

## Negative Media and Unit-Level Survey Response

Nancy Bates

U.S. Census Bureau, Demographic Surveys Division

### Introduction

Most U.S. Census Bureau surveys are voluntary and thus depend upon the public's good will to cooperate with requests for information. In a 2006 survey, the Census Bureau ranked 4<sup>th</sup> among 57 government organizations as most trusted to protect the privacy of personal information (Ponemon, 2006). This trust apparently translates into high levels of voluntary cooperation as surveys conducted by the Census Bureau consistently achieve higher response rates compared to surveys conducted by the private sector. However, negative media reports involving the Census Bureau may erode this trust along with the stellar participation rates it enjoys.

Over the past two decades, even Census Bureau response rates have declined (Atrostic, et al., 2001; Bates, 2007). Many different factors are hypothesized to be driving this decline one of which is viewed as increasing concerns about privacy and confidentiality (Fay, Bates and Moore, 1991; Singer, Mathiowetz and Couper 1993; Singer, Von Howeyk, and Neugebauer, 2003; Hillygus, et al. 2006). In the past, the topic of privacy and the Census Bureau has been the subject of public debate and negative media reports have surfaced as a result. For example, just prior to the 2000 Decennial Census, a controversy over privacy erupted when several members of Congress and (then presidential-candidate) George W. Bush made negative remarks about the intrusiveness of the census long form. The Senate went so far as to pass a nonbinding resolution waiving any fines or punishments for residents who declined to answer certain long form questions. These criticisms of the Census were widely reported on television and radio talk shows and in many newspaper articles. In the end, the negative publicity heightened public opinion about privacy and was estimated to have resulted in about a 5-percentage point drop in the mailback rate of census forms (Martin, 2000; Hillygus, et al., 2006).

More recently, media reports involving incidents of data security breaches in government agencies have become commonplace. For example, in May 2006, the media reported about a stolen laptop belonging to the Department of Veterans Affairs. The laptop was purported to contain unencrypted data concerning 26.5 million veterans. Soon after, reports of additional missing computers by the Department of Agriculture and Federal Trade Commission were also announced. Needless to say, these incidents sparked wide public concern about the safekeeping of data collected and maintained by government agencies.

In September 2006, the Washington Post ran a story reporting that 1,100 laptops had been counted as lost, stolen, or unaccounted for by the U.S. Commerce Department. The article went on to state that nearly 250 of the laptops came from the U.S. Census Bureau and that some of the laptops were thought to contain personal information including names, income, and Social Security Numbers. Similar stories were reported in other newspapers including the New York Times. The story was also featured on national and cable television reports over the next few days. Immediately after the story broke, some scholars hypothesized the event might undermine public confidence in the Census Bureau's ability to maintain data confidentiality and this, in turn, would lead to a diminished cooperation with surveys (Ohlemacher - Associated Press, 2006).

What exactly were the ramifications of the negative publicity? Given the huge volume of television, radio, print, and Internet media the public is exposed to daily, can a few stories really register in such a way as to influence behavior? Aside from recent attempts to measure fallout from the 2000 Decennial Census privacy debate, little is documented in the survey literature.

In this paper, we use the missing laptop story as a case study to assess whether a negative media event had a noticeable impact on survey cooperation. We view the event as a natural

experiment that allows us to compare “before” and “after” measures of participation, all other things being equal. We examine three continuing demographic surveys, the data for which are collected by the U.S. Census Bureau. We explore several survey “cooperation” measures immediately before and after the event. First, we compare the unit-level response and refusal rates during the field period of the event compared to rates from field periods immediately before and since the event. Next, we use paradata in the form of automated contact history records to measure the rate of interim or “soft” refusals occurring at the doorstep around the time of the event. These data also provide a small window to explore reasons *why* households were reluctant to participate and the ability to gauge whether these reasons fluctuated around the time of the media reports.

#### Data and Methods

To assess whether the media reports surrounding the missing laptops had a noticeable impact on survey cooperation, we examined three continuing demographic surveys for which the Census Bureau is the data collection agent. These included the National Health Interview Survey (NHIS), sponsored by the National Center for Health Statistics, and two consumer expenditure surveys sponsored by the Bureau of Labor Statistics -- the Consumer Expenditure Quarterly (CEQ) and Consumer Expenditure Diary (CE Diary). The Census Bureau collects data for many other surveys that were in the field during the time of the laptop event, but these three surveys have one common feature that made them candidates for study – they all use the Contact History Instrument (or CHI) as part of their field production.

The CHI is an automated system for collecting contact attempt histories in personal visit surveys. Interviewers are trained to record information such as the number of contact attempts, mode of attempt, day/time of attempt and outcome of each attempt. Additionally, the CHI collects information on the interviewer-householder interactions whenever a contact is made. For example, in cases where contact is made with a sample unit member but an interview is not completed, interviewers indicate *why* the interview could not be conducted (e.g. eligible person not available, inconvenient time, respondent is reluctant). Additionally, in all cases where contact is made, interviewers

complete a screen that includes 23 categories of verbal and nonverbal respondent behaviors and concerns – “doorstep concerns” that may be expressed or exhibited during interviewer-respondent interactions. These categories include questions, concerns, and reasons for reluctance to participate.

#### *The Three Surveys*

The NHIS is an annual survey of the health of the civilian, non-institutionalized household population of the U.S. The NHIS produces national estimates on health insurance coverage, health care access and utilization, health status, and health behaviors. The NHIS is a continuing survey with interviewing conducted most weeks of the year. The field period for each sample “week” assignment spans 16 days. Interviews are primarily conducted in-person using computer-assisted personal interviewing (CAPI)<sup>1</sup>.

Data from the CEQ and CE Diary provide a continuous series of data on consumer expenditures, which are used to determine the need to revise the consumer price index (CPI). The CEQ is an interview panel survey that obtains data on large consumer expenditures. The survey is a continuing survey with households in sample once every three months (for a total of 5 interviews). Each field period spans one month.

For the CE Diary, interviewers place diaries in sample units for the purpose of recording all purchases incurred during the survey week. Interviewers have 7 days to place the Week 1 diary, beginning on the so-called Earliest Placement Date and ending 7 days later. Earliest Placement Dates are evenly distributed throughout the year, so that each day has an equal chance of selection. The Week 1 and Week 2 diaries together cover fourteen consecutive days. The field period for the CE Diary fluctuates according to the day of the month a diary is successfully placed. With the exception of the diary itself, data for the CEQ and CE Diary are collected via CAPI. The majority of cases are collected by personal visit.

---

<sup>1</sup> In some cases, contact attempts and interviews are allowed by phone.

Because the laptop story was first reported on September 22, 2006, we selected interview field periods just before, during and after that date. For the NHIS, we selected nine sample weeks with interview periods spanning August 21 - October 31 – approximately 4 weeks before and 4 weeks after the event was first reported. The date of interest occurred toward the end of the 4<sup>th</sup> sample week, which covered an interview period of September 11-26, and near the beginning of the 5<sup>th</sup> sample week, which spanned September 18-October 3. Consequently, there were 2 interview “weeks” in NHIS that included the September 22 date. In all, we examined data from approximately 4,600 eligible households – around 2,000 before the media report and 2,300 after.

For the CEQ<sup>2</sup> and CE Diary, we examined 3 months of interviewing – one month prior to the month the event occurred (August), the month of the event (September), and the month immediately following (October). For the CE Diary, we examined data from around 1,650 eligible households per month and for the CEQ around 760 time-in-sample=1 households per month.

#### *Limitations*

It is prudent to highlight several limitations to the analysis including limitations of the CHI data. First, CHI was designed to collect information at the case level. However, statements of reluctance are made by individuals, and information recorded for a specific case may reflect contact with multiple household members. It is unclear to what extent, if any, the inability to link doorstep concerns to specific individuals affects our results. Second, the interpretation and recording of respondent concerns is a subjective undertaking. There is bound to be variability in the completeness of CHI records and in the coding of similar doorstep concerns across interviewers. Thirdly, CHI data are subject to recall error. For some contact outcomes, the doorstep interaction is

---

<sup>2</sup> Since the CEQ is a panel survey, an attempt is made to interview each unit on 5 different occasions. For comparison purposes, we only analyzed CEQ cases that were in sample for the first time (TIS=1).

brief and results in an interim refusal or scheduled callback. The details of these interactions should be readily accessible from memory and accurately recorded in the CHI. However, if the interaction leads to a partial or fully completed interview, a fair amount of time may pass between the initial doorstep interaction and the recording of CHI data. Additionally, a small percentage of NHIS, CEQ and CE Diary cases (around 2-3 percent) are completely missing CHI data. These cases had to be excluded when performing certain analysis<sup>3</sup>.

A final (and perhaps most important) caution is that we have no way of knowing if a household was actually aware of the missing laptop incident. We can only make the global assumption that all households had an equal probability of media exposure and use a “before” and “after” method to gauge the impact of the event.

#### Results

##### *Response rates, refusal rates and cumulative refusals*

We start our analysis broadly by examining unit-level response and refusal rates and then narrow the focus by turning to the frequency of “soft” refusals and reasons for not participating. We hypothesized that the media reports about the missing laptops might heighten public concern about the Census Bureau’s ability to safeguard respondent data. This, in turn, could lead to lower unit-level response rates starting with the field period in which the event occurred. Figures 1-3 illustrates the response rates by field.

For the NHIS, response rates<sup>4</sup> decreased noticeably to around 83% *before* the laptop story broke. But during the two field periods that included the date of the first media report,

---

<sup>3</sup> We examined the final outcome dispositions for the NHIS and CEQ cases missing CHI data. For the NHIS, approximately 54% of the cases without CHI data were interviews, 7% were noninterviews and 39% were ineligible. For the CEQ, around 27% of the cases missing CHI data were interviews, 35% were noninterviews, and 37% were ineligible. Data were not available for the CE Diary to make a similar analysis.

<sup>4</sup> Response rates were calculated using cases with CHI data available. Rates reflect the AAPOR RR2 definition (AAPOR, 2006).

response rates increased (to 90.1 percent and 90.8 percent). By the field period that immediately followed the event, response rates had returned to similar levels just before it occurred (88.1 percent). Response rates among these 4 field periods were not statistically significant from one another ( $X^2 = 2.54$ , d.f.=3,  $p=.47$ ).

For the CEQ, we also see a slightly higher response rate during the month that included the event with rates slightly declining in the month just after the story was first reported (76.9 percent before; 79.8 percent during; 78.5 percent after). Again, these differences are not statistically significant ( $X^2=1.85$ , d.f.=2,  $p=.40$ ). For the CE Diary, response rates were practically identical before, during and after the event with no significant differences (around 76% for each month).

Next, we focused on refusal rates<sup>5</sup> for the same field periods (see figures 4-6). We hypothesized that the negative media reports could translate into a greater frequency of households refusing to participate – notably because of increased skepticism that the Census Bureau could keep personal information such as names, address and Social Security numbers confidential. For the most part, the NHIS refusal rates mirrored the response rates trend line. That is, refusal rates increased prior to the event (August 28-September 12) but decreased by around 3 percentage points during the two field periods in which the story was first reported (September 11-26 and September 18-October 3). In the field period immediately after the event, refusal rates climbed back to their pre-event levels before leveling off for most of the periods covering October. However, like the response rates, the differences in refusal rates across these 4 field periods were not statistically significant ( $X^2=5.1$ , d.f.=3,  $p=.16$ ).

The refusal rate pattern was similar in the CEQ (albeit not as noticeable) where refusals dipped slightly during the month when the story was reported (by about 1 percentage point) but returned to pre-event levels by the month following the event. The CE Diary was the only survey to exhibit a different pattern. In this case, refusal rates increased by about 2.5 percentage points during the month of September before dropping slightly in the month after the event.

However, like the NHIS, refusal rates before, during, and immediately after the event were not significantly different for either of the consumer expenditure surveys.

As a final measure to gauge impact on refusals, we plotted the cumulative refusals over time before, during, and after the event (figures not shown). Typically, refusals cumulate very slowly with a sharp increase toward the very end of the field period. This occurs because households that initially refuse are usually followed up with refusal conversion attempts. Hard refusals are usually not coded as such until the last days of the field period. We wondered, however, if final refusals for the field period during the event would have a “spike” close to September 22<sup>nd</sup>.

We found that for one of the NHIS field periods that contained the event (9/11-9/26), an increase in refusals did occur sooner than the other field periods (around Day 7 in the field). However, this increase could not have been due to the laptop story since Sept. 22<sup>nd</sup> fell on the 12<sup>th</sup> day of interviewing – about 6 days *after* refusals had already started to rise noticeably. During the other field period that contained the event (9/18 – 10/3), Sept. 22<sup>nd</sup> fell on the 5<sup>th</sup> day of the interviewing during which cumulative refusals were at zero. During this period, refusals didn’t begin to occur until four days later and even then, only slowly and on pace very much like those before and after the event. For the CEQ, the cumulative refusal trends are practically identical, before, during and after the event with no “spike” occurring immediately after the 22<sup>nd</sup> of September.

How should we interpret these measures of cooperation? Taken together, they suggest that the media events did not decrease overall response rates nor did they drive up refusal rates. On the contrary, we could argue there is some evidence that response increased during the time period when the missing laptop story was in the news and at least for two of the surveys, refusals decreased as well. However, since none of the differences are statistically significant, it is safest to infer the event simply had no impact on unit-level response nor did it cause hard refusals to occur earlier in the field period.

*Soft (interim) refusals*

<sup>5</sup> Refusal rates reflect the AAPOR REF2 (AAPOR, 2006).

The CHI data allowed us to analyze cases according to interim disposition status, that is, outcomes prior to a final disposition code. For this paper, we were interested in examining the occurrence of interim refusals (sometimes referred to as soft refusals). Interviewers identified soft refusals on a screen in the CHI allowing them to indicate “respondent is reluctant” whenever contact was made with a sample unit member but the interview could not be conducted.

We hypothesized that the occurrence of soft refusals might have increased around the time of the laptop story. If true, it would have required more resources devoted to refusal conversion and follow-up. We graphed the percentage of contacts that were flagged as soft refusals in the days just before, during, and after the event (figures not shown). The base is the number of eligible contacts on a given day. For all three surveys the trend line looked similar – the percentage of soft refusals fluctuated from one day to the next without any obvious change in pattern after the story was reported. For the NHIS, the percentage ranged somewhere between 3% and 20% but there is no evidence that soft refusals occurred more frequently around September 22<sup>nd</sup>. Likewise for the CEQ and CE Diary where daily fluctuations in soft refusals appear the same before and after the story was reported.

#### *Reasons for refusals*

The final analysis was to explore the reasons households gave for not wanting to participate in the surveys. As mentioned earlier, this qualitative data is collected from a screen with 23 categories designed to capture reasons behind any reluctance (e.g., privacy concerns, survey takes too long, not interested). It is also intended to more generally record behaviors or predispositions describing the interviewer/respondent interaction (e.g., breaks appointments, hostile or threatening to interviewer). For this paper, we examined two categories thought to most closely relate to the content of the missing laptop reports – privacy concerns and anti-government statements. We hypothesized that the frequency of these types of statements might increase around the time the laptop story broke.

We plotted the frequency of “privacy” or “anti-government” concerns mentioned during each

contact. The plots reflect the percentage of households that expressed these particular concerns over all eligible contacts (by field period). In all three surveys, privacy concerns were expressed more often than anti-government comments, but again, there is no indication that either increased noticeably during the field period when the story was reported. Finally, we examined some open-ended fields from CHI to get a sense if people were mentioning the incident, but it wasn’t fitting neatly into one of the close-ended categories. We examined the “other-specify” field on the screen where contact was made but an interview was not conducted as well as the “other-specify” field whenever any type of contact was made. Again, we found very little evidence that households were making any mention of the story during doorstep interactions. For the NHIS, only 9 of the open-ended entries out of 604 pertained to the missing laptops (less than 2%). For the CEQ, only 4 out of 434 were laptop-related and for the CE Diary, only 4 out of 720 mentioned the stolen laptops (less than 1% for both surveys).

#### Conclusions

In the past, the Census Bureau has been the subject of negative stories reported in the media. Most recently, on September 22<sup>nd</sup> 2006, the Washington Post ran a story about 1,100 laptops missing from the U.S. Commerce Department, of which, 250 were purported to contain personally identifiable information collected by the Census Bureau. This came about four months after a highly publicized story about a stolen laptop belonging to the Department of Veterans Affairs containing unencrypted data on 26.5 million veterans. In this paper, we use traditional unit-level response measures and newly available paradata to address the following question:

*Did the media reports about the Census Bureau’s missing laptops have an impact on respondent cooperation with Census Bureau surveys?*

To answer this question, we examined three nationwide household surveys in the field when the story was first reported. Using more than one survey to examine the issue is beneficial in several ways. First, the surveys cover different topics areas (health versus consumer spending) making our findings more generalizable. Second, the surveys employ different sample sizes, sampling schemes, and interviewers,

which again, expands the breadth of our conclusions. However, our analysis was limited by the fact we are studying a “natural” and not a controlled experiment. As such, we can only examine before and after measures of survey cooperation and we have no mechanism to measure actual *awareness* of the Census Bureau laptop story. Consequently, we cannot state with certainty if our findings represent true cause-and-effect between exposure and behavior or simply lack of exposure.

For all three surveys, we found no evidence that this particular event “registered” with the public in such a way as to negatively influence cooperation. We found that, in all three surveys, both response rates and refusal rates were not significantly different for field periods including the date the story was reported. We also found no evidence that the number of refusals increased around the time of the event. We also found no indication that the number of soft refusals (cases requiring refusal conversion follow-up) increased around the time of the laptop story. Finally, by examining the doorstep concerns recorded at the time of contact, we explored whether the privacy concerns and anti-government comments might have increased around the time of the event. Again, we found no evidence to support this.

However, our lack of evidence connecting this particular media event to a decline in survey participation does not mean that media events cannot influence behavior. With this event, the Census Bureau joins a growing list of federal agencies that have acknowledged data security breaches as a result of missing laptops. We could be nearing the “tipping point” whereby another negative event could cause irrevocable damage to the public trust the Census Bureau relies on to carry out its mission. This could prove harmful down the road especially when the public is called upon to respond to the 2010 Census. As the Decennial Census draws near, the Census Bureau will embark on a massive public awareness campaign and the number of census-related events, advertising, and media reports will dramatically increase. Along with the positive publicity, the media will undoubtedly also report negative stories, including the event studied here.

Research by Gerber (2001) suggests many people believe information collected by the government is available on one “big computer”

representing a massive database shared among the various government agencies. If the public does not discern one federal agency from another, news of missing laptops at other agencies could spill over and impact 2010 Census participation, particularly if additional breaches occur close to Census Day (April 1, 2010). In such a situation, we might very well see a significant correlation between negative media reports and cooperation, much like we did in the Census 2000.

## References

American Association for Public Opinion Research (2006). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*. 4<sup>th</sup> edition. Lenexa, Kansas: AAPOR.

Atrostic, B.K., Bates, N., Burt, G., Silberstein, A. (2001). “Nonresponse in U.S. Government Household Surveys: Consistent Measures, Recent Trends, and New Insights.” *Journal of Official Statistics*, 17 : 209-226.

Bates, N. (2007). “Nonresponse to Selected Demographic Household Surveys: 1990-2005.” An internal Census Bureau memorandum from Cheryl Landman, Chief, Demographic Surveys Division, U.S. Census Bureau, January 4, 2007.

Fay, R., Bates, N. and Moore, J. (1991). “Lower Mail Response Rate in the 1990 Census: A Preliminary Interpretation.” Paper presented to the 1991 Annual Research Conference of the U.S. Census Bureau. Arlington, VA.

Gerber, E. (2001). *The Privacy Context of Survey Response: An Ethnographic Account*. Book chapter in Confidentiality, Disclosure and Data Access: Theory and Practical Applications for Statistical Agencies. Doyle, P., Lane, J. Theeuwes, J., and Zayatz, L, (Ed). Amsterdam, The Netherlands: Elsevier.

Hillygus, S., Nie, N., Prewitt, K., and Pals, H. (2006). The Hard Count: The Political and Social Challenges of Census Mobilization. Russell Sage Foundation: New York, N.Y.

Martin, E. (2000). “Changes in Public Opinion During the Census.” A paper presented at the Census Advisory Committee of Professional Associations, October 19.

Ohlemacher, S. (2006). "Will Public Lose Confidence in Census?" Article published by the Associated Press, [www.washingtonpost.com](http://www.washingtonpost.com), September 22.

Ponemon, L. (2006). "2006 Privacy Trust Study of the U.S. Government." February 23, 2006. A report conducted by the Ponemon Institute: [www.ponemon.org](http://www.ponemon.org).

Singer, E. Van Howeyk, J.V., Neugebauer, R. (2003). "Attitudes and Behavior: The Impact on Privacy and Confidentiality Concerns on Participation in the 2000 Census." *Public Opinion Quarterly* 67: 368-84.

Singer, E. Mathiowetz, N. and Couper, M. (1993). "The Impact of Privacy and Confidentiality Concerns on Survey Participation." *Public Opinion Quarterly* 57: 465-82.

Section on Survey Research Methods

Fig. 1 2006 NHIS - Response Rates by Interview Period: Before and After Event (AAPOR RR2)

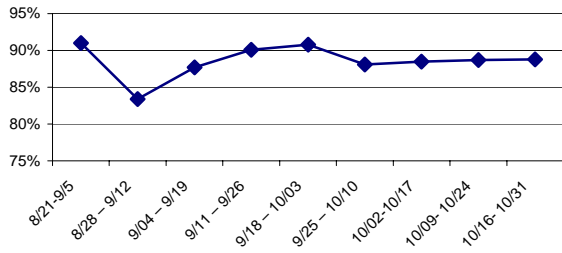


Fig. 4 2006 NHIS - Refusal Rates by Interview Periods Before and After Event (AAPOR REF2)

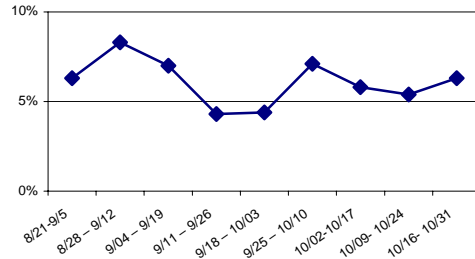


Fig. 2 2006 CEQ (TIS=1) - Response Rates by Interview Periods Before and After Event (AAPOR RR2)

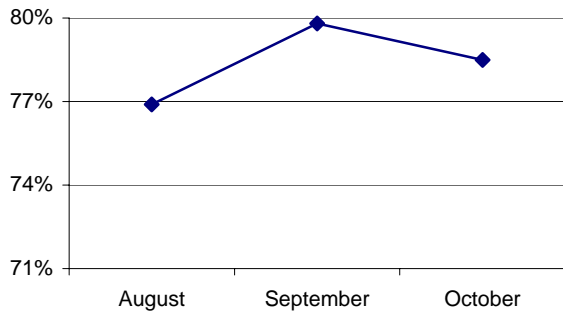


Fig. 5 2006 CEQ (TIS=1) - Refusal Rates by Interview Periods Before and After Event (AAPOR REF2)

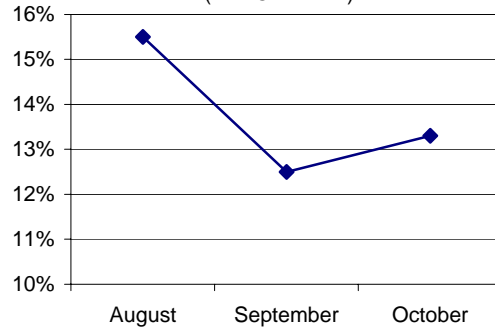


Fig. 3 2006 CE Diary - Response Rates by Interview Periods Before and After Event (AAPOR RR2)

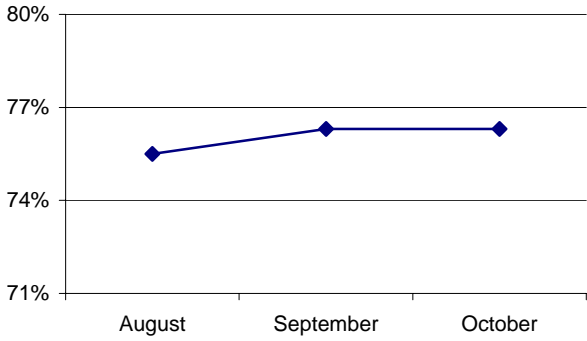


Fig. 6 2006 CE Diary - Refusal Rates by Interview Periods Before and After Event (AAPOR REF2)

