NONRESPONSE IN FEDERAL HOUSEHOLD SURVEYS: NEW MEASURES AND NEW INSIGHTS[1]

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1. INTRODUCTION

Response rates affect the amount and quality of information available to the users of federal household surveys and the cost of providing that information. Understanding why households and individuals choose to respond to surveys can help survey organizations develop survey designs and collection processes that are likely to have higher response rates. Arriving at such an understanding presents challenges. The characteristics of individuals and households, and of survey designs and collection processes, all interact to determine response rates. These interactions, and the high cost of conducting controlled experiments, make it difficult to draw inferences about the likely sources of nonresponse by analyzing a single household survey's experience. Because surveys typically differ in many of these characteristics, it can also be difficult to draw reliable inferences by comparing response rates across surveys.

This paper reports on three projects undertaken by the Interagency Household Survey Nonresponse Group (IHSNG) to develop sets of consistent response and nonresponse rates that explicitly account for many of these differences among surveys. The first project developed and calculated core measures of response and nonresponse rates the first time the unit was interviewed. These core rates single out the key components of observed nonresponse, including refusals, no one at home, temporary absence, language problems, and an "all other reasons" category. Because many of these surveys are panel surveys – surveys with repeated interviews of the same sample unit – the second project developed and calculated panel-based response rates that allow valid comparisons among them. The third project developed sets of response rates appropriate to the specific focus and concerns of each survey. Analyzing the sets of rates these projects developed leads to more consistent insights about likely sources of nonresponse.

The three projects IHSNG undertook were selected by the sponsoring agencies from recommendations it made in an earlier paper (Atrostic and Burt, 1999). That paper examined

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[1] *Disclaimer:* This paper reports the results of research and analysis undertaken by members of the Interagency Household Survey Nonresponse Group (IHSNG). It has undergone a more limited review than official publications of any of the sponsoring agencies. Opinions expressed are those of the authors and do not necessarily represent the official position of any of the sponsoring agencies. This report is released to inform interested parties of research and to encourage discussion.

This paper reports research that has benefited from the contributions of many IHSNG members, including Fran Chevarley, Kathleen Creighton, John Dixon, Ronald Dopkowski, Patricia Doyle, Judith Eargle, James Esposito, Karen King, Robert Latta, Thomas Mayer, Michael McMahon, Marilyn Monahan, Jeffrey Moore, Thomas Moore, Adrienne Oneto, Elmira Richards, Josephine Ruffin, Lucinda Scurry-Johnson, Harland Shoemaker, Stephanie Smiley, Antoinette Tremblay, Ronald Tucker, and Gregory Weyland.

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trends in response rates in six large, continuing Federal household surveys that provide data for key national social and economic statistics: the Current Population Survey (CPS), the Consumer Expenditure (CE) Diary and Quarterly Surveys (CED and CEQ), the National Health Interview Survey (NHIS), the National Crime Victimization Survey (NCVS), and the Survey of Income and Program Participation (SIPP). Analyzing response rates in these surveys requires interagency coordination because, although the Census Bureau collects the data for all of them, five are sponsored by other agencies, including the Bureau of Labor Statistics, the National Center for Health Statistics, and the Bureau of Justice Statistics. In the earlier paper, IHSNG developed and used a systematic framework to formulate hypotheses about likely sources of nonresponse in household surveys.

The recommendations stemmed from IHSNG's prior efforts to use the framework and hypotheses to improve the survey process. That experience highlighted the need to develop well-defined nonresponse measures that focus on specific, systematic components of overall survey nonresponse rates, and equally well-defined, but different, measures that address the specific reasons for collecting the data in each survey. The need for establishing comparable definitions had been voiced by other survey research organizations, both public and private, beginning at least two decades ago (CASRO 1982; BLS 1987). However, there have been continuing calls in the literature for consistent definitions (e.g., Johnson, Botman, and Basiotis 1994; Groves and Couper 1998). A report recently published by the American Association for Public Opinion Research (AAPOR) again recommended a set of standardized operational definitions and formulas for response rates for both in-person and Random Digit Dial (RDD) surveys (AAPOR 1998), suggesting that these comparable definitions generally had not yet been implemented.

The first section of this paper presents an analysis of a core set of consistent nonresponse statistics at the initial interview of the six surveys. Initial nonresponse rates in these surveys are increasing. Initial refusal rates and "no one home" rates are important components of the increases. While the initial nonresponse rate allows more valid cross-survey comparisons of trends in survey nonresponse, neither the initial nonresponse rate nor its component rates provide the full story of nonresponse across surveys. For panel surveys, the amount of time a survey is allowed to be in the field and the duration of the survey affect the overall nonresponse. The second section presents panel-based nonresponse measures for panel surveys. Analyzing these rates suggests that time in the field interacts in a relatively complex way with differences in the length of time between interviews and data collection procedures in the different surveys. The third section presents survey-specific nonresponse rates. Analyzing the nonresponse rates developed for specific surveys provides additional insights about the ways that design characteristics affect nonresponse rates.

A key insight common to all the projects is the important role of survey design and collection processes. Analyzing their relationship to nonresponse can provide survey managers and sponsors with information about likely tradeoffs among survey design, data collection processes, cost, and nonresponse and other elements of data quality. Based on its initial analyses, the IHSNG recommendations suggest specific, targeted directions for additional research to improve survey data.

2. DEFINING A CONSISTENT SET OF CORE MEASURES OF NONRESPONSE

The objective of the first project was to develop a core set of nonresponse statistics for the six government surveys in the previous study. The project gathered information on the definitions and the exact formulas used to generate the annual nonresponse rates currently produced. Project members considered alternative definitions[2], but agreed that the most appropriate 'generic' or standardized measures of nonresponse across surveys having different designs were the initial interview nonresponse rates proposed in IHSNG's earlier paper.[3]

2.1 Initial Nonresponse Rates Defined

Nonresponse rates measured at the initial interview offer valid comparisons across different surveys because they lower the effects of some design features hypothesized to influence nonresponse (e.g., frequency and number of interviews). Since the first interview is done by personal visit in all six surveys, initial nonresponse rates eliminate the effect of the different interview mode at subsequent contacts. Naturally, many different design features still remain (e.g., interview length and the survey subject matter), and these affect the levels and trends in nonresponse rates.

In addition to the initial nonresponse rate and initial refusal rate proposed in earlier work, project members decided to include additional major components of nonresponse in their recommended core set of measures: no one at home, temporarily absent, language problems, and 'other' reasons there was no interview.[4] This yields a set of seven core rates that most of the six surveys could readily calculate. Staff from the Census Bureau, the National Center for Health Statistics, and the Bureau of Labor Statistics subsequently reviewed and agreed on seven initial interview response and nonresponse rates:

- The response rate
- The nonresponse rate, and its five major components:
  - The language problem rate
  - The temporary absence rate
  - The not at home rate
  - The refusal rate
  - The other reasons rate

2.2 Analysis of Initial Nonresponse Rates 1990-1998

Five of the initial nonresponse statistics for 1990-1998 (for years available) are illustrated in Charts A-E. (Data points for these charts are in Tables 1 and 2 of Appendix A).[5] The initial nonresponse rates, presented in Chart A, have been increasing to some degree for all six surveys

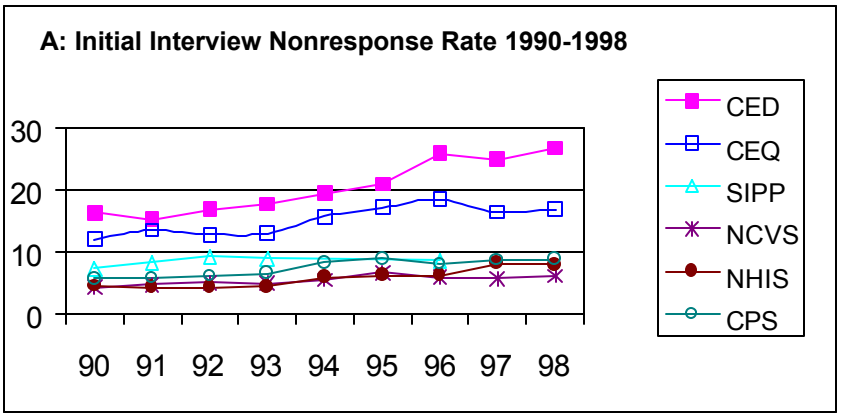
[2] The nonresponse and refusal rates selected are essentially those developed by AAPOR. Our set of components on the nonresponse contains five categories, while AAPOR defined three (refusals, non-contact, and other).

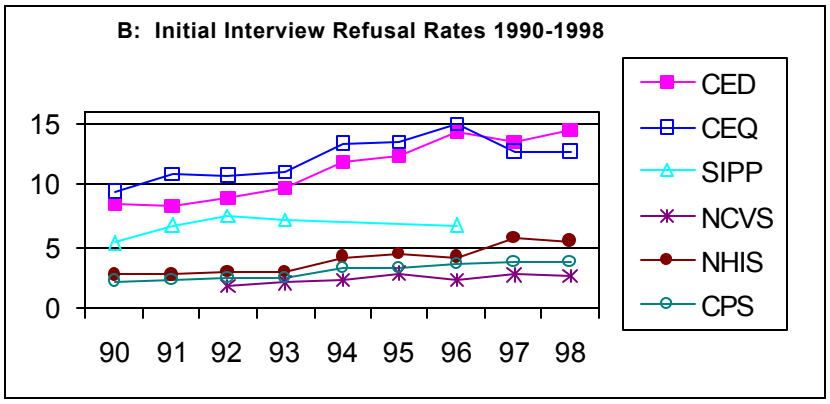
[3] Initial nonresponse is measured for the initial interview at the sample address.

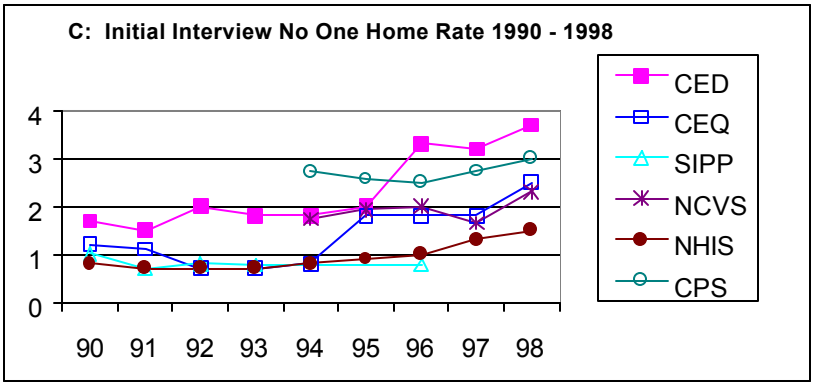
[4] The other nonresponse category includes reasons such as medical problems or a death in the family. The detailed operational definitions, assumptions, and formulas for calculating the rates are found in Appendix A.

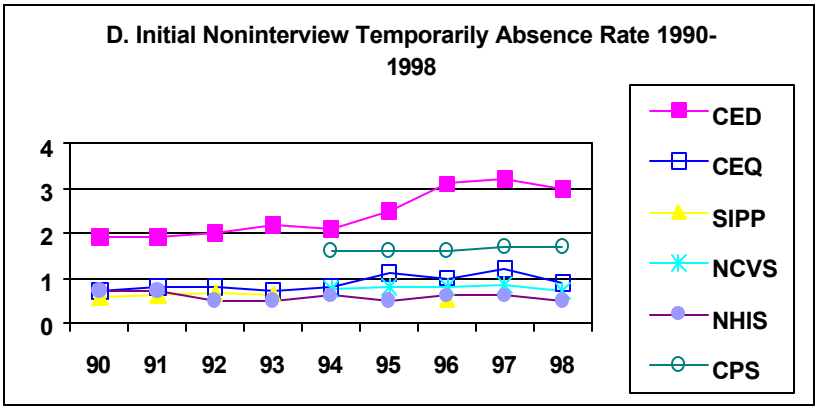
[5] The initial noninterview language problem rate is currently collected for SIPP and NHIS only. SIPP only has data for 1996 and NHIS for 1996-1998.

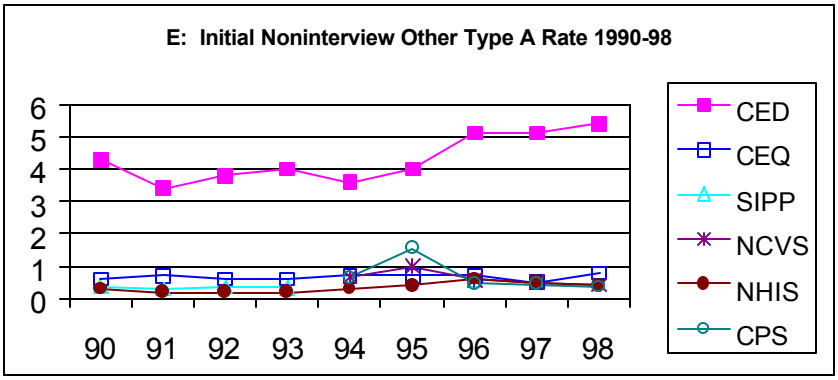
since the beginning of the decade. Closer inspection suggests the real upward trend in initial nonresponse rates may have started for some surveys in 1993. Since 1996, the initial nonresponse rates appear to have leveled off for the CEQ, CED, CPS, and NCVS. (The SIPP only started one panel since 1993). Despite the growth in initial nonresponse since 1990, the rates for the CPS, NCVS, NHIS, and SIPP all remain below 9%.






C: Initial Interview No One Home Rate 1990 - 1998
4
3
2
1
0
90 91 92 93 94 95 96 97 98
CED
CEQ
SIPP
NCVS
NHIS
CPS


D. Initial Noninterview Temporarily Absence Rate 1990-1998
4
3
2
1
0
90 91 92 93 94 95 96 97 98
CED
CEQ
SIPP
NCVS
NHIS
CPS

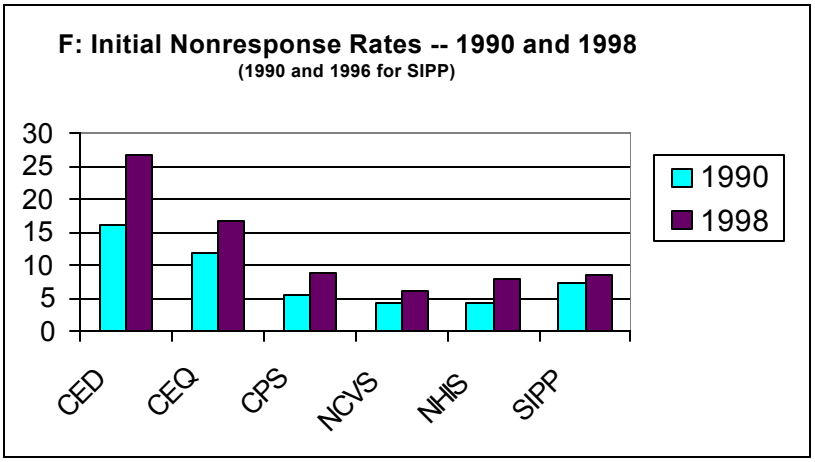

E: Initial Noninterview Other Type A Rate 1990-98
6
5
4
3
2
1
0
90 91 92 93 94 95 96 97 98
CED
CEQ
SIPP
NCVS
NHIS
CPS

The initial refusal rates for 1990-1998 are presented in Chart B. These rates represent the portion of overall nonresponse that can be attributed to a household refusing to be interviewed. Initial refusal rates, like initial nonresponse rates, increased across all six surveys between 1990 and 1998. Refusals have become a somewhat larger proportion of the initial nonresponse rate for all of the surveys except the CEQ survey. Table 1 shows refusals as a percent of total nonresponse at the initial interview. In 1998, refusals were the major source of initial nonresponse for both CE surveys, the NHIS, and the SIPP. However, just over four in ten of the initial nonresponse cases for CPS and the NCVS were refusals.

Table 1: Refusals as a Percent of Initial Nonresponse for Selected Household Surveys, 1990-1998

	CE Diary	CE Quarterly	CPS	NCVS	NHIS	SIPP
1990	51.5%	79.2%	38.6%	35.3%	60.0%	72.6%
1998	54.3%	75.7%	43.2%	42.6%	67.5%	79.1%
Difference	2.8	-3.5	4.6	7.3	7.5	6.5

The initial nonresponse rates in 1990 and 1998 are shown in Chart F. SIPP had the lowest percentage point difference increase (just over 1 percentage point) and CED had the highest (over 10 percentage points).[6] The two consumption surveys (CEQ and CED) also have the highest absolute levels of initial nonresponse. This higher rate is consistent with findings documented over the decade for other countries' expenditure surveys, particularly those requiring a diary (De Heer 1999; Martin and Matheson 1999).



[6] Rates for 1990 and 1996 shown for SIPP since 1996 represent the most recent panel.

Both the temporarily absent and residual "other" rates are relatively stable over time (see Charts D and E). However, the remaining component of nonresponse, no one at home, increased throughout the decade.[7] (See Chart C.) This increase occurs for all surveys, especially toward the latter part of the decade.[8] There are many hypotheses about the causes, including more single person households, longer commute times, and more dual-income households (Groves and Couper, 1998).

3. INITIAL VS. SUBSEQUENT NONRESPONSE IN PANEL SURVEYS

While the initial nonresponse rate serves as a basis for comparing trends across all surveys, including one-time surveys, the nonresponse rate at subsequent interviews provides further insights for comparing panel surveys. The second project developed a set of nonresponse rates for initial and subsequent interviews for the three panel surveys examined by IHSNG: the CPS, the CEQ, and the NCVS.

Survey design and data collection procedures, including the amount and type of information asked, the frequency of contact, the number of contacts, and the mode of contact, all contribute to the level of response achieved in panel surveys (Atrostic and Burt, 1999; Groves and Couper, 1998). Many of these procedures vary among the three panel surveys. CPS has eight interviews - monthly interviews for the first four months, and then, after eight months, a second set of four monthly interviews. It uses two modes: the first and fifth interviews are usually conducted by personal visit, the others by telephone. CEQ has five interviews, each three months apart, and all are personal visits. NCVS has seven interviews, each six months apart. The first interview is in person and the others are by telephone. Some CPS and NCVS telephone interviews are conducted at a Census Bureau computer-assisted telephone interviewing (CATI) centralized facility, rather than by a field interviewer.

The three surveys also share several design similarities. All three are continuing surveys with overlapping panels, i.e., a new panel is initiated when the previous panel is at the last interview. New panels are introduced every month and their initiation is staggered in such a way that all interviews, first through last, are represented at any given month.[9] An additional common design feature they have in common is that they do not follow households that move.

"Panel-based" rates are depicted in Chart G. (Data points are given in Table 3 in Appendix A.) They are derived by following selected panels throughout the interviewing cycle of each survey, and are computed by dividing the number of units that either refuse or are not available

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[7] Cases classified as "no one home" generally represent cases where: the interviewer determined the unit to be currently occupied, made repeat visits to the unit, varied the time of day of visits and yet never found anyone to be at home during the interview field period.

[8] Our initial interviews nonresponse measures are for personal visit for the six surveys. Our no one home rate does not reflect factors that contribute to noncontact in CATI surveys such as answering machine screening and caller identification screening features

[9] This is done to counteract the potentially negative effects of attrition, conditioning, and changes in sample composition, so that balanced estimates can be produced.

for interview in a given individual interview by the number of eligible units at the same interview. The panel-based rates shown here represent nonresponse for a panel as a whole, not distinguishing whether the initial households still reside at the selected addresses in a given panel.

Nonresponse rates are expected to increase with time in panel because of the increasing burden placed on respondents (B. Bailar, 1989). This is the general trend for CEQ. In CEQ, refusals are the major source of nonresponse (see Table 3 of Appendix A), and since this component tends to increase from one interview to the next, so does the nonresponse rate (see chart G). By contrast, this trend does not hold for CPS and NCVS. For both surveys, the initial interview nonresponse rate is higher than the nonresponse rate at the second interview. For CPS, it is also higher than the average rate for all subsequent interviews. All components of nonresponse appear to contribute to this pattern, but especially the increased opportunity to locate potential respondents after the first interview. Three factors emerge as possible causes of the apparent differences in panel nonresponse statistics: 1) refusals over the duration of the panel, 2) noncontacts over the duration of the panel, and 3) procedural and mode differences.

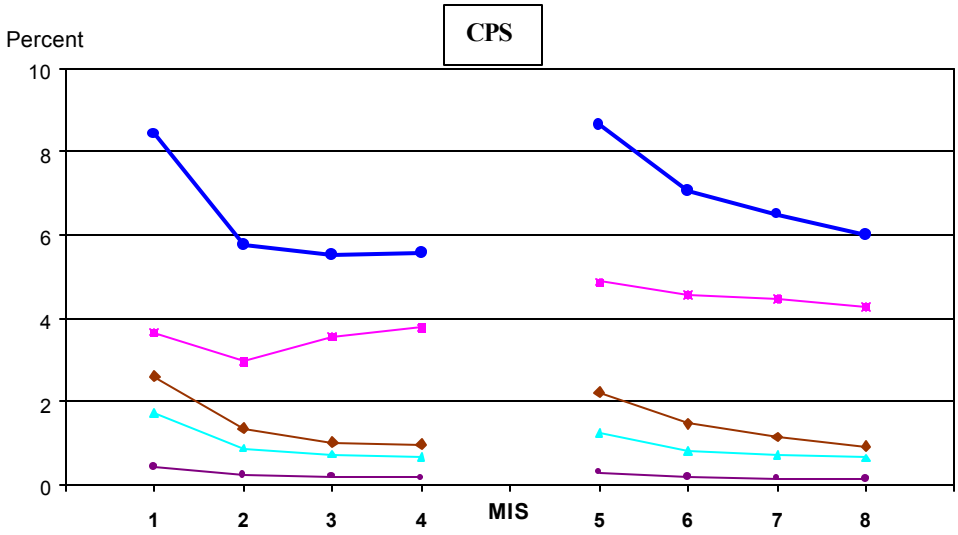
3.1 Refusal Rate Changes Over the Duration of the Panel

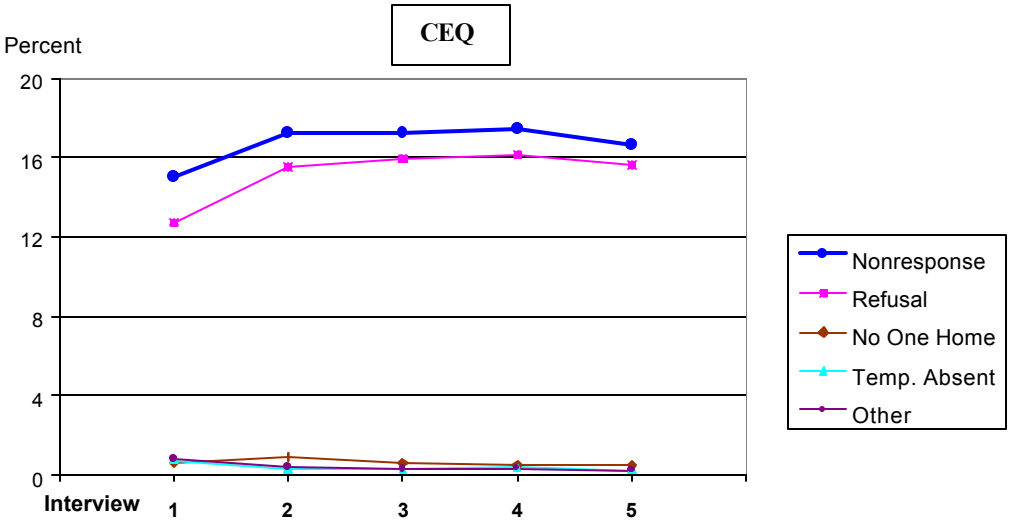
All three surveys encounter most of the refusals at the first interview. However, additional units refuse subsequent interviews, making the initial refusal rate usually lower than the average rate for subsequent interviews. Nonetheless, refusal rates do not always increase after the first interview, since some of the initial refusals are converted to responses in subsequent interviews. This is consistent with a study of CPS households that were eligible in all eight interviews, where Harris-Kojetin and Tucker (1997) found that 2% refused all eight interviews, but 2.8% refused the first interview, yet participated for the other seven.[10] As shown in Chart G, the CPS refusal rates decline from the first to the second interview, and this interview has the lowest refusal rate of all the interviews. Refusal rates tend to increase after the second interview, with a peak at interview five.

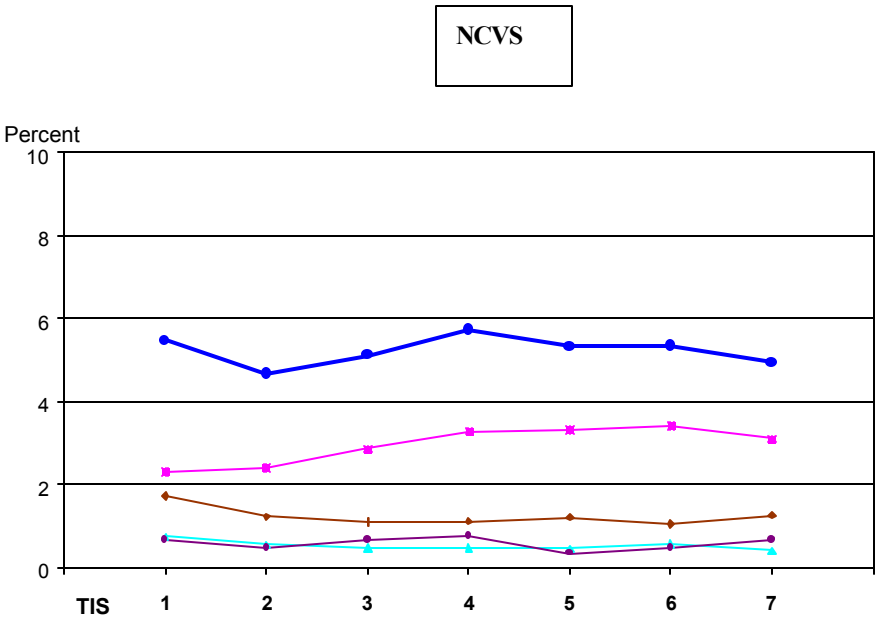
In CEQ and NCVS, although some initial refusals are converted to response the net effect is an increasing trend, as usually expected. There is a decline in the last interview of CEQ and NCVS, however, and also in the last three interviews of CPS. One possible explanation for this is that the more cooperative respondents stay with the panel. Another possible explanation is the changing composition of panel units. Throughout the life of a panel, an increasing number of new sample units are new residents of a vacated or a newly built house included in the panel addresses. These units are interviewed at the wave of the other units in the panel, and, therefore, their total potential participation period is shorter than that of units that were eligible from the first interview. In CEQ, as much as 20% of the units eligible in the fifth interview, which occurs one year after the first, are new units.

[10] The majority (82%) of cases was interviewed all eight times.

CHART G: PANEL NONRESPONSE TRENDS FOR SELECTED PANEL SURVEYS







3.2 Noncontact Rate Changes Over the Duration of the Panel

All of the surveys have units that cannot be contacted by the closing date, either because no one is home, the respondent is temporarily absent, or for other reasons that make the respondent unavailable. Units that are not interviewed for these reasons are referred to collectively as noncontacts. Survey design, particularly time in the field, appears to affect noncontact rates. CPS interviewers have one week (the week of the 19th) to find the sampled addresses and contact the households. In NCVS the monthly assignment must be completed within the first two weeks of the month. In CEQ interviewers have the month to contact the sample cases, although field procedures recommend that they make the visits during the first half of the month in order to facilitate the recall of expenditures for the prior three months.

Another aspect of survey design, repeated interviews in panel surveys, may increase the chances of locating the potential respondents after the first interviewing cycle. In CPS and NCVS, the "no one home" rates, while still less than 3 percent, comprise 31% of the initial nonresponse. These rates decline after the first interview. In CPS, however, "no one home" rates are high again at the fifth interview, which occurs eight months after the last contact in the fourth interview. Similar trends are found for temporary absence rates for CPS and NCVS. In CEQ, less than five percent of the overall nonresponse at the first interview is due to no one at home cases in the panels considered. It should be noted that in more recent years there has been an increase in the proportion of noncontacts in CEQ, as shown in Table 2 of Appendix A.

3.3 Procedural and Mode Differences

Panel surveys span long periods of time. Changes may occur in the prevailing circumstances in the field, and the person who is actually responding, or not responding, may be different from one interview to the next. The interviewer may occasionally be different as well. Survey managers may also have an impact on response rates. In addition to these changing circumstances, field procedures may change somewhat in the course of the panel. For instance, more effort to obtain interviews may be placed if a panel initially experiences a lower than usual response, thus making the second interview more successful. Usual procedures may be followed for most respondents, but for respondents that are reluctant to participate again, additional follow-up procedures may be instituted.

There are also mode changes in CPS and NCVS in the course of the various panel interviews. The effect of interviewing mode on nonresponse is somewhat unclear. On the one hand, some respondents prefer the telephone for fear of crime at the door or having strangers in their house (Groves and Couper, 1998). On the other hand, telephone interviews, especially from a centralized facility, are sometimes associated with higher nonresponse compared to personal visits, probably because the rapport with respondents is diminished (Tucker and Kojetin, 1994). For the CPS and NCVS, the mode change is not usually accompanied by an interviewer change when interviews are conducted from the interviewers' home. With this procedure, the rapport established during the first interview continues and this positive effect may be added to the benefits of the less intrusive telephone interview. In CPS most of the telephone interviews are conducted from the interviewers' home, although between 10 and 15 percent are also conducted from a centralized facility. Similarly, in NCVS the telephone

interviews are conducted either from a centralized facility or from the interviewer's home, although a larger percentage of NCVS telephone interviews are conducted at a centralized telephone facility.

Another aspect of the CPS trends is the high nonresponse in the fifth interview. One hypothesis is that the eight-month interval between the fourth and fifth interviews reduces the importance of factors such as knowing the location and continuing the rapport with respondents. If so, the personal visit in the fifth interview may effectively mark the beginning of a new round of monthly interviews in CPS, with similar difficulties as the first interview.

4. SURVEY-SPECIFIC NONRESPONSE RATES

While the six surveys share many design features and data elements, there also are many differences. In addition, each survey has its own set of concerns and unique focus. The third project began the task of developing nonresponse rates appropriate to such specific survey characteristics. This section reports results for two survey-specific nonresponse rates: person-level nonresponse rates calculated for the NCVS; and nonresponse rates for households that move but cannot be located, calculated for the SIPP.

4.1 NCVS Person-Level Nonresponse Rates

Because a major focus of the NCVS is to estimate person-level crime rates, it tries to obtain interviews from all individuals age 12 and over within sampled households. Person-level nonresponse rates are calculated for households where at least one person has been interviewed. A nonrespondent is a person in such a household who refuses to participate, or who is unavailable for interview and for whom a proxy interview is not obtained. This person-level nonresponse rate, shown in Table 2, rose from 6.0 percent in 1992 to 10.8 percent in 1998. 1992 is used as a starting point instead of 1990 because it coincides with the introduction of the redesigned NCVS questionnaire.[11] There are a number of hypotheses about why person-level nonresponse increased without a corresponding increase in household nonresponse rates. These hypotheses include: potential tradeoffs between the household and person nonresponse rates; the strict rules that NCVS uses to select respondents (each person over age 12 must be interviewed, and proxy responses are allowed only under stringent conditions); and the way interviewers are evaluated (household-level nonresponse rates are used but person-level rates are not). However, there has been little research to test these hypotheses. This section presents information on the factors that appear to affect person level nonresponse, including – the mode used to collect the data, the household size, and the characteristics of those who do not respond.

Data Collection Mode

NCVS interviews collect data two ways: paper-and-pencil interviewing done by field staff and computer-assisted telephone interviewing (CATI) at the Census Bureau's centralized telephone centers. The person-level nonresponse rates by data collection mode are shown in Table 2 for 1992 through 1998. During this period, the person-level nonresponse rate more than doubled in field cases, the rate for telephone interviews increased by a third, and the overall rate

[11] Results are based on internal collection year files with all seven sample rotations, including the bounding interview done for incoming rotations

increased by eighty percent. In 1992, field cases had a nonresponse rate of 5.2 percent, well below the 7.3 percent rate for CATI cases. By the end of the decade, the nonresponse rate for field cases was larger than the CATI rate (10.7 vs. 9.5 percent).

Table 2 : NCVS Person-Level Nonresponse Rate by Data Collection Mode, 1992-1998

	1992	1993	1994	1995	1996	1997	1998	Change 92-98
Field cases	5.2	6.2	7.3	8.0	8.9	9.9	10.7	107.4%
CATI Recycle cases	9.9	10.6	12.2	14.7	14.2	15.2	16.4	65.4%
CATI cases	7.3	6.7	7.6	7.8	8.0	9.2	9.5	30.6%
All cases	6.0	6.6	7.7	8.3	8.9	10.1	10.8	80.1%

Note: Because interviews collected using CATI are known to produce higher estimates of crime rates, the proportion of cases interviewed using CATI is kept constant at about 28 percent of household interviews. Field interviews account for 66 percent of household interviews. The remaining 6 percent are CATI cases that did not obtain interviews and are "recycled" from the telephone centers to the field.

Person vs. Household Nonresponse Rates

The person-level nonresponse rate is calculated only for households that have at least one respondent. As Table 3 shows, the proportion of responding households where at least one person was not interviewed grew from under 10 percent in 1992 to over 15 percent in 1998. This proportion increased in households of all sizes. The largest percentage increase in person-level nonresponse was among households with two persons age 12 and over. In these households, the percentage increased from 9.8 to 17.9 over the period.

Table 3: Percent of Households with One or More Individuals Who Do Not Respond

Number of Persons Over Age 12	Proportion of Households 1992	1998	Percentage Change 1992-1998
All households	10.0	15.0	50.0%
2	9.8	17.9	82.7%
3	17.3	29.9	72.8%
4	22.5	35.5	57.8%
5 or more	27.1	44.8	65.3%

Personal Characteristics

For NCVS, research shows that household and person-level nonresponse rates vary with several personal characteristics. The reference person for a household, or the spouse of that reference person, is much easier to contact and interview than are other household members. For these other household members, the person-level nonresponse rate is about 20 percent. Demographic characteristics such as race, gender, and age also affect these rates. For example,

the person-level nonresponse rate for blacks is about 25% higher than for non-blacks, about 60% higher for males than for females, and highest among high-school age persons.

4.2 SIPP Household Nonresponse Due to Movers Who Cannot Be Located

Longitudinal estimates from SIPP data in principle include all new households subsequently formed that contain original sample persons. However, these new households may not respond in subsequent interviews, for similar reasons as in the first interview. In addition, these new households may be temporarily unavailable to the survey because the sample person has moved and the new household cannot be located, or because the new household is located more than 100 miles from a SIPP sample PSU and cannot be interviewed by telephone.[12]

Not surprisingly, nonresponse rates are higher for persons who move than for those who reside in the same housing unit for the duration of the panel. For the SIPP panel that was first interviewed in 1991, Mack et al. (1995) found that the nonresponse rate for persons who moved was 22.5 percent by the eighth interview, or about double the rate of 10.3 percent for persons who did not move. Waite (1995a) reports that over 25 percent of households with three or more persons would have at least one person moving out of their households in a 4-month period. On average, 41 percent of the person-level nonresponse cases reported in each SIPP interview of the 1992 panel were persons who moved and could not be located.

Calculating appropriate nonresponse rates for SIPP is complicated by the fact that the exact number of eligible households after the first interview is not known. Households who respond in the first interview may split up to form additional eligible households, or may leave the survey population entirely. When all members of an interviewed household move and cannot be located, they may account for 0, 1, or 2 or more eligible households in subsequent waves. If all members of the household leave the survey population, there will be no eligible households. If they split up and move to different housing units, there can be two or more households.[13]

Table 4 shows two kinds of household nonresponse rates by panel and interview for the SIPP panels that began in 1990 through 1993. The first kind (labeled NR in the table) occurs when households that are known to be eligible do not respond. The second kind (labeled moved, cannot locate in the table) occurs when some or all members of a household leave and cannot be traced, or move more than 100 miles from a SIPP PSU and cannot be interviewed by telephone. The sample loss rate shown in Table 4 includes: all the eligible units that are used in the calculation of the nonresponse rates and "moved, cannot locate" rates; and an adjustment for the number of potentially eligible units. The rates shown in Table 4 are cumulative. Most of the sample loss occurs in the first two interviews (or waves), and most of the early losses are due to nonresponse by households that were originally eligible. Additional nonresponse from these households is quite small after the first four interviews.

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[12] The latter is a rule specific to SIPP survey practices.

[13] In order to make good estimates of these subsequent nonresponse rates, it is important to define eligibility carefully and consistently, since eligibility determines the denominator of some nonresponse rates. According, this project also developed definitions of several eligibility rates for the subsequent interviews of SIPP.

Table 4: Cumulative Household Nonresponse, Moved and Cannot Locate, and Sample Loss Rates, 1990-1993 SIPP Panels

	1990 Panel			1991 Panel			1992 Panel			1993 Panel		
Wave	NR	Moved, Cannot Locate	Sample Loss	NR	Moved, Cannot Locate	Sample Loss	NR	Moved, Cannot Locate	Sample Loss	NR	Moved, Cannot Locate	Sample Loss
1	7.3	--	7.3	8.4	--	8.4	9.3	--	9.3	8.9	--	8.9
2	10.9	1.5	12.6	12.3	1.5	13.9	12.8	1.7	14.6	12.3	1.7	14.2
3	11.5	2.6	14.4	13.1	2.7	16.1	13.1	2.8	16.4	12.9	2.8	16.0
4	12.5	3.4	16.5	13.6	3.6	17.7	13.8	3.6	18.0	13.9	3.5	17.9
5	13.6	4.6	18.8	14.5	4.2	19.3	14.9	4.7	20.3	14.9	4.4	19.9
6	14.1	5.3	20.2	14.4	5.1	20.3	15.3	5.4	21.6	15.9	5.5	22.2
7	14.3	5.9	21.1	14.7	5.6	21.0	16.0	5.9	23.0	17.1	6.2	24.0
8	14.4	5.9	21.3	14.5	5.9	21.4	16.9	6.7	24.7	17.5	6.9	25.1
9							17.7	7.3	26.2	18.1	7.5	26.5
10							17.5	7.6	26.7			

5. CONCLUSIONS AND RECOMMENDATIONS

The interagency group, IHSNG, was established by the U.S. Census Bureau and the Bureau of Labor Statistics and charged with finding ways to reduce an apparent upward trend in nonresponse rates in six continuing household surveys conducted by the Census Bureau. In its first paper, IHSNG reported that, while nonresponse rates increased during the 1990s for all of the surveys examined, there did not seem to be a single consistent explanation. It also found that the available household nonresponse rates did not always seem to measure the same concept across surveys (because of differences in survey designs and procedures), and that measures of the same concept were not always calculated exactly the same way across surveys. IHSNG recommended that the Census Bureau develop, implement, and begin to monitor a consistent set of unit nonresponse rates and set of nonresponse measures appropriate for specific surveys. It also recommended developing nonresponse rates appropriate for panel surveys. This paper reports on IHSNG's initial progress in developing and implementing these recommendations.

We developed and calculated a set of consistent core nonresponse rates for these surveys for the period 1990 to 1998. This set of seven rates measures response, nonresponse and selected components of nonresponse at the initial interview. All seven rates can be readily calculated from available information. They also provide detail not currently available on how the different components of nonresponse are changing over time. We found that nonresponse rates are indeed increasing for these surveys. However, we also found that their rate of change, and the relative importance of components of nonresponse, varies widely. To monitor and understand nonresponse trends over time and across different surveys, we recommend routinely producing this core set of initial interview nonresponse measures.

Although many components of nonresponse vary among surveys, analysis of our core rates suggests that refusals at the initial interview increased over the decade for all surveys. We recommend that additional research be conducted on the reasons respondents refuse to

participate. For example, research recently undertaken for the SIPP is coding and categorizing the reasons respondents give when they refuse to participate (Abreau, Martin and Winters, 1999). We look forward to the results. They have the potential to enhance interviewer training, pre-notification materials, and other aspects of the survey process that might increase a respondent's willingness to participate. Such studies, however, require that information on reasons for refusals are available. We recommend that survey instruments provide interviewers the opportunity to record different reasons for refusals so the information is not lost and can be studied further.

Our core measures also show that "no one home" appears also to have become a more important component of nonresponse since the early 1990s. Hypotheses suggest that changing economic, demographic, and social factors external to the survey process[14] interact with survey design and collection procedures, resulting in increasing "no one home" rates. Research has shown that aspects of survey design and data collection procedures, such as day of the week, time of day, and amount of time between visits, affect the likelihood of making contact. However, two recent studies in the U.K. (Barton, 1999; Martin and Matheson, 1999) suggest that reducing the noncontact rate will not necessarily reduce the nonresponse rate. Changing the time of contact may reduce "no one home" rates, but may have no detectable effect on survey response because refusals simply increase or respondents are found at home but are still not available to give an interview because they are engaged in other activities. Further research is needed to find ways to decrease noncontact rates without shifting these cases into one of the other components of nonresponse (i.e., refusals). We recommend continued analysis of the interaction between external factors and the survey process, as well as continued analysis of potential tradeoffs among different components of nonresponse.

Increases in nonresponse rates and its components may not be uniform across the nation. There may be variations at sub-national levels, such as region or areas with populations of different sizes, in the social, economic, and demographic characteristics of potential respondents, and in survey operations. If such differences do exist, then across-the-board measures intended to improve response rates could be counter-productive. We recommend an analysis of variation at sub-national levels in nonresponse rates.

Our analysis of the new panel nonresponse measures suggests that differences in design features may affect nonresponse rates over the duration of the panel. Additional research is needed to identify the most important features. Such research might include the effect of changes in the interviewer, changes in the responding person in the household, and the effects of interviewer-respondent interactions. Additional research (similar to that in Groves and McGonagle 1999) may document the type of nonresponse follow-ups made throughout the panel and how interviewers adapt them based on respondent characteristics. We recommend additional, targeted, research on procedural and mode effects on nonresponse.

We recommend producing the set of panel nonresponse rates developed for this paper, and developing additional panel measures of nonresponse. One such additional measure would include only units that were eligible at the first interview (and exclude other units that joined the

[14] External changes include more single-person households, longer commute times, more dual-income households, and more women in the labor force.

panel at subsequent interviews). These measures would show the dynamics of panel composition changes throughout the life of the panel survey and would provide a basis of comparison to longitudinal rates that SIPP produces for units that do not move over the duration of a panel.

Our examination of person-level nonresponse rates for NCVS and mover rates for SIPP indicate that these rates are also increasing. Additional research is needed to better understand the extent to which these rates vary with the characteristics of the individuals in the households. Changes in nonresponse create significant problems in the analysis of data from longitudinal surveys. Potential biases in the estimates across time are of special concern for SIPP, since this survey provides critical information on the dynamics of short-term relationships between economic changes and demographic changes (e.g., marriage, childbirth, and other life-course events). The present sets of survey-specific nonresponse rates illustrate the diverse characteristics that such rates might need to measure. They also illustrate that these detailed and targeted calculations can generate important insights for the surveys. We recommend continuing to develop additional nonresponse rates specific to each survey.

The three IHSNG projects described in the paper showed that several sets of consistent nonresponse measures for six large, continuing surveys could be defined and produced from readily available data: a core set of seven nonresponse measures that apply to all six surveys; a new set of nonresponse measures appropriate to panel surveys; and new sets of measures appropriate to the concerns of specific surveys. Analyses of these nonresponse measures generated new insights about the components of nonresponse in the various surveys, and about the potential differential effects of survey design and data collection processes. Those insights suggest several key areas of further research that are likely to yield high-value information about sources of nonresponse. Such research is also likely to provide critical information for sponsors and survey managers about the complex tradeoffs among design and data collection factors and nonresponse rates and other aspects of data quality. The results reported here also show the value of an interagency approach. Our final recommendation is to continue this interagency collaboration.

REFERENCES

American Association for Public Opinion Research (1998). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for RDD Telephone Surveys and In-Person Household Surveys*. Ann Arbor, Michigan:AAPOR.

Abreau, D., Martin E., and Winters, F. (1999). "Money and Motive: Results of an Incentive Experiment in the Survey of Income and Program Participation," Paper presented at the International Conference on Survey Nonrespose, Portland, OR.

Atrostic, B.K. and Burt. G. (1999). "Household Non-response: What We Have Learned and A Framework for the Future," in Statistical Policy Working Paper 28: Seminar on Interagency Coordination and Cooperation, Office and Management and Budget, pp. 153-180, April 1999.

Bailar, B. (1989) "Information Needs, Surveys, and Measurement Errors," in *Panel Surveys*, D. Kasprzyk et al, Wiley, 1989, p. 7.

Barton, J. (1999). "An analysis of the availability of individuals at home," *Survey Methodology Bulletin*, Office for National Statistics, Social Science Division, No. 45. 7/99.

Bureau of Labor Statistics (1987). "Report of the Data Collection Task Force on its Demonstration Database," Internal BLS Memorandum, March 27.

Council of American Survey Research Organizations (CASRO) (1982). "On the Definition of Response Rates," Special Report.

Couper, M.P., Baker, R.P., Bethlehem, J., Clark, C.Z.F., Martin, J., Nicholls, W.L., and O'Reilly, J.M. (editors) (1998). *Computer Assisted Survey Information Collection*, Wiley and Sons, New York, N.Y.

De Heer , W. (1999). International Response Trends: Results of an International Survey, *Journal of Official Statistics*, Vol. 15, No. 2, pp. 129-141.

Groves, R.M. and Couper, M.P. (1998). *Nonresponse in Household Interview Surveys*, Wiley and Sons: New York.

Groves, R.M., Cialdini, R.B., and Couper, M.P. (1992). 'Understanding the Decision to Participate in a Survey," *Public Opinion Quarterly*, Winter 1992, pp. 475-495.

Harris-Kojetin, B. and Tucker, C. (1997) "Longitudinal Nonresponse in the Current Population survey (CPS)," Paper Presented at the 8th International Workshop on Household Survey Nonresponse, Mannheim, Germany.

Kulka, R.A., Holt, N.A., Carter, W., and Dowd, K.L. (1991). "Self Reports of Time Pressures, Concerns for Privacy and Participation in the 1990 Mail Census," Bureau of the Census *Annual Research Conference Proceedings*, pp. 33-54, 1991.

Martin, J. and Matheson, J. (1999). "Responses to Declining Response Rates on Government Survey," *Survey Methodology Bulletin*, U.K. Office for National Statistics, Social Survey Division, No. 45, 7/99.

Purdon, S., Campanelli, P., and Sturgis, P. (1999). "Interviewers' Calling Strategies on Face-to-Face Interview Surveys," *Journal of Official Statistics*, Vol. 15, No. 2, pp. 199-216.

Swires-Hennessy, E. and Drake, M. (1992). "The Optimum Time at Which to Conduct Interviews," *Journal of the Market Research Society*, 34 (1), 61-71.

Tucker, C. and Kojetin, B. (1994) "Measuring the effects of the CPS transition on nonresponse," Paper presented at the 5th International Workshop on Household Survey Nonresponse, Ottawa, Canada

U.S. Census Bureau (1998). *Household and Family Characteristics,* detailed tables in publication P20-515 by Casper, L. and Bryson, K., Current Population Survey, March 1998.

U.S. Department of Labor (1994). *Marital and Family Characteristics of the Labor Force from the March 1994 Current Population Survey,* U.S. Bureau of Labor Statistics.

U.S. Department of Labor (1995). *Employment and Earnings*, U.S. Bureau of Labor Statistics, Vol. 42, No. 1, 1995.

Weber, D. and Burt., R.C., (1972). "Who's Home When?," Population Division Working Paper, U.S. Census Bureau, Washington, D.C.

Weeks, M.F., Jones, B.L., Folsom, R.E. and Benrud, C.H. (1980). "Optimal Times to Contact Sample Households." *Public Opinion Quarterly*, 44 (1), 101-114.

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App. A - Table 1: Initial Noninterview and Initial Refusal Rates in Selected Household Surveys, 1990 - 1998

	CE Diary [1]		CE Quarterly Survey [1]		CPS		NCVS [2]		NHIS [3]		SIPP [4]	
	Nonresponse	Refusal	Nonresponse	Refusal	Nonresponse	Refusal	Nonresponse	Refusal	Nonresponse	Refusal	Nonresponse	Refusal
1990	16.3	8.4	12.0	9.5	5.7	2.2	4.3	n/a	4.5	2.7	7.3	5.3
1991	15.2	8.3	13.5	10.9	5.8	2.4	4.8	n/a	4.3	2.7	8.3	6.8
1992	16.8	9.0	12.8	10.8	6.1	2.5	4.9	1.8	4.3	3.0	9.3	7.5
1993	17.7	9.7	13.0	11.0	6.5	2.5	5.0	2.1	4.4	3.0	8.9	7.2
1994	19.4	11.8	15.7	13.4	8.3	3.3	5.5	2.9	5.9	4.2	---	---
1995	20.9	12.3	17.1	13.5	8.9	3.2	6.7	3.0	6.2	4.4	---	---
1996	25.8	14.3	18.5	15.0	8.1	3.6	5.8	2.4	6.2	4.1	8.6	6.8
1997	24.9	13.5	16.4	12.8	8.7	3.8	5.7	2.7	8.2	5.7	--	---
1998	26.7	14.5	16.9	12.8	8.8	3.8	6.1	2.6	8.0	5.4	--	---

Notes

1 CE Diary and CE Quarterly Survey rates exclude the government shutdown months - November/December 1995 and January 1996. All CE rates were calculated by BLS according to the definitions established by the Interagency Household Survey Nonresponse Group. Due to the special purpose of this group, the rates shown here are not the same as official BLS rates reported in CE publications.

2 Initial contact refusal rates for NCVS are not available before 1992.

3 Households in the NHIS are only sampled once, so the annual and initial contact rates are the same. NHIS rates exclude government shutdown months during 1995-96. The NHIS rates for 90-97 were calculated from final edited data produced by NCHS; the 1998 rate was calculated from data collected by the Census Bureau prior to NCHS post-delivery edits

4 SIPP did not initiate panels in 1994, 1995, 1997 or 1998.

App. A - Table 2: Initial Noninterview No One Home, Temporarily Absent, and Other Type A Rates for Selected Household Surveys, 1990 – 1998

	CE Diary[1]			CE Quarterly Interview[1]			CPS[2]			NCVS[2]			NHIS[3]			SIPP[4]		
	NOH	T. A.	OTH	NOH	T.A.	OTH	NOH	T.A.	OTH	NOH	T.A.	OTH	NOH	T.A.	OTH	NOH	T.A.	OTH
1990	1.7	1.9	4.3	1.2	0.7	0.6	n/a	n/a	n/a	n/a	n/a	n/a	0.8	0.7	0.3	1.0	0.6	0.4
1991	1.5	1.9	3.4	1.1	0.8	0.7	n/a	n/a	n/a	n/a	n/a	n/a	0.7	0.7	0.2	0.7	0.6	0.3
1992	2.0	2.0	3.8	0.7	0.8	0.6	n/a	n/a	n/a	n/a	n/a	n/a	0.7	0.5	0.2	0.8	0.7	0.4
1993	1.8	2.2	4.0	0.7	0.7	0.6	n/a	n/a	n/a	n/a	n/a	n/a	0.7	0.5	0.2	0.8	0.6	0.3
1994	1.8	2.1	3.6	0.8	0.8	0.7	2.7	1.6	0.7	1.7	0.8	0.7	0.8	0.6	0.3	n/a	n/a	n/a
1995	2.0	2.5	4.0	1.8	1.1	0.7	2.6	1.6	1.6	1.9	0.8	1.0	0.9	0.5	0.4	n/a	n/a	n/a
1996	3.3	3.1	5.1	1.8	1.0	0.7	2.5	1.6	0.5	2.0	0.8	0.6	1.0	0.6	0.6	0.8	0.5	0.6
1997	3.2	3.2	5.1	1.8	1.2	0.5	2.7	1.7	0.4	1.7	0.9	0.5	1.3	0.6	0.5	n/a	n/a	n/a
1998	3.7	3.0	5.4	2.5	0.9	0.8	3.0	1.7	0.4	2.3	0.7	0.4	1.5	0.5	0.4	n/a	n/a	n/a

Notes

1 CE Diary and CE Quarterly Survey rates exclude the government shutdown months - November/December 1995 and January 1996. All CE rates were calculated by BLS according to the definitions established by the Interagency Household Survey Nonresponse Group. Due to the special purpose of this group, the rates shown here are not the same as official BLS rates reported in CE publications.

2 Initial contact No one Home, Temporarily Absent, and Other Type A rates not available for CPS and NCVS prior to 1994

3 Households in the NHIS are only sampled once, so the annual and initial contact rates are the same. NHIS rates exclude government shutdown months during 1995-96. The NHIS rates for 90-97 were calculated from final edited data produced by NCHS; the 1998 rate was calculated from data collected by the Census Bureau prior to NCHS post-delivery edits.

4 SIPP did not initiate panels in 1994, 1995, 1997 or 1998.

App. A - Table 3: PANEL NONRESPONSE

CPS

	Month In Sample (MIS)								Avg	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	2-8	Diff
NONRESPONSE RATE	8.4	5.8	5.5	5.6	8.7	7.1	6.5	6.0	6.4	-2.0
Refusal Rate	3.7	3.0	3.6	3.8	4.9	4.6	4.5	4.3	4.1	0.4
No One Home Rate	2.6	1.4	1.0	1.0	2.2	1.5	1.1	0.9	1.3	-1.3
Temporarily Absent Rate	1.7	0.9	0.7	0.7	1.2	0.8	0.7	0.6	0.8	-0.9
Other Noninterview Rate	0.4	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.2	-0.2

CEQ

	Interview					Avg	
	1	**2**	**3**	**4**	**5**	2-5	Diff
NONRESPONSE RATE	15.0	17.2	17.2	17.4	16.7	17.1	2.1
Refusal Rate	12.8	15.5	16.0	16.2	15.6	15.8	3.0
No One Home Rate	0.7	0.9	0.6	0.5	0.5	0.6	-0.1
Temporarily Absent Rate	0.8	0.4	0.3	0.4	0.3	0.3	-0.5
Other Noninterview Rate	0.8	0.3	0.3	0.4	0.3	0.3	-0.4

NCVS

	Time In Sample (TIS)							Avg	
	1	**2**	**3**	**4**	**5**	**6**	**7**	2-7	Diff
NONRESPONSE RATE	5.5	4.7	5.1	5.8	5.3	5.5	5.0	5.2	-0.3
Refusal Rate	2.3	2.4	2.9	3.3	3.3	3.4	3.1	3.3	1.0
No One Home Rate	1.7	1.2	1.1	1.1	1.2	1.1	0.9	1.1	-0.6
Temporarily Absent Rate	0.8	0.6	0.5	0.5	0.5	0.6	0.4	0.5	-0.3
Other Noninterview Rate	0.7	0.5	0.7	0.8	0.4	0.5	0.7	0.6	-0.1

NOTES

The tables and charts show rates developed using several panels. Nine panels were used for CPS - initiated from January to September 1997, ending in December 1998. Twelve panels were used for CEQ - initiated from June 1993 through May 1994, ending in June 1995. Twelve panels were used in NCVS - initiated from January through December 1994, ending in December 1997. The analysis of more recent panels for CEQ and NCVS was precluded because of the introduction of new sample areas with the 1990 design in the middle of the interviewing cycle. Although nonresponse levels are increasing, the panel trends have been consistent throughout the past years.

In each survey, the rates for individual panels were combined. For CEQ the nonresponse numbers were first added and then rates were computed over all panels. For CPS and NCVS, separate rates were first computed and then averaged. Due to rounding, the rates by type of nonresponse may not add exactly to the overall rates. The average of the second through the last interview is shown in the next to the last column of the tables. The last column shows the difference between this average and the rate for the first interview.

Cross-sectional rates by wave were also developed. They show similar trends and characteristics to the panel-based rates. This is due to the continuous introduction of new panels and the gradual changes in nonresponse through time.

DEFINITIONS OF INITIAL INTERVIEW NONRESPONSE RATES

ASSUMPTIONS FOR INITIAL NONRESPONSE RATES

- Assumption #1: The rates apply only to the initial contact in sample. For panel surveys that follow addresses, this means using only the first contact. For panel surveys that follow people, this means using units in the first round or wave of interviewing. For one-time, annual surveys, this means using units in sample at a specified time. When calculating an annual initial nonresponse rate for a monthly survey the correct computation is to sum all of the initial contact noninterview types relevant to that particular rate (e.g., all first contact noninterviews due to language problems), over the twelve months in sample and divide by the sum of all initial contact eligible units over the twelve months in sample.

- Assumption #2: Sample units with undetermined eligibility status are to be considered eligible and placed in the numerator and denominator when calculating the initial contact nonresponse rates.

- Assumption #3: When available, the rates should be calculated using the final, edited outcome codes. For more recent years when final codes may not be readily available, the interim outcomes may be used but must be noted in the text and/or tables when presented.

- Assumption #4: For surveys that undergo post-delivery sponsor edits that result in changes to interview outcomes, the sponsoring agency will be the source for the initial contact nonresponse data, otherwise the collecting agency will be the data source.

VARIABLES NEEDED FOR INITIAL NONRESPONSE RATES

NAME: Number of Eligible Units not interviewed due to Language problems (NEUL)
DEFINITION: Interviewing units eligible for an interview where an interview was not obtained because the respondent could not converse in the language of the interviewer or available translator.
COMPUTATION: Sum of cases classified in the NEUL category.
DETAILS: Some surveys do not capture the language problem separately (e.g., CE, CEQ, NHIS before 1995).

NAME: Number of Eligible Units not interviewed due to No One Home (NEUNH)
DEFINITION: Number of interviewing units never interviewed because no one was ever found at home within the interviewing period.
COMPUTATION: Sum of cases classified in the NEUNH category.

NAME: Number of Eligible Units Refusing to be Interviewed **(**NREF**)**
DEFINITION: Interviewing units eligible for interview where the respondent refused to be interviewed (even after refusal conversion attempts).
COMPUTATION: Sum of cases classified in the NREF category.

NAME: Number of Eligible Units not interviewed due to Temporary Absence (NEUTA)
DEFINITION: Number of eligible interviewing units never interviewed because occupants are away temporarily (e.g., on vacation) during the field interviewing period.
COMPUTATION: Sum of cases classified in the NEUTA category.

NAME: Number of Eligible non-interviewed units excluding refusals, language problems, no one at home, temporarily absent (NEUE)
DEFINITION: Interviewing units that are eligible for interview but are not interviewed for some reason other than a refusal, a language problem, no one being home, or the interview unit being temporarily vacant.
COMPUTATION: The sum of all eligible units classified as noninterviews for reasons other than language problems, no one home, temporarily absent or refusal.
DETAILS: Some surveys do not capture the language problem separately and these cases fall into this category (e.g., CE, NHIS before 1995).

NAME: Total Number of Eligible Non-Interviewed (i.e. Type A) Households (NTYPEA)
DEFINITION: The sum of interviewing units eligible for interview that were not interviewed because of: language problems, no one home, temporarily absent, refusals, and all other reasons.
COMPUTATION: Sum of all eligible units classified as noninterviews.

NAME: Number of Interviewed Units (NINT)
DEFINITION: All interviews considered by a predetermined definition to be complete.
COMPUTATION: Sum of all interviewed units.

NAME: Number of Eligible Units (NEU)
DEFINITION: Number of interviewing units in the sample that are considered to be eligible for interview, e.g., they are determined to be existing structures that are residentially occupied.
COMPUTATION: Sum of all units classified as eligible.
DETAILS: For CE the interviewing unit is Consumer Unit (CU). Definition of 'eligible' may vary across surveys.

FORMULAS FOR INITIAL NONRESPONSE RATES

NAME: Initial Noninterview Language Problem Rate (INLR)
DEFINITION: Number of eligible interviewing units not interviewed because of language problems divided by the total number of eligible interviewing units.
COMPUTATION: (NEUL/NEU) x 100

NAME: Initial Noninterview Temporary Absence Rate (INTAR)
DEFINITION: Number of eligible interviewing units not interviewed because occupants were temporarily away during the interview period divided by the total number of eligible interviewing units.
COMPUTATION: (NEUTA/NEU) x100

NAME: Initial Noninterview Refusal Rate (INREFR)
DEFINITION: Number of eligible interviewing units not interviewed because occupants refused to participate divided by the total number of eligible interviewing units.
COMPUTATION: (NREF/NEU) x 100

NAME: Initial Noninterview No One Home Rate (INNHR)
DEFINITION: Number of eligible interviewing units not interviewed because occupants were never found to be at home during the interview period divided by the total number of eligible interviewing units.
COMPUTATION: (NEUNH/NEU) x 100

NAME: Initial Noninterview Other Type A Rate (INOAR)
DEFINITION: Number of eligible noninterviewed interviewing units excluding refusals, language problems, no one at home, temporarily absent divided by the total number of eligible interviewing units.
COMPUTATION: (NEUE/NEU) x 100

NAME: Initial Noninterview Rate (INR)
DEFINITION: Combination of eligible interviewing units that were not interviewed due to language problems, refusal, no one home, temporarily absent or other reasons (i.e., Type A) divided by the total number of eligible interviewing units.
COMPUTATION: (NTYPEA/NEU) x 100

NAME: Initial Interview Response Rate (IIRR)
DEFINITION: Number of interviewed interviewing units divided by the number of eligible interviewing units.
COMPUTATION: (NINT/NEU) x100