, however, the earlier comments about ACS procedural changes, and their possible confounding effects on this analysis.

¹¹ As will soon be apparent, this was not the case. In some instances the much smaller number of cases for analysis seems to account for the failure of the Seattle results to mirror those for the nation as a whole. In others, however, the essential pattern of observed differences is simply not in line with the national-level results, for reasons that are not clear.

“Never contacted” as a final case outcome [Table 5]

Improved call answering performance does not appear to have carried over to improved contact with ACS sample households, however. (An answered call is not equivalent to contact with the appropriate ACS sample case – it is merely a necessary first step for such contact.) The national-level results do show a slightly lower “never contacted” rate in November 2005 (27.3%) than in October 2005 (27.8%), but the drop in November is probably not attributable to the Caller-ID switch because a similar difference can be observed in the 2004 results.

In the Seattle-RO-only results the observed trends are of a similar direction and magnitude as in the national-level data, although in this case neither the 2004 October-November difference nor the October-November 2005 difference achieves statistical significance.

Call answering efficiency

This section examines various indicators of call answering efficiency – whether or not the Caller-ID display switch caused calls to ACS sample households to be answered sooner. We examine call answering at the first answerable call and the fifth call, as well as the average number of calls made until a call was answered. We find the results to be somewhat mixed across the different indicators, and also somewhat inconsistent across the two analysis samples – the national sample and the sample from the Seattle RO.

a. Call answered at the 1st answerable call attempt [Table 6]

The national-level data offer some evidence of a negative impact of the Caller-ID switch on call answering efficiency as indicated by the tendency for first call attempts to be answered. The 2004 results suggest a slight baseline “seasonal” difference in the likelihood of the first call being answered, in the form of a slight increase from October 2004 (43.9%) to November (45.0%). November’s advantage seems to have disappeared after the switch, however. In 2005, the November first-call-answered rate was the same as the October rate – 44.1%.

The Seattle-only results reveal a different sort of pattern, but one that remains consistent with the national results in suggesting a negative impact of the Caller-ID switch on the tendency for ACS sample households to answer the first call. In Seattle there is no evidence of a “seasonal” difference between October and November 2004, in contrast to a significant decline in first-call-answering in November 2005 (43.1%) relative to October 2005 (45.0%).

b. Call answered by the 5th answerable call attempt [Table 6]

Although there appear to have been no immediate efficiencies of the Caller-ID switch – and, in fact, a slight decline in the efficiency of the first call attempt – a more positive picture emerges from the cumulative call-answered results by the fifth answerable call. The 2005 results for the nation as a whole show that by the fifth call attempt the November call answered rate (78.9%) was significantly higher than the October rate (77.5%), as contrasted with no significant October-November difference by the fifth call in 2004.

This positive result is not evident in the Seattle-only data, however. Although the direction of the observed October-to-November 2005 trend in call answering changes from a decrease (at the first call) to an increase (at the fifth), a statistical analysis of the cumulative results by the fifth call detects no significant difference between the two months' estimates (77.8% in October; 78.3% in November). This is consistent with the baseline 2004 fifth call results, which also show no significant difference in the call answered between October and November.

c. Average number of calls until a call was answered [Table 7]

The Caller-ID switch appears to have had no impact on the efficiency of calls to ACS sample households, as measured by the average number of calls until a call was answered.¹² At the national level we see a very small but statistically significant change in the average number of calls in November 2005 (2.6), after the switch, compared to October (2.5). There is little justification for concluding that this indicates a negative impact of the Caller-ID switch, however, since there was a similar significant October-to-November increase in 2004.

The results for just the Seattle RO are very similar to those for the nation as a whole – a significant increase from October to November in the average number of calls that had to be made until one was answered in both 2004 and 2005, and thus no apparent impact of the Caller-ID switch.

3.3.2. Refusal Nonresponse

Our primary goal in carrying out this research effort was to assess whether the new “CENSUS BUREAU” Caller-ID display affected people’s call answering behavior. We were also interested, however, in more “bottom line” impacts on telephone survey cooperation, in this case, cooperation with the ACS telephone interview. In this section we turn to these issues, starting with an examination of refusal nonresponse. Again, we use a variety of measures of refusal nonresponse, and we analyze results for both the nation as a whole and separately for cases in areas of the U.S. covered by the Census Bureau’s Seattle RO. On the whole, we find some evidence – especially in the national data – for a small but statistically significant positive impact of the Caller-ID switch on ACS telephone refusals.

Encountering a refusal at the 1st answerable call attempt [Table 8]

The national-level results for 2004 suggest that there may be a marginally significant “seasonal” difference between October and November in refusal likelihood – that, in general, first calls are more likely to meet with a refusal in November (2.2%) than October (1.9%). In 2005, however, the Caller-ID switch seems to have eliminated this seasonal trend, resulting in no significant difference between the October and November estimates (3.1% and 2.9%, respectively).

The pattern of the Seattle-only results is somewhat different, but the bottom line is the same – a positive impact of the Caller-ID switch. Here the 2004 October and November estimates do not

¹²These analyses are restricted to cases in which at least one call was ever answered.

differ significantly, as contrasted with 2005, where the first call refusal rate dropped significantly from October to November.

Ever refused any answerable call [Table 8]

In addition to reduced first call refusals, we also see strong evidence in the national-level data of a positive effect of the Caller-ID switch on the tendency for ACS telephone interview cases to *ever* refuse at any call attempt. The proportion of November 2005 cases which ever refused at any call (13.3%) is significantly lower than the October 2005 rate (14.1%); the Caller-ID switch appears to have reversed a significant “seasonal” trend in the opposite direction, as indicated by an October-to-November increase in the ever refused rate in 2004.

The Seattle-only results, on the other hand, point to a much more neutral/no effect conclusion. First, they show, in 2004, no evidence of any seasonal difference between October and November in the tendency to ever express a refusal to cooperate with the ACS interview. And second, there is no evidence that the Caller-ID switch had any impact one way or the other – that is, no October-to-November difference in 2005 either. The former (2004) discrepancy with the national results is not simply a small n problem – the direction of the observed difference is the reverse of the national data. The small n may be a factor in the 2005 discrepancy; there the nonsignificant Seattle results are in the same direction and of the same approximate magnitude as the national results.

“Refused” as a final case outcome [Table 5]

Not surprisingly, the pattern of findings with regard to a final case outcome status of “refused” is very similar to the “ever refused a call” results summarized immediately above. In the national data we see clear evidence of a positive impact of the Caller-ID switch: a small but marginally significant ($p < .10$) decrease in final refusals in November 2005 (10.3%) compared to October 2005 (10.6%), in marked contrast to a significant October-to-November increase in refusals in 2004.

Once again, however, the Seattle-only results offer no evidence of any such positive effect – no significant difference in final refusal rates between October 2005 (9.9%) and November 2005 (10.1%), nor any significant baseline difference between October and November 2004. Here again, the discrepancy between the Seattle-only and national-level results cannot be explained away by the small number of cases in Seattle, since the direction of the observed October-November differences in both 2004 and 2005 are the reverse of the national data.

3.3.3. Interview Completion

In this final results section we turn to an examination of the possible impact of the Caller-ID switch on completion of the ACS telephone nonresponse follow-up interview. As with call answering and refusal nonresponse, we use multiple indicators of interview completion for both the U.S. as a whole and separately for cases located in the region of the country covered by the Seattle RO. The evidence here is quite mixed – the national-level results show a mix of

significantly positive effects of the Caller-ID switch, significantly negative effects, and nonsignificant findings; the Seattle-only results are consistently nonsignificant.

“Interview completed” as a final case outcome [Table 5]

The national results suggest that the Caller-ID switch had a small but significantly positive impact on final cooperation with the ACS telephone interview. This is evidenced by the fact that the rate of interview completion increased significantly from October 2005 (31.4%) to November 2005 (32.9%), while there was no significant difference between the October and November 2004 completion rates.

The Seattle-only findings, however, do not support the same conclusion. In both 2004 and 2005 the observed trend is for completion rates to increase in November relative to October, although neither October-to-November change is statistically significant.

Interview completion efficiency

a. Interview completed at the 1st answerable call [Table 9]

The most desirable outcome, from the standpoint of interviewing efficiency, is to complete an interview the very first time an answerable call is made to an ACS sample household. Our investigation finds no evidence that the Caller-ID switch had any effect on this outcome. In the national-level results, while there was a significant increase in first call interview completion in November 2005 (17.1%) relative to October (16.5%), there was a similar October-to-November increase in 2004. Thus the 2005 difference may not be due to the Caller-ID switch, but could be a “seasonal” difference.

Although the pattern of findings differs, cases located in areas covered by the Seattle RO also show no evidence of an impact of the Caller-ID switch on first call interview completion rates. The observed rates were identical in October and November 2005 (16.4%), and there was also a nonsignificant October-November difference in 2004.

b. Interview completed by the 5th answerable call [Table 9]

Although not evident at the very first call, by the fifth answerable call the Caller-ID switch does appear to have had a positive effect on interview completion – at least at the national level. The cumulative interview completion rate after five answerable calls was 29.0% in October 2005, rising to 30.2% in November; there was no similar increase from October to November in 2004, where call interview completion rates did not differ significantly.

Again, however, for Seattle-only cases there is no evidence of an effect of the Caller-ID switch – the observed trends of the differences in both 2004 and 2005 are similar to the national results, but the differences are nonsignificant in both years.

c. Average number of calls until an interview was completed [Table 10]

In the national-level findings there is evidence of a negative impact of the Caller-ID switch on the average number of calls required to complete an ACS interview.¹³ Although in absolute terms the difference is very small, it took, on average, significantly more calls to complete an interview in November 2005 (2.4) than in October (2.3); in contrast, there was no significant October-November difference in 2004.

The Seattle-only data show no comparable negative impact of the Caller-ID switch, but neither do they suggest that it had a positive effect. In both 2004 and 2005 the October and November average-calls-to-completion estimates are quite similar and not significantly different from each other.

4. CONCLUSIONS

Our analyses suggest that, on balance, the decision to switch back to procedures which permit the Caller-ID display of “CENSUS BUREAU” on calls originating from the U.S. Census Bureau’s telephone centers was the right one. The effects are certainly not completely consistent, and describing them as “modest” is perhaps being too kind, but in general we see evidence of positive changes as a result of the switch, in both our ability to make contact with potential respondents and in their ultimate cooperation with the telephone interview request. We suspect that the Census Bureau name may account for the difference between our results and those of Fernandez and Hannah (2007), who find no detectable benefits of a “GA PUBLIC HEALTH” Caller-ID display over the “UNKNOWN CALLER” default.

We have noted repeatedly the weaknesses of our research design, so of course strong caveats are still appropriate. Notwithstanding those caveats, two factors give us some added confidence in our conclusions: (1) First, the positive pattern emerges even under “treatment” conditions that are obviously very weak. The penetration of Caller-ID in US households is far from complete, rendering the switch irrelevant for an unknown but probably substantial component of the households included in the two surveys. In addition, our data suggest that the procedural change implemented in the telephone centers only resulted in an actual switch in Caller-ID display messages about half the time. The fact that any impact is evident under such watered-down conditions is something of a surprise, and further suggests that, if there is a bias in our findings, it is likely one of *underestimating* the real impact of a truly effective implementation of a “CENSUS BUREAU” Caller-ID message. (2) The second factor which seems to lend additional credence to our findings is the fact that the results from two completely independent and very different surveys both point in essentially the same direction.

We hasten to add that the above conclusions apply primarily to first-time telephone survey response issues. Our examination of the possible impact of the Caller-ID switch on attrition (in a second administration of the TPOPS interview) is beset by more than the usual set of problems, which render the data from key time periods of little use to the analysis. The examination also suffers from results that, for no apparent reason, vary quite widely across different comparison

¹³These analyses are restricted to cases in which an interview was completed.

groups. In short, unlike first-time interview effects, we do not feel confident that we can draw even tentative general conclusions about the impact of Caller-ID information on households for whom we are trying to complete a second interview.

One surprising feature of the results, for which we have no good explanation, is why we did not see any evidence of an “enhancement” of our national-level findings in the Seattle-only analyses. We expected such evidence – in fact, that expectation was the sole motivation for a separate examination of Seattle, based on the data which suggested that the Caller-ID switch was implemented most completely and effectively there. We are certainly aware of the many and important limitations of the Caller-ID implementation component of our research. Obvious potential sources of the disconnect between our expectations and the observed results include the very small number of cases used to evaluate the Caller-ID implementation (only two interviewers in each state), the lack of any known connection between the specific location of the tested interviewers and the interview sample cases (and thus the possibility of different telephone service providers), and of course the absence of any knowledge about which interview sample cases subscribed to Caller-ID. Another possibility is that the Caller-ID implementation findings are largely on-target, that the Seattle results – the Seattle *non*-results, in point of fact – represent the true state of affairs regarding Caller-ID impacts, and that the national-level findings are somehow anomalous or artifactual. Again – we can only offer speculation; we have no data to bring to bear on the matter.

The one conclusion in which we have great confidence is that the data available to us for this evaluation were only marginally up to the task. A rigorous assessment of the impact of the Caller-ID display of the Census Bureau name on telephone survey contact and cooperation – one which would support firm conclusions – would require a very different research design than the one we had to work with. In the best of circumstances, such a design would include random assignment of telephone cases to control and treatment groups, in a designed experiment administered under controlled conditions, and preferably with solid information concerning the actual Caller-ID stimulus presented to all cases included in the experiment. Until such research is implemented, the conclusions we draw from the current study – a small positive impact of the Caller-ID switch on survey contact and cooperation – must remain tentative.

ACKNOWLEDGEMENTS

Many people provided assistance with various aspects of the work presented in this paper. At the risk of inadvertently omitting key names, we specifically note the following: Stephanie Baumgardner, who handled ACS data file preparation and executed the ACS analyses used in this research; Renee Cox, who provided all the data files used to execute the TPOPS analyses used in this research; Deborah Kinnaman, who generously shared with us her considerable expertise on TPOPS implementation details; Dawn Nelson, for general guidance and support; Susan Love, who originally brought the "UNKNOWN CALLER" problem to our attention; and our Census colleagues who provided many useful comments on early drafts of this paper – Deborah Griffin, Theresa DeMaio and Todd Hughes.

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Table 1
TPOPS (TIS=1) Call Efficiency Before and After the Caller-ID Switch*

1a. Average Number of Call Attempts Prior to Contact

	<i>Before Switch</i>		<i>After Switch</i>	<i>Significance test results</i>	
	2005		2006		
	<u>Q1</u>	<u>Q3</u>	<u>Q1</u>	<u>2005 Q1 vs. 2006 Q1</u>	<u>2005 Q3 vs.2006 Q1</u>
National (n)	1.5 (4867)	1.6 (4177)	1.3 (4165)	t= 5.48 p<.0001	t=7.18 p<.0001
Seattle (n)	1.4 (520)	1.7 (443)	1.2 (529)	t= 2.01 p<.05	t=3.63 p<.001

1b. Average Number of Calls Until Interview Completed

	<i>Before Switch</i>		<i>After Switch</i>	<i>Significance test results</i>	
	2005		2006		
	<u>Q1</u>	<u>Q3</u>	<u>Q1</u>	<u>2005 Q1 vs. 2006 Q1</u>	<u>2005 Q3 vs.2006 Q1</u>
National (n)	4.6 (2568)	5.1 (2235)	3.5 (2264)	t=10.84 p<.0001	t=13.29 p<.0001
Seattle (n)	4.1 (312)	4.5 (264)	3.4 (299)	t= 2.56 p<.05	t=3.67 p<.001

*Among households with insufficient address information to have been sent an advance letter (see text).

Table 2
TPOPS (TIS=1) Cooperation Before and After the Caller-ID Switch*

2a. Refusal Rates

	<i>Before Switch</i> 2005		<i>After Switch</i> 2006	<i>Significance test results</i>	
	<u>Q1</u>	<u>Q3</u>	<u>Q1</u>	<u>2005 Q1 vs. 2006 Q1</u>	<u>2005 Q3 vs.2006 Q1</u>
National (n)	20.8 (6947)	21.0 (6172)	18.9 (5750)	t= 2.67 p<.01	t=2.88 p<.01
Seattle (n)	19.5 (707)	19.5 (637)	19.3 (716)	n.s	n.s

2b. Cooperation Rates

	<i>Before Switch</i> 2005		<i>After Switch</i> 2006	<i>Significance test results</i>	
	<u>Q1</u>	<u>Q3</u>	<u>Q1</u>	<u>2005 Q1 vs. 2006 Q1</u>	<u>2005 Q3 vs.2006 Q1</u>
National (n)	62.4 (4115)	61.5 (3568)	65.5 (3456)	t= 2.80 p<.01	t=3.45 p<.01
Seattle (n)	68.4 (456)	66.8 (395)	66.4 (450)	n.s	n.s

2c. Response Rates

	<i>Before Switch</i> 2005		<i>After Switch</i> 2006	<i>Significance test results</i>	
	<u>Q1</u>	<u>Q3</u>	<u>Q1</u>	<u>2005 Q1 vs. 2006 Q1</u>	<u>2005 Q3 vs.2006 Q1</u>
National (n)	37.0 (6947)	35.6 (6172)	39.4 (5750)	t= -2.77 p<.01	t=-4.27 p<.0001
Seattle (n)	44.1 (707)	41.4 (637)	41.8 (716)	n.s	n.s

*Among households with insufficient address information to have been sent an advance letter (see text).

Table 3
 TPOPS Second Interview Response and Refusal Rates
 Among Households which Completed Their First TPOPS Interview

2 nd Interview Quarter	<i>Before Switch</i> (2005)		<i>After Switch</i> (2006)	
	Q2	Q3	Q1	Q4
Interviewed	72.1 ^{a, c}	70.1 ^d	67.0 ^a	75.3 ^{c, d}
Refused	13.0 ^e	16.1 ^h	18.0 ^e	13.0 ^h
N	2451	1451	790	1103

% Interviewed

- a. [2005 Q2 vs. 2006 Q1] t=2.67 p<.01
- b. [2005 Q3 vs. 2006 Q1] n.s
- c. [2005 Q2 vs. 2006 Q4] t=-2.07 p<.05
- d. [2005 Q3 vs. 2006 Q4] t=-2.96 p<.005

% Refused

- e. [2005 Q2 vs. 2006 Q1] t=-3.25 p<.01
- f. [2005 Q3 vs. 2006 Q1] n.s
- g. [2005 Q2 vs. 2006 Q4] n.s
- h. [2005 Q3 vs. 2006 Q4] t=2.26 p<.05

Table 4
ACS Call Answering Among All Cases with at Least One Answerable Call

Part 1 – All ROs

% of All Cases With at Least 1 Answerable Call Which ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... ANSWERED a call	84.6 ^c	85.2 ^d	85.5 ^{b,c}	87.6 ^{b,d}
... NEVER ANSWERED a call	15.4	14.8	14.5	12.4
TOTAL CASES W/ 1+ ANSWERABLE CALL	19657	20884	73789	69355

Significance Test Results

- a: [Oct 04 - Nov 04] n.s.
 b: [Oct 05 - Nov 05] $\chi^2 = 133.10$ p<.0001
 c: [Oct 04 - Oct 05] $\chi^2 = 9.13$ p<.0025
 d: [Nov 04 - Nov 05] $\chi^2 = 96.37$ p<.0001

Part 2 – Seattle RO

% of All Cases With at Least 1 Answerable Call Which ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... ANSWERED a call	85.5	86.3	86.2 ^b	87.9 ^b
... NEVER ANSWERED a call	14.5	13.7	13.8	12.1
TOTAL CASES W/ 1+ ANSWERABLE CALL	1589	1669	5209	4721

Significance Test Results

- a: [Oct 04 - Nov 04] n.s.
 b: [Oct 05 - Nov 05] $\chi^2 = 6.23$ p<.025
 c: [Oct 04 - Oct 05] n.s.
 d: [Nov 04 - Nov 05] n.s.

Table 5
ACS Final CATI Interview Status Among All Cases With At Least One Answerable Call

Part 1 – All ROs

% of All Cases With at Least 1 Answerable Call for Which the Final CATI Interview Status was ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... Ineligible/Eligibility Uncertain	2.1	1.9	1.4	1.5
... Never Contacted	32.7 ^{a,c}	30.9 ^{a,d}	27.8 ^{b,c}	27.3 ^{b,d}
... Exceeded Call Maximum	2.5 ^{a,c}	3.2 ^{a,d}	5.0 ^{b,c}	6.7 ^{b,d}
... Hearing/Language Barrier	0.4	0.3	0.3	0.3
... Unavailable	1	1.3	0.6	0.6
... Refusal	6.9 ^{a,c}	7.7 ^{a,d}	10.6 ^{b,c}	10.3 ^{b,d}
[Sub-Total: Contact, but No Progress]	[8.3]	[9.2]	[11.5]	[11.2]
... Complete (or “Sufficient Partial”) Interview	35.0 ^c	35.1 ^d	31.4 ^{b,c}	32.9 ^{b,d}
... Insufficient Partial Interview	4.1	4.2	3.7	3.7
[Sub-Total: Contact with Progress]	[39.2]	[39.2]	[35.1]	[36.6]
... Late Mail Return	15.3	15.5	19.2	16.7
TOTAL CASES W/ 1+ ANSWERABLE CALL	19657	20884	73789	69355

Significance Test Results

Never Contacted

a: [Oct 04 - Nov 04] t = 3.94 p<.0001
b: [Oct 05 - Nov 05] t = 2.02 p<.05
c: [Oct 04 - Oct 05] t = 13.29 p<.0001
d: [Nov 04 - Nov 05] t = 9.99 p<.0001

Refusal

a: [Oct 04 - Nov 04] t = 2.89 p<.005
b: [Oct 05 - Nov 05] t = 1.95 p<.10
c: [Oct 04 - Oct 05] t = 17.07 p<.0001
d: [Nov 04 - Nov 05] t = 11.90 p<.0001

Exceeded Call Maximum

a: [Oct 04 - Nov 04] t = 4.62 p<.0001
b: [Oct 05 - Nov 05] t = 13.85 p<.0001
c: [Oct 04 - Oct 05] t = 18.42 p<.0001
d: [Nov 04 - Nov 05] t = 22.43 p<.0001

Complete Interview

a: [Oct 04 - Nov 04] n.s.
b: [Oct 05 - Nov 05] t = 5.93 p<.0001
c: [Oct 04 - Oct 05] t = 9.47 p<.0001
d: [Nov 04 - Nov 05] t = 5.80 p<.0001

Table 5 (continued)

Part 2 – Seattle RO

% of All Cases With at Least 1 Answerable Call for Which the Final CATI Interview Status was ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... Ineligible/Eligibility Uncertain	3.0	2.3	1.9	1.7
... Never Contacted	31.4 ^c	30.3 ^d	28.5 ^c	27.3 ^d
... Exceeded Call Maximum	2.2 ^{a,c}	3.4 ^{a,d}	5.1 ^{b,c}	7.3 ^{b,d}
... Hearing/Language Barrier	1.1	1.1	0.4	0.3
... Unavailable	1.1	1.6	0.6	0.7
... Refusal	7.6 ^c	6.4 ^d	9.9 ^c	10.1 ^d
[Sub-Total: Contact, but No Progress]	[9.8]	[9.1]	[10.9]	[11.1]
... Complete (or “Sufficient Partial”) Interview	33.4 ^c	34.4	31.2 ^c	32.5
... Insufficient Partial Interview	4.1	4.0	3.5	3.4
[Sub-Total: Contact with Progress]	[37.5]	[38.4]	[34.7]	[35.9]
... Late Mail Return	16.2	16.6	19.1	16.7
TOTAL CASES W/ 1+ ANSWERABLE CALL	1589	1669	5209	4721

Significance Test Results

Never Contacted

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] t = 2.19 p<.05
- d: [Nov 04 - Nov 05] t = 2.32 p<.025

Refusal

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] t = 2.92 p<.005
- d: [Nov 04 - Nov 05] t = 4.97 p<.0001

Exceeded Call Maximum

- a: [Oct 04 - Nov 04] t = 2.10 p<.05
- b: [Oct 05 - Nov 05] t = 4.53 p<.0001
- c: [Oct 04 - Oct 05] t = 6.07 p<.0001
- d: [Nov 04 - Nov 05] t = 6.66 p<.0001

Complete Interview

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] t = 1.65 p<.10
- d: [Nov 04 - Nov 05] n.s.

Table 6
ACS Cumulative Call Answering, By Call Attempt,
Among All Cases With At Least One Answerable Call

Part 1 – All ROs

Cumulative % of All Cases With at Least 1 Answerable Call Which Answered a Call by the...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... 1st answerable call	43.9^a	45.0^{a,d}	44.1	44.1^d
... 2 nd answerable call	63.4	63.7	63.9	64.1
... 3 rd answerable call	70.7	71.1	71.1	71.3
... 4 th answerable call	74.9	75.0	75.0	75.9
... 5th answerable call	77.5	77.5^d	77.5^b	78.9^{b,d}
... 6 th answerable call	79.4	79.2	79.2	80.9
... 7 th answerable call	80.8	80.2	80.5	82.2
... 8 th answerable call	82.0	81.4	81.7	83.3
... 9 th answerable call	82.8	82.1	82.5	84.1
... 10 th answerable call	83.4 ^a	82.8 ^{a,d}	83.0 ^b	84.7 ^{b,d}
... 15 th answerable call	84.3	84.7	84.7	86.7
... 20 th answerable call	84.6	85.2	85.5	87.6
... 21 st or later answerable call	84.6 ^c	85.2 ^d	85.5 ^{b,c}	87.6 ^{b,d}
% of All Cases with at Least 1 Answerable Call Which NEVER ANSWERED an Answerable Call	15.4	14.8	14.5	12.4
TOTAL CASES W/ 1+ ANSWERABLE CALL	19657	20884	73789	69355

Significance Test Results

1st call:

- a: [Oct 04 - Nov 04] t = 2.25 p<.025
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] n.s.
- d: [Nov 04 - Nov 05] t = 2.41 p<.025

5th call:

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] t = 6.63 p<.0001
- c: [Oct 04 - Oct 05] n.s.
- d: [Nov 04 - Nov 05] t = 4.39 p<.0001

Table 6 (continued)

Part 2 – Seattle RO

Cumulative % of All Cases With at Least 1 Answerable Call Which Answered a Call by the...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... 1st answerable call	43.4	44.6	45.0^b	43.1^b
... 2 nd answerable call	65.1	63.6	64.3	63.6
... 3 rd answerable call	72.1	72.1	71.0	70.4
... 4 th answerable call	76.4	75.9	75.0	75.1
... 5th answerable call	79.3	78.4	77.8	78.3
... 6 th answerable call	81.4	80.3	79.5	80.5
... 7 th answerable call	82.3	81.3	80.9	82.1
... 8 th answerable call	83.0	82.4	82.4	83.4
... 9 th answerable call	84.1	83.2	83.2	84.2
... 10 th answerable call	84.7	84.2	83.9	84.8
... 15 th answerable call	85.3	85.6	85.6	86.9
... 20 th answerable call	85.4	86.3	86.3	87.9
... 21 st or later answerable call	85.4	86.3 ^d	86.3 ^b	87.9 ^{b,d}
% of All Cases with at Least 1 Answerable Call Which NEVER ANSWERED an Answerable Call	14.5	13.7	13.8	12.1
TOTAL CASES W/ 1+ ANSWERABLE CALL	1589	1669	5209	4721

Significance Test Results

1st call:

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] t = 1.90 p<.10
- c: [Oct 04 - Oct 05] n.s.
- d: [Nov 04 - Nov 05] n.s.

5th call:

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] n.s.
- d: [Nov 04 - Nov 05] n.s.

Table 7
ACS Call Answering – Average Number of Calls to Achieve The First Answered Call

Part 1 – All ROs

Among Cases Which Ever Answered a Call...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... Average # of Answerable Calls to Achieve the First Answered Call	2.3 ^{a,c}	2.4 ^{a,d}	2.5 ^{b,c}	2.6 ^{b,d}
TOTAL CASES W/ 1+ ANSWERED CALL	16637	17792	63086	60741

Significance Test Results

- a: [Oct 04 - Nov 04] t = 3.78 p<.0001
- b: [Oct 05 - Nov 05] t = 5.67 p<.0001
- c: [Oct 04 - Oct 05] t = 7.22 p<.0001
- d: [Nov 04 - Nov 05] t = 6.12 p<.0001

Part 2 – Seattle RO

Among Cases Which Ever Answered a Call...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... Average # of Answerable Calls to Achieve the First Answered Call	2.2 ^{a,c}	2.4 ^{a,d}	2.5 ^{b,c}	2.6 ^{b,d}
TOTAL CASES W/ 1+ ANSWERED CALL	1358	1440	4490	4149

Significance Test Results

- a: [Oct 04 - Nov 04] t = 2.39 p<.025
- b: [Oct 05 - Nov 05] t = 2.61 p<.01
- c: [Oct 04 - Oct 05] t = 3.81 p<.0001
- d: [Nov 04 - Nov 05] t = 2.54 p<.025

Table 8
ACS Refusal Nonresponse Among All Cases With At Least One Answerable Call

Part 1 – All ROs

% of All Cases With at Least 1 Answerable Call Which ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... REFUSED at the First Answerable Call	1.9 ^{a,c}	2.2 ^{a,d}	3.1 ^c	2.9 ^d
... Did NOT Refuse at the First Answerable Call	98.1	97.8	96.9	97.1
... Ever REFUSED, at Any Answerable Call	6.9 ^{a,c}	7.6 ^{a,d}	14.1 ^{b,c}	13.3 ^{b,d}
... NEVER Refused at Any Answerable Call	93.1	92.4	85.9	86.7
TOTAL CASES W/ 1+ ANSWERABLE CALL	19657	20884	73789	69355

Significance Test Results

1st Call Refused

a: [Oct 04 - Nov 04] $\chi^2 = 3.22$ p<.10
 b: [Oct 05 - Nov 05] n.s.
 c: [Oct 04 - Oct 05] $\chi^2 = 74.23$ p<.0001
 d: [Nov 04 - Nov 05] $\chi^2 = 33.59$ p<.0001

Ever Refused at Any Call

a: [Oct 04 - Nov 04] $\chi^2 = 8.34$ p<.005
 b: [Oct 05 - Nov 05] $\chi^2 = 20.78$ p<.0001
 c: [Oct 04 - Oct 05] $\chi^2 = 734.76$ p<.0001
 d: [Nov 04 - Nov 05] $\chi^2 = 485.03$ p<.0001

Part 2 – Seattle RO

% of All Cases With at Least 1 Answerable Call Which ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... REFUSED at the First Answerable Call	2.5 ^c	2.0 ^d	3.7 ^{b,c}	2.9 ^{b,d}
... Did NOT Refuse at the First Answerable Call	97.5	98.0	96.3	97.1
... Ever REFUSED, at Any Answerable Call	7.3 ^c	6.4 ^d	14.7 ^c	13.7 ^d
... NEVER Refused at Any Answerable Call	92.7	93.7	85.3	86.3
TOTAL CASES W/ 1+ ANSWERABLE CALL	1589	1669	5209	4721

Significance Test Results

1st Call Refused

a: [Oct 04 - Nov 04] n.s.
 b: [Oct 05 - Nov 05] t = 2.28 p<.025
 c: [Oct 04 - Oct 05] t = 2.59 p<.01
 d: [Nov 04 - Nov 05] t = 2.25 p<.025

Ever Refused at Any Call

a: [Oct 04 - Nov 04] n.s.
 b: [Oct 05 - Nov 05] n.s.
 c: [Oct 04 - Oct 05] t = 9.07 p<.0001
 d: [Nov 04 - Nov 05] t = 9.34 p<.0001

Table 9
ACS Cumulative Interview Completion, by Call Attempt,
Among all Cases With At Least One Answerable Call

Part 1 – All ROs

Cumulative % of All Cases With at Least 1 Answerable Call Which had a Final Status of “Complete” (or “Sufficient Partial”) by the ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... 1st answerable call	18.1^{a,c}	19.2^{a,d}	16.5^{b,c}	17.1^{b,d}
... 2 nd answerable call	26.5	27.0	24.2	24.9
... 3 rd answerable call	29.6	30.1	26.8	27.4
... 4 th answerable call	31.5	31.6	28.1	29.1
... 5th answerable call	32.6^c	32.5^d	29.0^{b,c}	30.2^{b,d}
... 6 th answerable call	33.4	33.1	29.6	30.8
... 7 th answerable call	33.9	33.4	30.0	31.2
... 8 th answerable call	34.3	33.8	30.3	31.5
... 9 th answerable call	34.5	34.1	30.6	31.8
... 10 th answerable call	34.7 ^c	34.3 ^d	30.7 ^{b,c}	32.0 ^{b,d}
... 15 th answerable call	34.9	34.9	31.2	32.6
... 20 th answerable call	35.0	35.1	31.4	32.9
... 21 st or later answerable call	35.0 ^c	35.1 ^d	31.4 ^{b,c}	32.9 ^{b,d}
TOTAL CASES W/ 1+ ANSWERABLE CALL	19657	20884	73789	69355

Significance Test Results

1st call:

- a: [Oct 04 - Nov 04] t = 2.84 p<.005
- b: [Oct 05 - Nov 05] t = 3.08 p<.005
- c: [Oct 04 - Oct 05] t = 5.06 p<.0001
- d: [Nov 04 - Nov 05] t = 6.63 p<.0001

5th call:

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] t = 4.98 p<.0001
- c: [Oct 04 - Oct 05] t = 9.66 p<.0001
- d: [Nov 04 - Nov 05] t = 6.35 p<.0001

Table 9 (continued)

Part 2 – Seattle RO

Cumulative % of All Cases With at Least 1 Answerable Call Which had a Final Status of “Complete” (or “Sufficient Partial”) by the ...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... 1st answerable call	16.6	17.4	16.4	16.4
... 2 nd answerable call	24.7	25.2	23.9	24.2
... 3 rd answerable call	28.0	28.9	26.1	26.6
... 4 th answerable call	30.1	30.5	27.5	28.3
... 5th answerable call	31.2^c	31.5	28.6^c	29.4
... 6 th answerable call	32.3	31.9	29.1	30.0
... 7 th answerable call	32.7	32.2	29.6	30.5
... 8 th answerable call	32.9	32.7	30.0	30.9
... 9 th answerable call	33.1	33.1	30.2	31.1
... 10 th answerable call	33.4 ^c	33.5	30.4 ^c	31.4
... 15 th answerable call	33.6	34.0	31.0	32.2
... 20 th answerable call	33.6	34.4	31.2	32.4
... 21 st or later answerable call	33.6 ^c	34.4	31.2 ^c	32.4
TOTAL CASES W/ 1+ ANSWERABLE CALL	1589	1669	5209	4721

Significance Test Results

1st call:

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] n.s.
- d: [Nov 04 - Nov 05] n.s.

5th call:

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] $t = 1.98$ $p < .05$
- d: [Nov 04 - Nov 05] n.s.

Table 10
 ACS Interview Completion – Average Number of Answerable Calls
 to Achieve a Completed Interview (or a Sufficient Partial Interview)

Part 1 – All ROs

Among Cases Which Completed an Interview...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... Average # of Answerable Calls to Achieve the Completed Interview	2.2 ^c	2.2 ^d	2.3 ^{b,c}	2.4 ^{b,d}
TOTAL COMPLETED INTERVIEW CASES	6884	7321	23180	22803

Significance Test Results

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] t = 3.83 p<.0001
- c: [Oct 04 - Oct 05] t = 3.06 p<.005
- d: [Nov 04 - Nov 05] t = 4.28 p<.0001

Part 2 – Seattle RO

Among Cases Which Completed an Interview...	2004		2005	
	Oct	Nov	Oct (before)	Nov (after)
... Average # of Answerable Calls to Achieve the Completed Interview	2.2	2.4	2.3	2.5
TOTAL COMPLETED INTERVIEW CASES	531	574	1624	1534

Significance Test Results

- a: [Oct 04 - Nov 04] n.s.
- b: [Oct 05 - Nov 05] n.s.
- c: [Oct 04 - Oct 05] n.s.
- d: [Nov 04 - Nov 05] n.s.