

**WHAT DO THE “LATE” CASES TELL US?  
EVIDENCE FROM THE 1998 SURVEY OF CONSUMER FINANCES**

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helped to process the data, to the superb staff and interviewers at NORC who collected the data, and to the survey respondents who shared the intimate details of their finances with us.

Unit nonresponse has long been a serious problem in the Survey of Consumer Finances (SCF). The SCF uses a dual-frame design that includes an area-probability sample, and a list sample that oversamples wealthy households. In the 1998 SCF, the most recent in the series, that area-probability sample had a response rate of 66 percent. The response rate in the list sample varied widely—from 47 percent in the stratum least likely to be wealthy to only 12 percent in the stratum likely to be very wealthy. Over time, response rates at these levels have been strong motivation for research on nonresponse in the SCF.

As is the case in most other government surveys, the SCF makes strenuous efforts to maintain response rates. Generally, the field period begins with a fairly strong rate of return of completed cases from the field, but the production rate inevitably falls. Closer to the end of the field period, remaining cases are targeted with increasing intensity. Multiple strategies are developed to convert refusals and persuade undecided cases, including the use of accomplished “refusal converters,” roaming “swat teams” of experienced interviewers, increased use of respondent incentives, and other tactics. These efforts are quite costly. The argument for pursuing the relatively difficult “late” cases is two-fold: First, sample size is important for more efficient estimation. Second, there is an implicit assumption that higher response rates lessen the possibilities of bias. The former argument is straightforward, but the latter is less so.

If the last additional cases have characteristics that are differentially less likely to be included among the already-completed cases and more likely to be included among the set of nonrespondents (all appropriately weighted), then there is a reduction of bias. To the degree that we can identify the differential dimensions of nonresponse, the last observations become candidates for adjustment cells in weighting. Past research provides mixed evidence on the utility of this approach.

Continuing work begun in Kennickell (1997), this paper investigates the information contained in the later observations of the SCF. The first section of the paper briefly reviews some of the related literature. The second section gives some background on the SCF, its sample design, and what is known about nonresponse in the survey. The next section develops three measures of “lateness” of the

completed observations: in terms of the number of attempts to obtain an interview, the number of contacts with someone, and time into the field period. The fourth section contrasts some important data characteristics for earlier and later cases. Among the items examined are indications of wealth and income, indications of the “complexity” of cases, demographic characteristics, and missing data rates. The fourth section compares the set of late cases with nonrespondents using three types of information: census tract data and interviewer observations for the area-probability and list samples, and frame data for the list sample. The final section summarizes the findings and points toward the additional research needed in the SCF to make progress in reducing nonresponse and coping with the inevitable cases that do not participate.

## **I. Literature**

At the end of a survey field period, one usually has respondents and nonrespondents. At that point, one typically divides the respondent population into groups or sets of groups that can be used as the basis of some sort of weighting adjustments to compensate for the nonresponse. The motivation is that by specifying groups that are relatively homogeneous (at least along some key dimensions) that are also plausibly disproportionately represented among the nonrespondents, but are also present among the respondents, one has the hope of reducing some types of bias. Often such adjustments are based on frame data or on characteristics that are known for the population. In a survey where the difficulty of obtaining a given interview is likely to be correlated with variables of interest in the survey, levels of difficulty or a close proxies would be good choices for weighting adjustment groups.

Politz and Simmons (1949) provide a formal rationale for grouping survey cases by the number of calls needed to complete them when respondent availability is a key issue and additional calls are costly. Deming (1950) takes this approach farther and develops a framework for determining the optimal number of calls. Pottoff et al. (1993) further develop the Politz and Simmons approach in a parametric model.

However, these papers focus mainly on cases where there is a problem in contacting respondents. As Stinchcombe et al. (1981) show in their study of Dakota farmers, there can be large

differences that may be analytically important between cases that are difficult to reach and those that are more likely to refuse. In their work, the completed cases where there were problems in contacting the respondent looked more like the cases that were completed without unusual difficulties. In contrast, those who had “temporarily refused” at least once had a different pattern of attitudes. Smith (1984) refers to the underlying factors that lead respondents to cooperate or not as “propitiousness”—the degree to which the attempts for the interview are convenient to the subject—and “inclination”—other factors affecting the subject’s willingness to participate. While emphasizing the importance of distinguishing between these two motives, he recognizes that the true nature of a non-interview is not always clear. Thus, while one might want to focus on temporary refusals as a proxies for the cases that are permanent refusals, each group is likely to include people for whom the timing was simply not good no matter what reason was given for not participating in a survey, and the proportions of those people might well differ. Moreover, there may also be cases that are registered as having had no contacts—or limited contacts—simply because the respondents were systematically avoiding the interviewers.

The available empirical evidence on weighting adjustments accounting for the difficulty of interviewing cases is fairly limited, and the conclusions are mixed. Dunkleberg and Day (1973) look at data from the 1967 Survey of Consumer Finances (a member of a different family of surveys from the one studied in this paper). They find evidence that some key survey estimates of proportions “converge” on the true population values with additional callbacks. Guadagnoli and Cunningham (1989) look at a sample of physicians in a mail survey. They found minimal differences between respondents who were obtained initially and those obtained with follow-up, but both groups differ from the nonrespondents along lines that are likely important for analysis of the data. Lin and Schaeffer (1995) examine a sample of people in Wisconsin court records who were paying child support. They investigated two closely related models: the “continuum of resistance model,” which posits that cases that are interviewed after a certain amount of effort are more like those who are interviewed earlier, and the “classes model,” which assumes one can identify groups of respondents who are most like the nonrespondents—specifically the cases of the temporary refusals. The authors’ results provide very limited support for the proposition that completed cases that were difficult—in either sense—are a

useful proxy for the final nonrespondents. In a relatively small survey of Oregon college students, Ellis et. al (1970) find little support for using cases that required follow-up for completion to serve as proxies for nonrespondents. However, Filion (1976) uses the same data to argue for the opposite conclusion. Using data from a survey of northern California communities, Fitzgerald and Fuller (1982) also fail to find strong evidence that cases that required relatively many contact to be completed are relatively like nonrespondents. More recently, Voigt et al. (1999) find some patterns of differences between early respondents, late respondents, and temporary refusals, but the patterns are not strong enough to suggest clear patterns of bias if the later and more difficult cases be ignored.

## **II. Background on the SCF**

The SCF is a conducted every three years by the Board of Governors of the Federal Reserve System, with the cooperation of the Statistics of Income Division (SOI) at the IRS. Data for the 1998 survey, which are the basis of this paper, were collected by the National Opinion Research Center at the University of Chicago (NORC) between the months of June and December using computer-assisted personal interviewing (CAPI). In almost every case, at least the initial contact with respondents was in-person, and 79.2 percent of cases were completed in person.<sup>1</sup>

The survey questions are ones that are typically considered “sensitive.” They focus on the details of assets, liabilities, and other financial characteristics.<sup>2</sup> For example, for a checking account, the survey asks the amount in the account, the household members in whose names the account is held, and the institution where the account is held. Although there has been an attempt to “modulate” the intensity of such questions across the survey by interspersing attitudinal questions and questions of a more demographic nature, these breaks are of necessity relatively short.

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<sup>1</sup>If respondents preferred to be interviewed by telephone, interviewers were able to accommodate them. Special versions of the study materials—showcards, brochures, etc.—were provided to respondents in advance of phone interviews.

<sup>2</sup>A more detailed description of the data is available in Kennickell, Starr-McCluer, and Surette (2000).

The median interview length was 77 minutes, and the 99<sup>th</sup> percentile of the distribution was 218 minutes. The median respondent answered about 430 questions, and the 99<sup>th</sup> percentile of the distribution was about 670 questions. The median respondent was directly asked only 36 questions requiring a dollar value, but at the 99<sup>th</sup> percentile the figure reaches 125. Thus, it is clear that respondent burden varies substantially over the sample.

Interviewer training is very important in the SCF, and a substantial fraction of their training is devoted to strategies for gaining respondents' cooperation. Every interviewer is encouraged to develop a preliminary "script" to use at the first call, but emphasis is placed on flexibility in responding to respondents' concerns. Of the 184 interviewers who completed any cases, a quarter of them completed seven or fewer cases and a quarter completed 33 or more. This variability coupled with the rate of attrition from the initial pool of about 210 interviewers who were trained suggest that some interviewers may have greater advantages in enlisting respondents' assistance.

The SCF sample is a dual-frame design, including an area-probability (AP) sample and a list sample (see Kennickell and Woodburn, 1999). Of the 4,309 observations in the final 1998 SCF dataset, 2,813 derived from the AP sample and the remaining 1,496 from the list sample. The AP sample is a multistage design with equal probabilities of selection for each household drawn from the 100 primary sampling units (PSUs) (see Tourangeau et al., 1993). The list sample is drawn from a sample of individual income tax returns which are selected and edited by SOI (see SOI, 1992).<sup>3</sup> For SCF sampling, these tax records are grouped into seven strata using a proxy for wealth estimated from income items in the frame (see Kennickell, 1998a). Units with high values of the index are over-sampled, and those with relatively low values are under-sampled. There are two important motivations for the use of the list sample. First, given the concentration of many important classes of assets, the design increases the estimation efficiency of the survey. Even more importantly, the stratification provides a means of coping with the dramatically different nonresponse rates across wealth groups shown below.

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<sup>3</sup>The sampling rate in the SOI file is high enough among the cases for which the list sample is most important that sampling error in this frame is typically ignored for the SCF.

The initial approach to members of the two samples is somewhat different. By agreement with SOI, all list sample respondents are given an opportunity to refuse participation in the survey before the field period begins.<sup>4</sup> These people are mailed a letters from the Chairman of the Federal Reserve and the NORC project director, a copy of a brochure developed specifically for the SCF, and a postcard to be returned if the person wishes to be removed from the sample. Those who return the postcard are treated as nonrespondents. All remaining list cases and all AP respondents are, at least in theory, approached with equal effort by the project interviewers.

The supervision of the interviewers by the central office and their field managers is a very important factor in the dynamics of the survey, but it is an area where very little is measured in a way that is useful for analytical purposes. For the first time, in the 1998 survey the call records that interviewers maintain for all their cases were kept in an electronic form that was accessible on a daily basis by the supervisory personnel. Because this facility allowed the tracking of some measures of effort on individual cases, it was not possible for interviewers to avoid working altogether on cases that were difficult in some way. However, it is still not straightforward to monitor either the meaningful level of effort or systematic avoidance of certain types of cases. I believe that interviewer “selection” in this sense—much of which may be entirely unconscious—is one of the most important unexplored areas of nonresponse.

Another key managerial factor that is relevant here is the efforts to target completion rates. The contract for the survey specified minimum completion targets for list sample cases by strata, and an overall minimum target for the AP cases. A common question for the SCF near the close of the field period is where to try to take the remaining required cases. Generally, the key objectives for the AP sample are to maintain response rates by PSU, and to avoid extremely low local response rates. Nonetheless, there is still substantial variability in rates in PSUs over time that appears to be uncorrelated with obvious observable phenomena. For the list sample, the an important objective is to

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<sup>4</sup>In addition, a relatively small number of observations are purged from the sample because the sampled person is someone sufficiently famous that it would be extremely difficult to mask their data sufficiently to be able to produce a public version of the data. These cases are treated as nonrespondents for purposes of weighting.

**Table 1: Response Rates as a Percent of Eligible Respondents, 1998 SCF, for Various Parts of the Sample**

All AP sample cases	65.9
Northeast region	62.4
Northcentral region	67.4
Southern region	68.3
Western region	63.8
Largest urban areas	62.3
Other cities and towns	66.6
Non-urban areas	70.3
All list sample cases	30.0
Wealth index stratum 1	41.5
Wealth index stratum 2	39.3
Wealth index stratum 3	36.3
Wealth index stratum 4	35.9
Wealth index stratum 5	30.6
Wealth index stratum 6	24.7
Wealth index stratum 7	10.6
<i>List sample participants as a % of those not refusing by postcard</i>	
All list sample cases	35.1
Wealth index stratum 1	46.6
Wealth index stratum 2	48.7
Wealth index stratum 3	42.8
Wealth index stratum 4	43.2
Wealth index stratum 5	36.6
Wealth index stratum 6	28.0
Wealth index stratum 7	11.7

**Table 2: Reasons for Noninterview, 1998 SCF, Percent of Eligible Nonrespondents**

	<i>AP</i>	<i>List</i>
Postcard refusal	NA	20.1
Unlocatable	2.6	3.3
Unavailable	3.2	2.7
Language problem	2.1	0.3
Incapacitated	0.9	0.7
Refused by gatekeeper	0.3	1.1
Break-off	0.6	0.6
Refused, no conversion attempt	10.0	7.4
Refused, conversion attempt	64.2	21.6
Censored	14.7	41.1
Other incomplete	1.2	0.4

meet the targets without taking too

disproportionately many people in a given stratum from any one QSU.

Interviewer attrition was a particularly great problem in the 1998 SCF. Consequently, some areas were seriously understaffed with local interviewers, and somewhat more reliance than usual had to be placed on teams of experienced traveling

interviewers. These interviewers would enter an area for a relatively short time and work intensively to obtain interviews—or at least appointments for local interviewers. Given the shorter time available during a given trip, it is not implausible that the types of cases targeted for work might have been different from those that would have been worked over a longer time by local interviewers.

As noted earlier, nonresponse is a serious problem in the SCF (table 1). Interviews were conducted with only 65.9 percent of the eligible AP sample respondents, and only 30.0 percent of the eligible list sample respondents (table 1).<sup>5</sup> Reasons for nonresponse (table 2) show that problems of

<sup>5</sup>Ineligible units accounted for 13.2 percent of the initial area-probability sample (largely vacant units, non-dwellings, and seasonal structures) and for 0.9 percent of the list sample (all permanently out of the country).



contact, language, incapacity, gatekeepers, and break-offs of interviews are relatively unimportant. Overall, refusals account for the bulk of nonresponse, but the role of “censored” cases—those whose completion status was still not resolved at the close of the field period—is also important.<sup>6</sup> For the AP sample, 14.7 percent of the eligible nonrespondents (5 percent of the eligible sample) were censored, and the figure is 41.1 percent for the list sample (28.8 percent of the eligible sample).<sup>7</sup> Some insight into this difference in the proportion of censored cases is given below.

Although the AP response rates are higher in the south and the midwest than in other regions, and higher in less densely populated areas than elsewhere, the participation rates are still quite low compared with many other government surveys of households. Overall, response rates for the list sample decline with the predicted value of wealth. Looking at only the set of respondents who did not return the postcard refusal form does not change this impression substantially. One point deserves special attention. For the cases in the lowest two strata—a group that corresponds in wealth to the overwhelming majority of the AP cases that were interviewed—the response rate is only about 40 percent. The large difference in response rates between these list sample respondents and the AP respondents has been consistent over time, and it appears to be a product of two factors. First, the interviewer is given a name and an address for list sample cases, while only an address is given for the AP cases. Because the address provided for list sample respondents is often not a home address, sometime respondents may be more suspicious of interviewers’ intentions, and gatekeepers may be more of a problem in such circumstances.<sup>8</sup> If the person is not at the address, the interviewer has to attempt to locate the respondent; however, failure to find the sample person or persons accounts for only 3.3 percent of the list sample nonrespondents overall. The second factor relates to interviewers’ incentives to interview the list sample cases. For their work evaluations, the most important target for

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<sup>6</sup>Examination of the call records for the censored cases suggests that some of these cases were ones where it was difficult to locate contact the respondent, but in very many instances it seems clear that the cases were still workable.

<sup>7</sup>The censored list sample cases are spread broadly across all the strata.

<sup>8</sup>The list sample addresses derive from tax files. Legally, the filing address for tax returns is the filer’s home address, but apparently this requirement is either unknown or ignored.

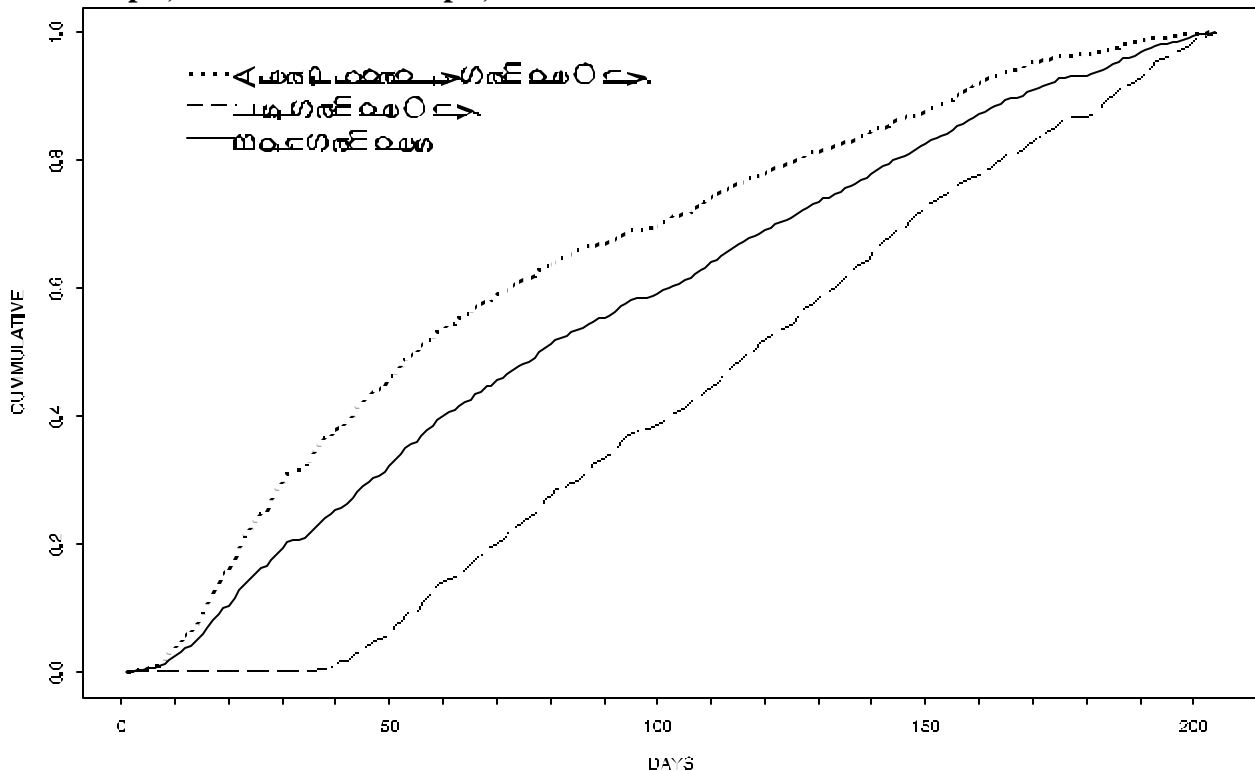
interviewers is producing completed cases. They are not told to which stratum their list sample cases belong, and unconditionally, list cases have more associated difficulties than AP cases. Although it is difficult to characterize effort deeply enough to say whether there was systematic avoidance of list sample cases, the high proportion of unresolved cases remaining for the list sample at the end of the field period supports this hypothesis.

Item nonresponse is also non-negligible in the survey. Missing data in the survey are multiply imputed five times (see Kennickell, 1998b). The imputations are designed to incorporate partial information in the form of range responses and cross-constraints on imputation outcomes. All reports of interview data from the 1998 SCF in this paper use the final iteration of the multiply imputed data.

### III. Indicators of “Lateness”

The goal of this paper is to compare the set of cases that were collected with relatively greater difficulty than other cases with both the group of easier cases and the group that could not be interviewed. These difficult cases, referred to here as “late” cases, cannot be precisely specified based

**Figure 1: Cumulative Fraction of Completed Cases by Days into the Field Period, AP Sample, List Sample, and Combined Sample, 1998 SCF.**



on the available data. Three dimension of lateness are considered here: cases that were interviewed later in time during the field period, those that were interviewed after a given number of attempts, and those that were interviewed after a given number of contacts.<sup>9</sup>

If all unresolved cases were worked uniformly over the field period, then elapsed time would be the best indicator of effort.<sup>10</sup> However, many factors cause deviations from this condition. Interviewer attrition, under-staffing in some areas, avoidance of difficult cases, holidays, local variations, contractual constraints, and a variety of management decisions all contribute to a blurring of the relationship. As shown in figure 1, the rate of case completion for the AP sample in 1998 began low—reflecting largely the fact that only half of the initial interviewers had completed their training at that point—but then rose sharply. By 50 days into the field period, about half of the eventually completed AP cases had been interviewed. The production rate slows progressively after that, with about 20 percent of the cases collected in the next 50 days, and the remaining 30 percent in the last 103 days.

Based on experiences in earlier SCFs, a decision was made to release the list sample cases to the field only after the interviewers had gained some experience with the AP cases. Significant numbers of list sample cases began to be completed starting around the 40<sup>th</sup> day, and the production of cases was approximately linear over the rest of the field period.

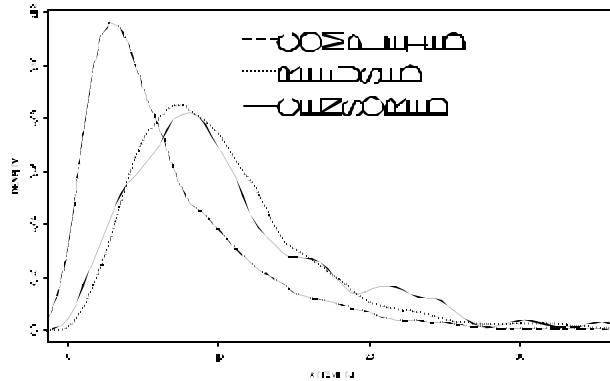
The number of attempts needed to complete a case may be a more direct measure of effort than the time measure. However, because all types of actions—negotiations with respondents, leaving a set of materials at a house where no one is home, mailing letters, leaving messages on an answering machine, etc.—have equal weight in this measure, it may overstate effort. If interviewers fail to act on cases where they believe they are less likely to succeed, attempts will tend to understate difficulty.

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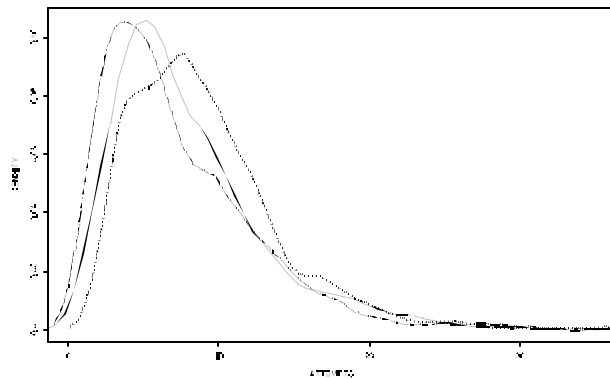
<sup>9</sup>The distinction between “temporary refusals” and other respondents might also be a useful indicator of difficulty. Considerations of such difficult cases will be the subject of further research.

<sup>10</sup>Another possible indicator in terms of time is the number of days elapsed from the first action on a case. According to the survey protocol, interviewers were required to take some action on all of their assigned cases during the first weeks of the field period. Although not all cases were “touched” at this time, the fact that most were eliminated this elapsed time measure as an independent alternative.

**Figure 2a: Density of Attempts; AP Sample; Completed, Refused, and Censored Cases; 1998 SCF**



**Figure 2b: Density of Attempts; List Sample; Completed, Refused, and Censored Cases; 1998 SCF**



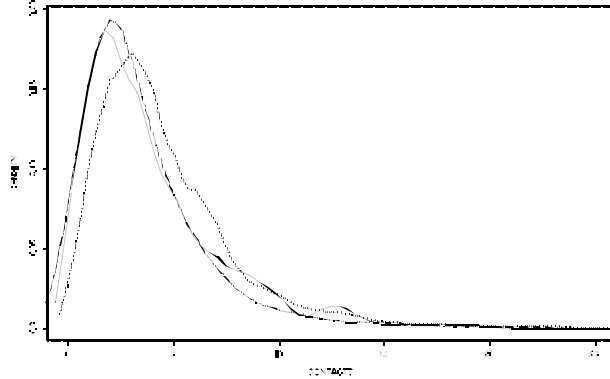
the completed cases and the others is less sharp.<sup>11</sup> This greater similarity is consistent with the hypothesis that interviewers tended to avoid list sample cases in favor of the higher unconditionally expected likelihood of completing AP cases.

Restricting attention to just attempts that were made in person at the sample address may impose more uniformity on the gauge of effort (see figures A1a and A1b in the appendix). As expected, the level of on-site attempts is broadly lower than total attempts, but the overall shapes and

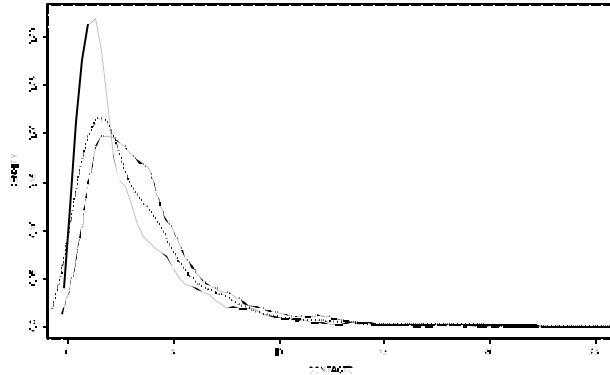
A few things are worth noting about the densities of attempts for the two samples (figures 2a and 2b, and table 3). For the AP sample, a relatively large number of cases was completed after a small number of attempts (the median of the distribution is 5), but there is a long right-hand tail (the 95<sup>th</sup> percentile of the distribution is 18). In contrast, the distribution of attempts for the censored cases and the “refused cases” (where this term includes all non-interview cases except the censored cases) are very similar, and they show evidence of greater effort (the median is 9 and the 95<sup>th</sup> percentile is over 30). This result is exactly what one would expect if the relatively “easy” cases are interviewed first and there is persistence in refusal conversion. For the list sample cases, the apparent level of effort is somewhat lower, and the difference between the distribution of attempts for

<sup>11</sup>The measure of attempts for the list sample excludes the initial mailing, which offered respondents a chance to opt out of the survey. From reports of respondents’ comments during the field period, it appears that many of them were unaware of having received this mailing.

**Figure 3a: Density of Contacts; AP Sample; Completed, Refused, and Censored Cases; 1998 SCF**



**Figure 3b: Density of Contacts; List Sample; Completed, Refused, and Censored Cases; 1998 SCF**



relative positions of the distributions are very similar to the case of unrestricted attempts. In any case, this on-site measure may be too restrictive since telephone contact can play a large part in the persuasion strategies of interviewers on the SCF.

Actual contacts provide another indicator of effort (figures 3a and 3b, and table 3). Contacts are a proper subset of attempts, and in this analysis any encounter with any person (respondent, gatekeeper, etc.) is included. One advantage of using contacts may be that, unlike attempts, they reflect direct effort applied to the respondents, or indirect effort that one would reasonably expect to be communicated to the respondents. On the other hand, some respondents may intentionally respond to the information they have about the survey by making themselves and their gatekeepers difficult to reach. For such respondents, contacts would

understate the true level of difficulty. As with attempts, interviewer expectations and behavior may also distort this measure.

For the AP sample, the fact that the density of contacts with refusals is shifted to the right of that for completed cases reflects the additional effort involved in attempting to convert those refusals. For the list sample, the distribution of contacts for refusals lies to the left of that for completed cases, suggesting either that refusal conversion was less vigorous, or that the refusals were stronger than was the case for the AP sample.<sup>12</sup>

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<sup>12</sup>The relationships are not much affected if contacts are restricted to only in-person contacts (see appendix figures A2a and A2b).

Ideally, one would expect to see a clear linear relationship between days into the field period and measures of attempts and contacts. There might be deviations when it is known that a case is temporarily unavailable for an extended period, or where it is thought that rapid follow-up of a given case will be particularly effective. Summarizing the actual temporal distributions of effort for individual cases is beyond the scope of this paper. However, it is possible to examine the relationship between the number of days into the field period before a case is resolved and the number of attempts or contacts for the case. For cases that were ultimately completed, there is a positive association between the number of days into the field period when the case was completed and the number of attempts made on the case (figures 4a and 4b), but a simple regression of attempts on days shows that the relationship is not a very strong one—for both samples, the coefficients on days are only about 0.06. For contacts (figures 5a and 5b), the relationship is even weaker—the corresponding regression coefficients on days are only about 0.01. Overall, it is clear that the time measure and the measures of attempts and contacts imply a largely different ordering of cases as “late.” For this reason, most of the key statistics in the next section of the paper are reported for measures of lateness defined using each of the three measures and one hybrid measure combining the outer tails of all three of the other measures.

**Table 3: Selected Statistics for the Distribution of Attempts and Contacts, by Sample Type and by Final Disposition, 1998 SCF.**

<i>Sample</i>	<i>Mean</i>	<i>25<sup>th</sup>%-ile</i>	<i>Median</i>	<i>75<sup>th</sup>%-ile</i>	<i>90<sup>th</sup>%-ile</i>	<i>95<sup>th</sup>%-ile</i>
<i>Action</i>						
<i>Final disposition</i>						
AP sample						
Attempts						
Completed	6.7	3	5	9	18	27
Refused	10.3	6	9	13	22	32
Censored	10.7	6	9	14	24	36
On-site attempts						
Completed	4.6	2	3	6	12	20
Refused	6.5	3	5	8	15	22
Censored	7.2	4	6	9	19	25
Contacts						
Completed	3.7	2	3	5	10	17
Refused	6.0	3	5	8	13	19
Censored	4.6	2	4	6	13	23
On-site contacts						
Completed	2.6	1	2	3	6	11
Refused	3.6	2	3	5	9	14
Censored	3.2	1	3	4	9	14
List sample						
Attempts						
Completed	7.3	4	6	10	17	27
Refused	8.9	5	8	11	18	26
Censored	7.9	4	7	10	19	27
On-site attempts						
Completed	2.9	1	2	4	8	11
Refused	3.3	1	3	4	9	15
Censored	3.4	1	3	5	9	16
Contacts						
Completed	4.0	2	3	5	10	15
Refused	4.1	2	3	5	9	15
Censored	2.9	1	2	4	9	16
On-site contacts						
Completed	1.7	1	1	2	4	7
Refused	1.5	0	1	2	5	8
Censored	1.4	0	1	2	5	8

Figure 4a: Attempts vs. Days into Field Period, AP Sample, 1998 SCF.

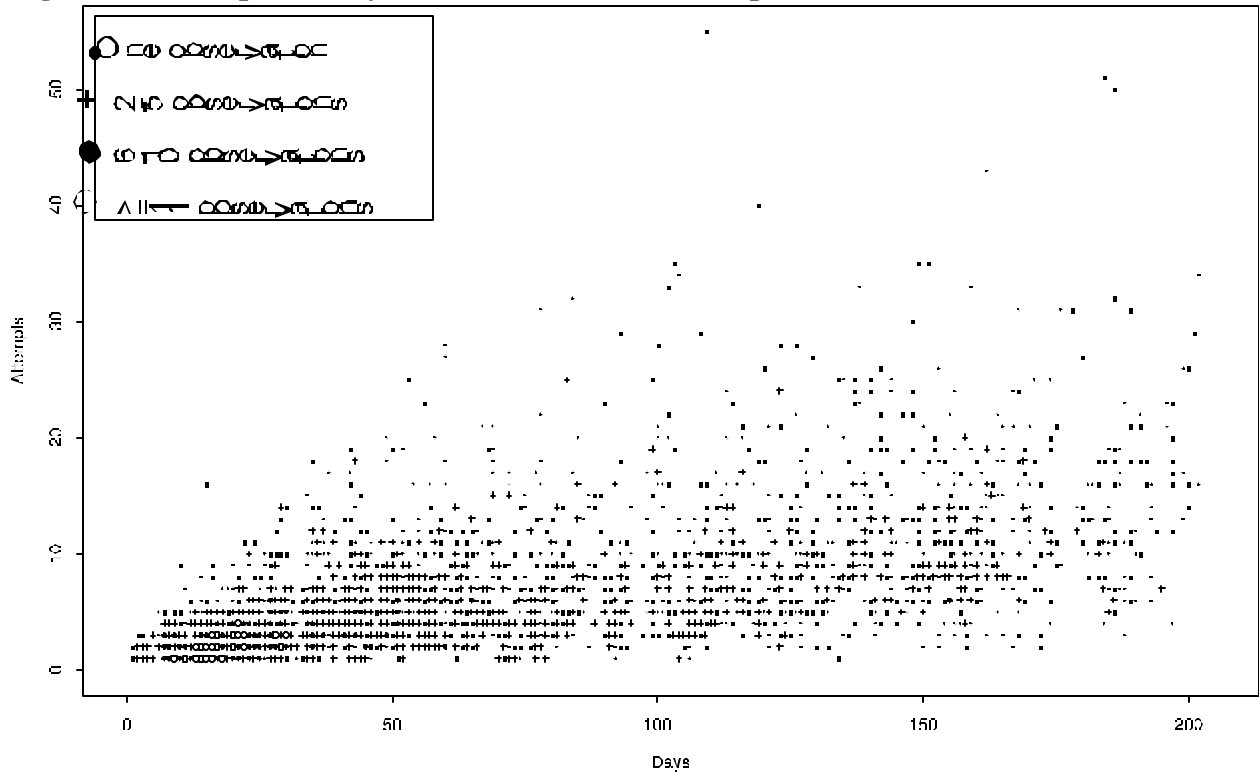
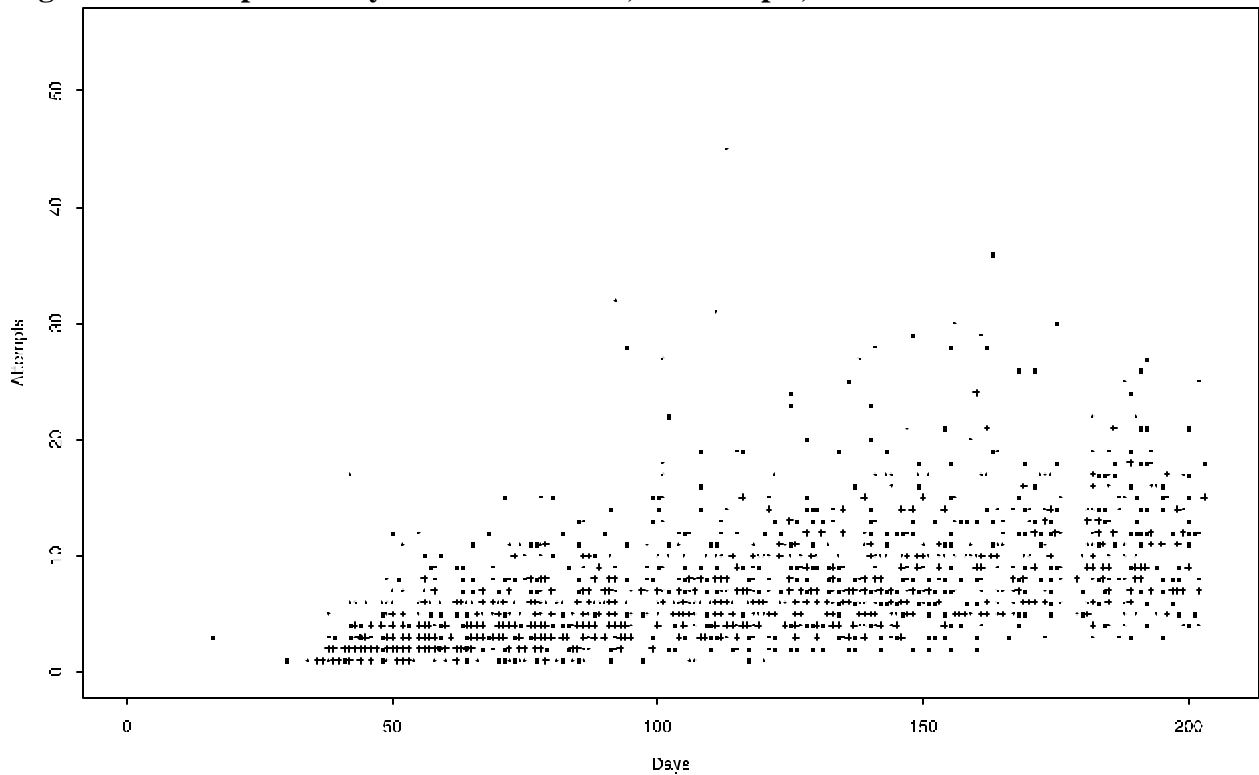
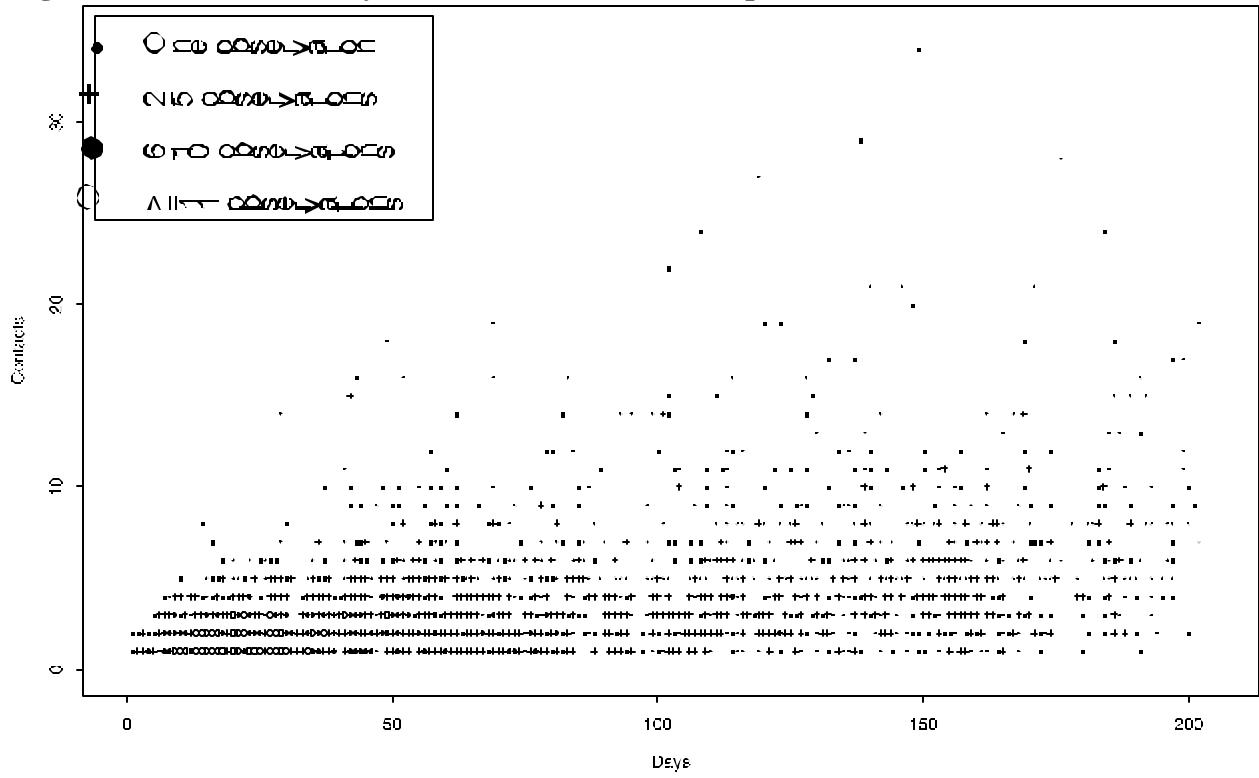


Figure 4b: Attempts vs. Days into Field Period, List Sample, 1998 SCF.

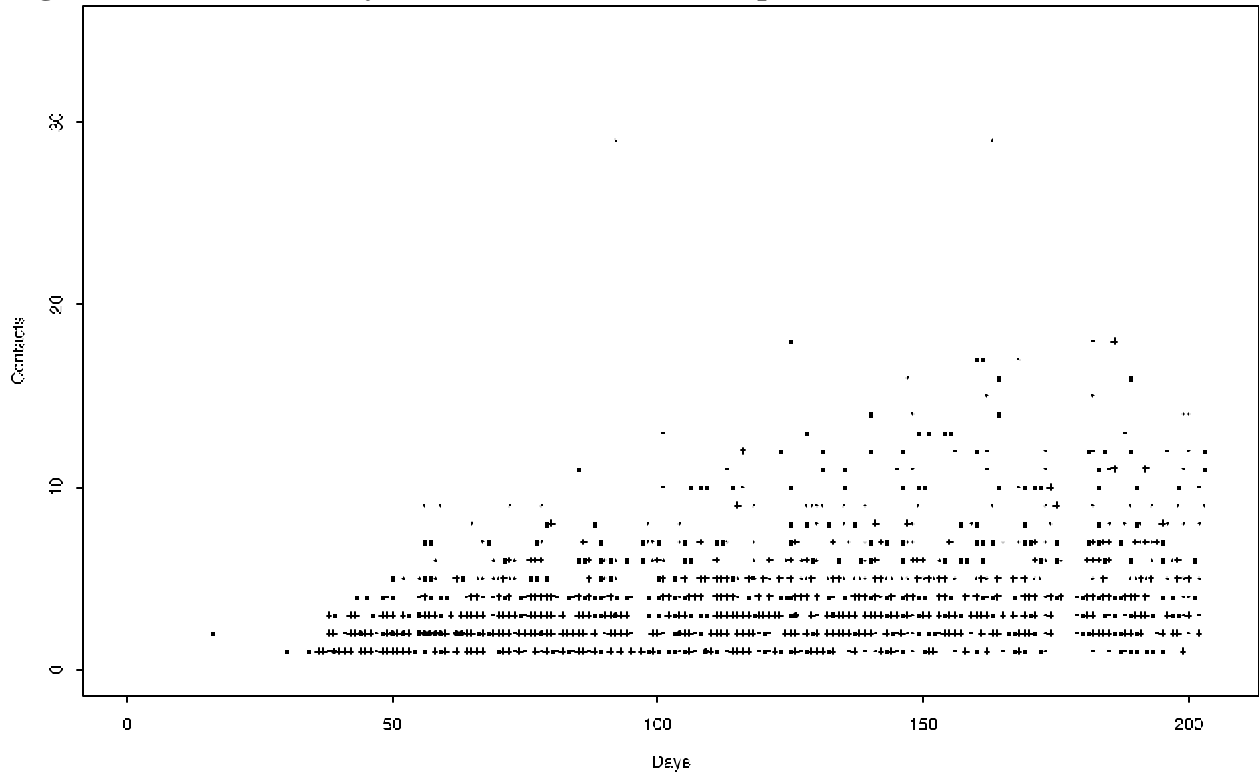




**Figure 5a: Contacts vs. Days into Field Period, AP Sample, 1998 SCF.**



**Figure 5b: Contacts vs. Days into Field Period, List Sample, 1998 SCF.**



### III. Analysis of the “Late” Cases

In the previous section, three characterizations of the “late” cases were developed: the number of days into the field period, the number of attempts, and the number of contacts needed to resolve a case as complete. Here, these classifications are further specified in order to compare the data collected in the survey for different definitions of earlier and later observations. In the case of the number of days into the field period, separate schemes are needed for the AP and list samples to account for the fact that interviewing of the list sample began later than that for the AP sample. For the AP sample, cases will be considered late if they were completed on or after the 100<sup>th</sup> day of the field period (about the 70<sup>th</sup> percentile of the distribution). The corresponding break point for the list sample cases is the 145<sup>th</sup> day (about the 70<sup>th</sup> percentile of the distribution). For contacts and attempts, there is no particular reason to think that these measures have different meanings in the two samples. The break point for attempts is set at 8 (the about 68<sup>th</sup> percentile for AP cases, and the 62<sup>nd</sup> percentile for list cases), and that for contacts is set at 4 (about the 53<sup>rd</sup> percentile for AP cases, and the 57<sup>th</sup> percentile for list cases). To hedge against imperfections in each of these measures, an additional measure based on multiple criteria is also used: for the AP cases, the break point is either the 130<sup>th</sup> day of the field period (81<sup>st</sup> percentile) or the 9<sup>th</sup> attempt (74<sup>th</sup> percentile) or the 5<sup>th</sup> contact (74<sup>th</sup> percentile); for the list cases, the point is either the 160<sup>th</sup> day of the field period (78<sup>th</sup> percentile), the 10<sup>th</sup> attempt (74<sup>th</sup> percentile) or the 6<sup>th</sup> contact (79<sup>th</sup> percentile). There is a degree of arbitrariness in the selection of all these boundary points, but the goal was to designate a sufficiently large fraction of cases as late so as not to have to worry too much about differential rates of sampling error.

When the cases in the AP sample are split by these classifications, some of the resulting pairs differ somewhat in terms of the demographic characteristics of the cases included.<sup>13</sup> Table 4a shows

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<sup>13</sup>Standard errors are not given for any of the differences between the figures in the table, primarily because one would need to have multiple estimates corresponding to all of the interesting comparisons in order to incorporate the common sample structure underlying any comparisons of groups. It is possible to use the SCF sample replicates to estimate such figures by simulating the distribution of differences in estimates within partitions of each replicate. For the AP sample with sample sizes in the range shown, a difference of more than about 2 percentage points would be significantly different from zero.

the unweighted percentage distribution of the AP sample split over a number of characteristics.<sup>14</sup> In each case, households with a “head” over age 65, having less education than a high school degree, or not currently employed were over-represented in the earlier group.<sup>15</sup> Cases where there was a working spouse or where there are both a working head and spouse tend to be better-represented later in the field period or after four or more contacts, but the pattern is reversed for attempts. Households with relatively low incomes generally tended to be interviewed earlier by all of the classifications. However, the patterns across wealth groups are much less clear. There is a slight tendency for less wealthy cases to be interviewed earlier in the field period or with three or fewer contacts, but the pattern is approximately reversed for both the attempts and the multiple criteria classifications.

For the list sample, table 4b provides information on the distribution of the sample groups across age and net worth categories and across the sample strata.<sup>16</sup> The distribution of cases over the sampling strata for the sample break based on the days of the field period is directly affected by the management decisions to pursue the high-stratum cases strongly later in the field period in order to meet the contractual minimums. Although there is no direct effect of these decisions on the number of attempts or contacts, and by these measures there is still an association of stratum with lateness, but it is weaker. Given the strong correlation between stratum and wealth, and between wealth and many demographic variables, the other patterns in the table are not surprising. The age distribution of respondents is similar to that seen in the AP sample. For the income and wealth measures, the table shows the same classifications as given for the AP sample in table 4a, along with a distribution of the relatively large fraction of cases in the original top groups across an extended set of classifications.

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<sup>14</sup>In the AP sample, all cases have an equal initial selection weight.

<sup>15</sup>For single-person households, the “head” is that person. For other households, the head is defined as the financially dominant single individual or one member of the financially dominant couple within the household. In the case of a mixed-sex couple, the male is defined as the head, and in all other cases as the older of the two individuals. As it is used here, this term is merely a means of organizing the data consistently across cases, and it does not imply any judgment about the actual arrangements within the survey households.

<sup>16</sup>Some interpretations of this information may be less straightforward than was the case for the AP sample because of the wide range of sampling rates in the list sample.

Overall, the top income and wealth groups tended to be more likely to be interviewed later. The more detailed income breaks suggest that the \$100,000-\$200,000 group is more likely to be interviewed earlier, the next highest group tends to be interviewed later, while there is no large difference for the groups above that. For the broken-out wealth groups, the data indicate that the group that is most clearly more likely to be in the late subsample is the one with wealth of \$10 million or more.

Because of the key role of wealth measures in the SCF, it is worthwhile to look in more detail at the changes in wealth over the measures of lateness. Figures 6a, 7a, and 8a show the distribution of wealth conditional on, respectively, days into the field period, number of attempts, and number of contacts for the AP sample.<sup>17</sup> The outer tails and the interquartile range vary a bit, but the variation is not consistent over any of the measures of lateness. The median across days into the field period is fairly flat until about the last 50 days when it moves up. The median of cases by attempts shows a pattern of decline. Over contacts, the median rises somewhat. For the list sample (figures 6b, 7b, and 8b), the center of the wealth distribution generally rises for later cases by all three definitions.

Another important way in which early and late cases in the SCF might differ is in terms of the complexity of their wealth portfolios. Other things being equal, one would expect that people with more complex asset structures would be less likely to be willing to do the interview, and thus more unlikely to be in the earlier groups. There is no obviously appropriate index of complexity, but there are some plausible indicators. Table 5 shows the distribution of the number of dollar values reported and the ownership of some key assets by lateness for the two samples. It is remarkable how little variation there is in the number of dollar questions asked across the sample splits, even at the higher percentiles of that distribution.<sup>18</sup> This result is particularly striking for the list sample, given the tendency toward higher wealth levels among late cases. Across all of the asset ownership categories except one, the

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<sup>17</sup>To accommodate the highly skewed distribution of net worth, that variable is transformed in all plots in this paper using the inverse hyperbolic sine with scale parameter 0.0001 (see Burbidge, Magee, and Rob 1988). Away from the origin, this transformation is approximately logarithmic.

<sup>18</sup>A dollar variable is counted as “answered” here if it actually was answered directly, or if it was not originally asked because a higher-order variable was missing but the dollar variable was imputed to a non-blank value.

percent of AP cases with the items tends to fall somewhat or remain flat among the later cases. The exception, pensions, appears to be a little more likely to be held by the later observations in that sample. For the list sample cases, the percent holding the various types of assets generally rises among the later cases. The exception for this sample is mutual funds, which are a bit less likely to be owned by the later groups. Thus, for the list sample at least, there is some indication here that later cases are more complex, though this pattern may simply be a reflection of higher wealth levels.

Interview length may be a more direct indicator of general complexity. For the AP cases, the distribution of the interview length is very similar across all the measures of lateness (figures 9a, 10a, and 11a). For the list sample cases, there is a slight tendency for the median length to rise for later cases (figures 9b, 10b, and 11b). However, the upper tail shows a dramatic lengthening among the later cases, suggesting that at least for some of the list cases, a much higher level of complexity may be involved in completing the interview—though, again, this difference may be driven by wealth differences alone.

A frequently heard argument against expending the effort to obtain interviews by applying additional effort is that such cases are more likely to have serious problems of item nonresponse. Table 6 provides information on the distribution of missing data in dollar variables for the sample splits.<sup>19</sup> For the AP sample, there is virtually no variation across the splits. The list sample cases show broadly higher levels of missing data for the later cases, as one would expect given the relative piling up of late wealth cases and the problem of higher rates of item nonresponse that are more common among relatively wealthy cases.

Because the list sample is constructed specifically to minimize the effects of nonresponse biases in wealth measurement and because of the availability of other frame data for post-stratification, it could be that the later cases in both samples add only to estimation efficiency and not to bias reduction in weighted estimates of wealth. One way to address this question is by performing the experiment of

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<sup>19</sup>Mirroring the calculation in table 5, a variable was counted as missing if it was originally reported directly as a missing value, or if it was originally not asked because of a higher-order missing variable but it was imputed to a non-blank value. Original responses that were given as ranges instead of a single value are not included as missing values.

treating the early and late cases as separate surveys and comparing the implied wealth distributions. To this end, a full set of weights and replicate weights for variance estimation were constructed for the early and late cases by each measure of lateness. Using these weights, it is possible to compare the implied wealth distributions for each of the pairs of early and late samples.

Figures 12-15 give quantile-difference (QD) plots of wealth in the pairs across definitions of lateness for the full sample, where the difference is given as the values at the percentiles of the early cases minus those for the late cases.<sup>20</sup> To gauge the importance of these differences, the dotted lines show the boundaries of an estimate of the pointwise 95 percent confidence interval around the central estimates.<sup>21</sup> For every sample group, the difference is significantly different from zero over some part of the distribution. For attempts and contacts, the difference is significant over all of the range except about the top and bottom 5 percent of the distribution. The picture is less clear cut for days and for the multiple indicators but there are still regions of significant differences.

For comparison with other surveys, differences for the AP sample alone may be more useful. For every one of the subsamples of the AP sample, the differences are much smaller than was the case for the combined AP and list samples, but the direction of the difference is the same—early cases have less wealth than later cases—over part the lower part of the distributions (figures 16-19).<sup>22</sup> For the

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<sup>20</sup>A QD plot shows the difference in the values of two distributions at a common quantile point. Such a plot is equivalent in its information content to a quantile-quantile (Q-Q) plot rotated by 45 degrees, but it is more efficient in its use of space when the distributions compared are similar. In the plots here, the differences are transformed using the inverse hyperbolic sine.

<sup>21</sup>Because of the complexity of this calculation some simplifications are invoked in computing the confidence intervals. The 95 percent confidence bounds are computed as pointwise bounds in wealth-difference/percentile space for a selection of the percentile points (2.5, 5, 15, 25, 35, 45, 55, 65, 75, 80, 85, 90, 95, 96, 97, 98, 99, 99.5). For each selected percentile, the set of differences between the wealth estimates corresponding to that percentile in the early and late partitions of each sample replicate, are used to simulate the distribution of the difference. The upper bound of the confidence interval at one of the selected percentile point is equal to the 97.5<sup>th</sup> percentile of the simulated distribution of the wealth difference; the lower bound is defined analogously.

<sup>22</sup>Estimates for the AP sample are made using nonresponse-adjusted design weights for that sample (Kennickell and Woodburn (1999)). The adjustments to the AP weights include ratio adjustments by PSU and raking to homeownership figures by region and race/ethnicity and to age groups.

groupings by days, attempts, and the multiple indicator criterion, the difference is barely significant only in a small region around the 20<sup>th</sup> percentile. In contrast, when the AP sample is divided by the number of contacts, the differences in the lower part of the distributions are larger and most strongly significant over a wider interval around the 40<sup>th</sup> percentile, and there is another small region of significant difference around the 85<sup>th</sup> percentile. The top ends of the distributions are all fairly thinly identified, so the degree to which the confidence intervals flare out in the top decile is not surprising.

**Table 4a: Unweighted Percent of Sample Group in Various Categories, AP Sample.**

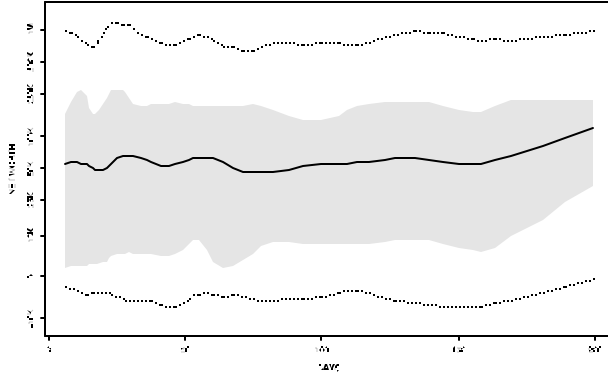
	Full	Days		Attempts		Contacts		Multiple criteria	
	Sample	<100	\$100	<8	\$8	<4	\$4	Early	Late
<b>Age of head</b>									
<35	25.8	25.6	26.4	23.1	31.7	25.2	27.0	24.2	28.3
35-44	24.3	24.5	24.0	23.1	26.9	22.8	27.0	23.3	25.9
45-54	19.0	18.3	20.7	19.2	18.6	19.4	18.4	18.9	19.2
55-64	12.1	11.8	12.8	12.7	10.8	11.3	13.3	11.7	12.7
65-74	10.2	10.8	8.9	11.5	7.5	11.1	8.8	11.4	8.4
\$75	8.5	9.1	7.2	10.4	4.5	10.2	5.6	10.5	5.5
<b>Education of head</b>									
< high school	18.3	19.6	15.2	19.8	15.2	20.3	14.9	19.8	16.1
High school	30.9	30.5	31.7	31.7	29.1	30.2	32.1	31.0	30.7
Some college	24.2	23.5	25.9	22.6	27.7	22.2	27.7	22.6	26.7
College or more	26.6	26.4	27.3	26.0	28.1	27.4	25.4	26.7	26.6
<b>Marital status</b>									
Marr./partner	57.6	57.8	57.0	59.7	52.9	55.8	60.5	58.5	56.2
Div./sep.	17.0	17.1	16.9	16.3	18.6	17.1	16.9	16.7	17.5
Widowed	9.2	9.1	9.4	9.7	8.1	9.9	8.0	9.6	8.6
Never married	16.2	16.0	16.8	14.3	20.4	17.2	14.6	15.2	17.7
<b>Household size</b>									
1	25.3	25.2	25.5	24.7	26.5	27.6	21.2	25.7	24.6
2	32.5	32.4	32.7	33.2	30.9	33.0	31.6	32.9	31.9
3-5	38.6	38.9	38.0	38.7	38.6	36.3	42.7	38.1	39.5
>5	3.6	3.5	3.9	3.4	4.0	3.0	4.5	3.4	4.0
<b>Race/ethnicity</b>									
Non-Hisp. white	76.6	76.4	76.9	78.7	72.0	77.1	75.6	78.5	73.6
Black	12.7	13.2	11.7	11.9	14.4	13.0	12.2	12.3	13.4
Hispanic	7.5	7.3	7.9	6.3	10.0	6.4	9.4	5.9	9.9
Other	3.2	3.1	3.4	3.1	3.6	3.5	2.8	3.3	3.1
<b>Homeowner</b>									
	59.4	58.9	60.7	62.3	53.4	59.8	58.9	61.7	56.0
<b>Work status</b>									
Head working	71.9	69.3	77.9	68.0	80.4	68.8	77.2	67.7	78.3
Spouse working	35.6	35.3	36.1	36.4	33.7	33.4	39.3	35.5	35.6
Head & spouse wkg.	31.6	30.9	33.1	32.0	30.8	29.5	35.2	31.2	32.3
<b>Income (thou. dollars)</b>									
<20	30.7	32.7	26.1	31.4	29.4	33.5	26.0	32.2	28.5
20-35	22.2	22.3	22.0	22.1	22.4	22.0	22.6	22.1	22.4
35-50	14.8	14.2	16.0	14.6	15.2	13.8	16.5	13.9	16.2
50-100	24.4	22.9	27.8	24.4	24.4	23.1	26.5	24.2	24.6
\$100	7.9	7.9	8.2	7.6	8.7	7.6	8.4	7.7	8.4
<b>Net worth (thou. dollars)</b>									
<0	9.3	10.0	7.7	8.9	10.2	9.3	9.3	8.8	10.0
0-5	15.2	16.1	13.1	15.5	14.7	16.8	12.3	16.0	14.1
5-25	14.3	13.6	15.8	12.8	17.4	13.7	15.2	13.1	16.1
25-75	16.4	15.8	17.8	16.2	16.9	16.8	15.7	16.2	16.7
75-150	14.6	14.0	16.1	15.0	13.8	13.1	17.2	14.7	14.6
150-350	16.1	16.6	15.0	16.7	14.7	16.9	14.8	16.9	14.8
\$350	14.1	13.9	14.6	14.9	12.4	13.4	15.6	14.4	13.6
<i>Memo item:</i>									
Percent of entire AP									



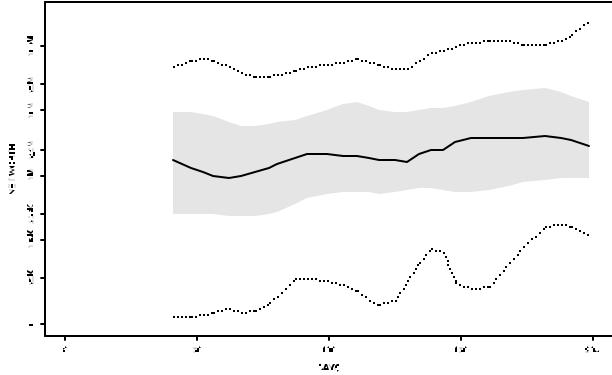
**Table 4b: Unweighted Percent of Sample Group in Various Categories, List Sample.**

	Full	Days		Attempts		Contacts		Multiple	
	Sample	<145	\$145	<8	\$8	<4	\$4	Early	Late
<i>Age</i>									
<35	6.9	7.5	5.4	6.6	7.4	7.6	6.0	6.8	7.0
35-44	16.3	17.8	12.9	15.2	18.1	13.5	20.0	15.5	17.4
45-54	28.4	28.1	29.2	27.9	29.2	26.2	31.4	27.5	29.8
55-64	23.2	21.7	26.6	23.1	23.4	24.8	21.0	22.4	24.3
65-74	15.8	15.1	17.4	15.9	15.6	16.8	14.5	16.0	15.6
\$75	9.4	9.8	8.5	11.3	6.2	11.1	7.1	11.8	6.0
<i>Income (thou. dollars)</i>									
<20	6.7	7.9	4.1	7.8	5.0	7.7	5.4	7.9	5.1
20-35	5.9	6.8	3.8	6.7	4.5	6.7	4.7	6.9	4.4
35-50	5.5	6.3	3.9	6.9	3.3	6.6	4.1	6.8	3.7
50-100	14.7	15.4	13.3	16.1	12.5	15.9	13.2	15.8	13.2
\$100	67.2	63.7	74.9	62.5	74.7	63.1	72.6	62.6	73.6
100-250	32.7	34.1	29.9	33.5	31.5	33.9	31.2	34.1	30.9
250-500	21.7	21.1	22.8	19.9	24.1	20.2	23.5	19.5	24.3
500-1,000	14.9	14.5	15.8	14.8	15.1	15.0	14.8	14.7	15.2
\$10000	30.7	30.3	31.6	31.8	29.4	30.9	30.6	31.6	30.0
<i>Net worth (thou. dollars)</i>									
<0	2.0	2.2	1.6	2.0	1.9	2.3	1.5	2.3	1.6
0-5 1.7	2.1	1.0	1.6	1.9	1.8	1.6	1.8	1.6	
5-25	2.6	3.2	1.3	2.9	2.1	3.4	1.5	2.8	2.3
25-75	2.8	3.0	2.2	3.0	2.3	2.8	2.8	3.1	2.3
75-150	4.4	4.7	3.6	4.7	3.8	4.5	4.2	4.4	4.3
150-350	8.6	9.8	5.9	10.8	5.0	9.8	6.8	10.5	5.8
\$350	78.0	75.1	84.5	74.9	83.1	75.4	81.5	75.0	82.1
350-1,000	18.7	19.5	17.0	19.8	17.1	19.5	17.6	19.5	17.6
1,000-5,000	35.6	37.2	32.3	36.3	34.5	36.0	35.0	36.2	34.8
5,000-10,000	13.2	12.5	14.6	13.4	13.0	12.6	14.0	13.2	13.2
\$10,000	32.6	30.7	36.2	30.6	35.5	31.8	33.5	31.1	34.4
<i>Sample stratum</i>									
1	8.4	10.5	3.5	9.1	7.2	9.7	6.6	10.2	5.8
2	10.2	10.6	9.3	11.8	7.7	11.8	8.2	10.3	10.1
3	13.6	15.8	8.7	14.9	11.4	14.6	12.2	15.1	11.5
4	18.5	17.9	19.9	19.0	17.8	17.9	19.3	18.9	18.1
5	21.5	20.7	23.4	20.3	23.6	20.7	22.6	20.1	23.5
6	25.1	22.6	30.5	22.4	29.4	22.6	28.4	23.0	28.0
7	2.7	1.8	4.8	2.6	3.0	2.8	2.7	2.4	3.2
<i>Memo item:</i>									
Percent if entire list sample in group	100.0	69.1	30.9	62.0	38.0	57.4	42.6	58.2	41.8

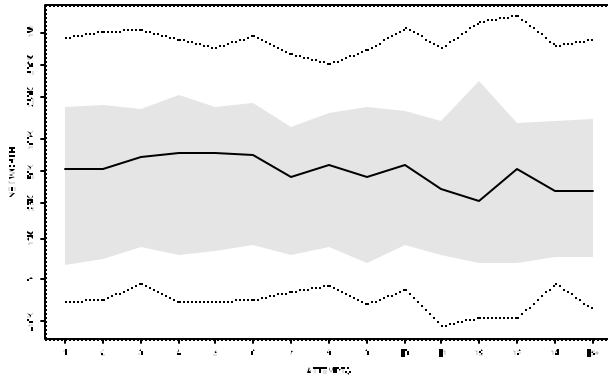
**Figure 6a: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of Distribution of Net Worth, By Days into Field Period, AP Sample, 1998 SCF.**



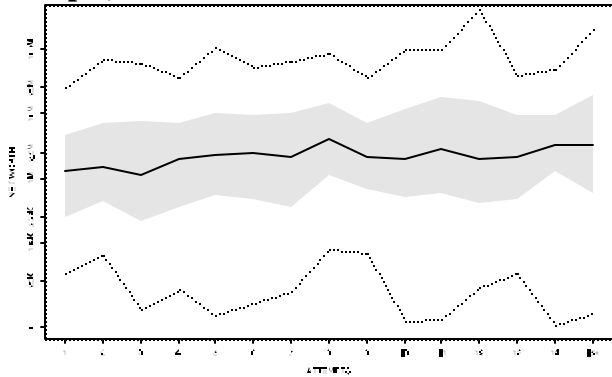
**Figure 6b: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of Distribution of New Worth, By Days into Field Period, List Sample, 1998 SCF.**



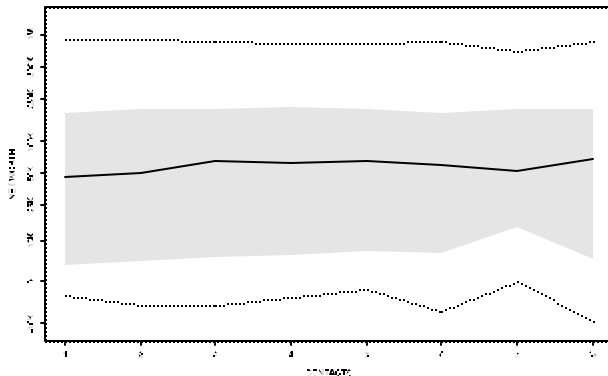
**Figure 7a: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of Distribution of New Worth, By Number of Attempts, AP Sample, 1998 SCF.**



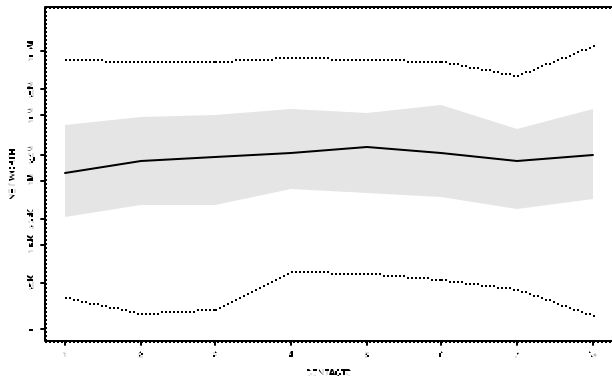
**Figure 7b: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of Distribution of New Worth, By Number of Attempts, ListAP Sample, 1998 SCF.**



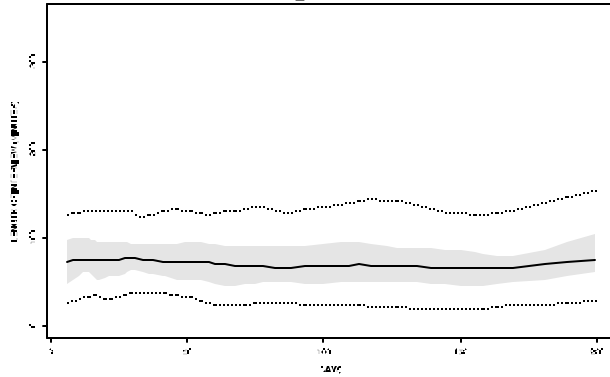
**Figure 8a: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of Distribution of New Worth, By Number of Contact, AP Sample, 1998 SCF.**



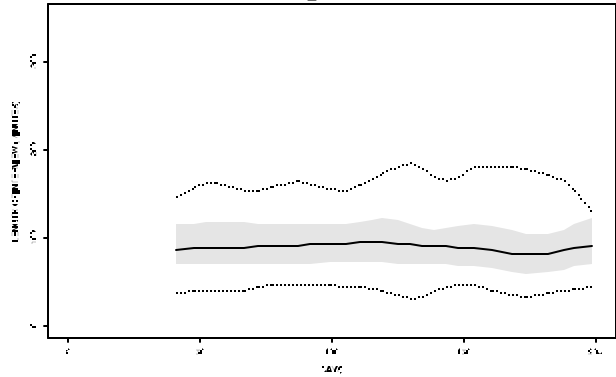
**Figure 8b: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of Distribution of New Worth, By Number of Contacts, List Sample, 1998 SCF.**



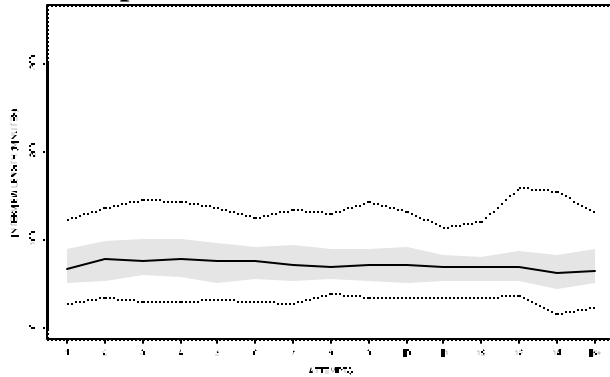
**Figure 9a: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of the Distribution of Interview Length, By Number of Days into Field Period, AP Sample, 1998 SCF.**



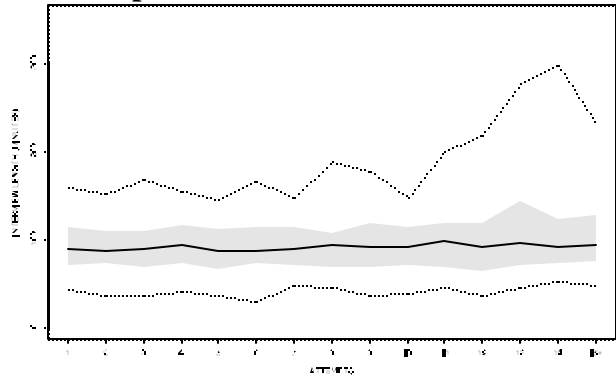
**Figure 9b: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of the Distribution of Interview Length, By Number of Days into Field Period, List Sample, 1998 SCF.**



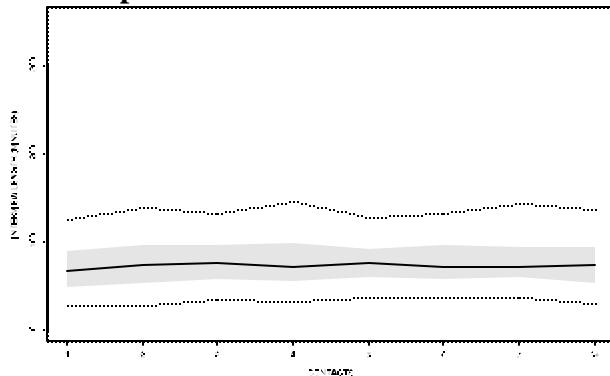
**Figure 10a: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of the Distribution of Interview Length, By Number of Attempts, AP Sample.**



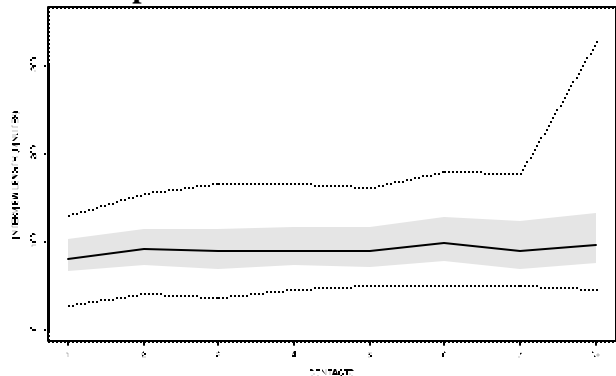
**Figure 10b: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of the Distribution of Interview Length, By Number of Attempts, List Sample.**



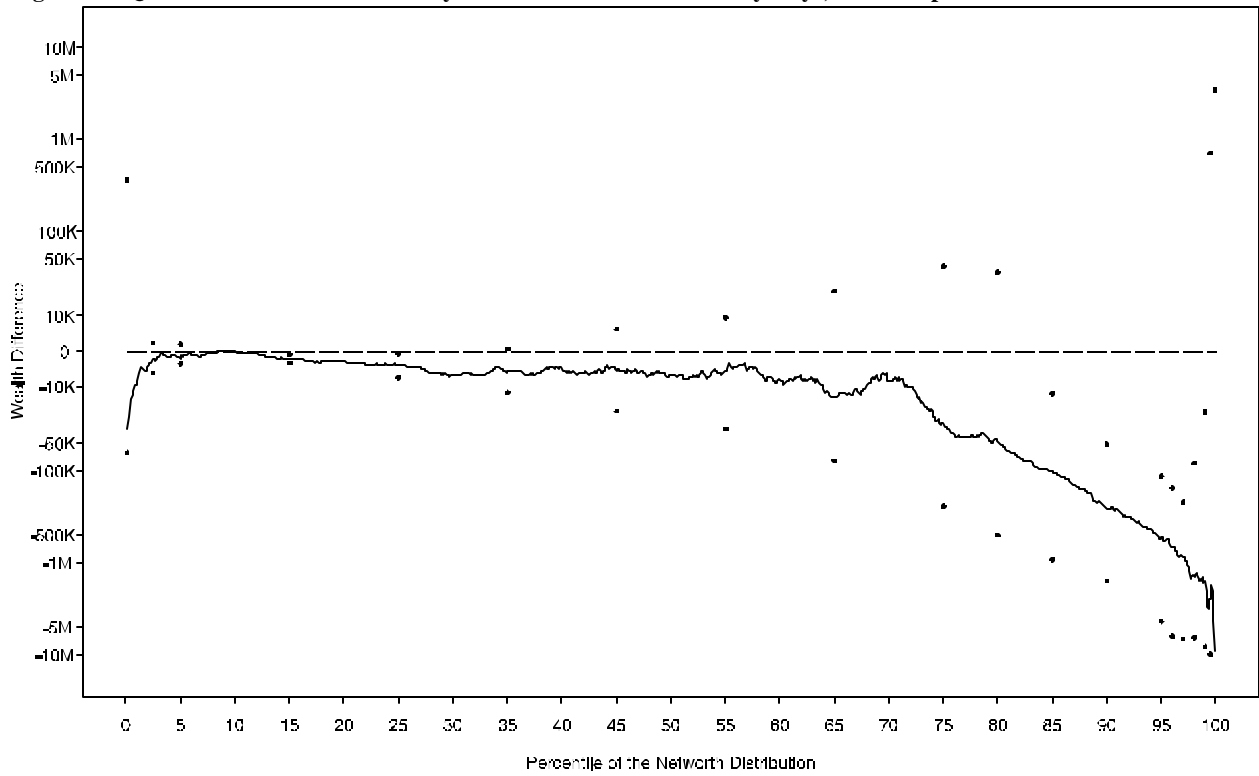
**Figure 11a: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of the Distribution of Interview Length, By Number of Contacts, AP Sample.**



**Figure 11b: Median, Interquartile Range, and Outer 5<sup>th</sup> Percentiles of the Distribution of Interview Length, By Number of Contacts, List Sample.**



**Figure 12: Q-D Plot of Net Worth of Early minus Late Cases Defined by Days, Full Sample.**



**Figure 13: Q-D Plot of Net Worth of Early minus Late Cases Defined by Attempts, Full Sample.**

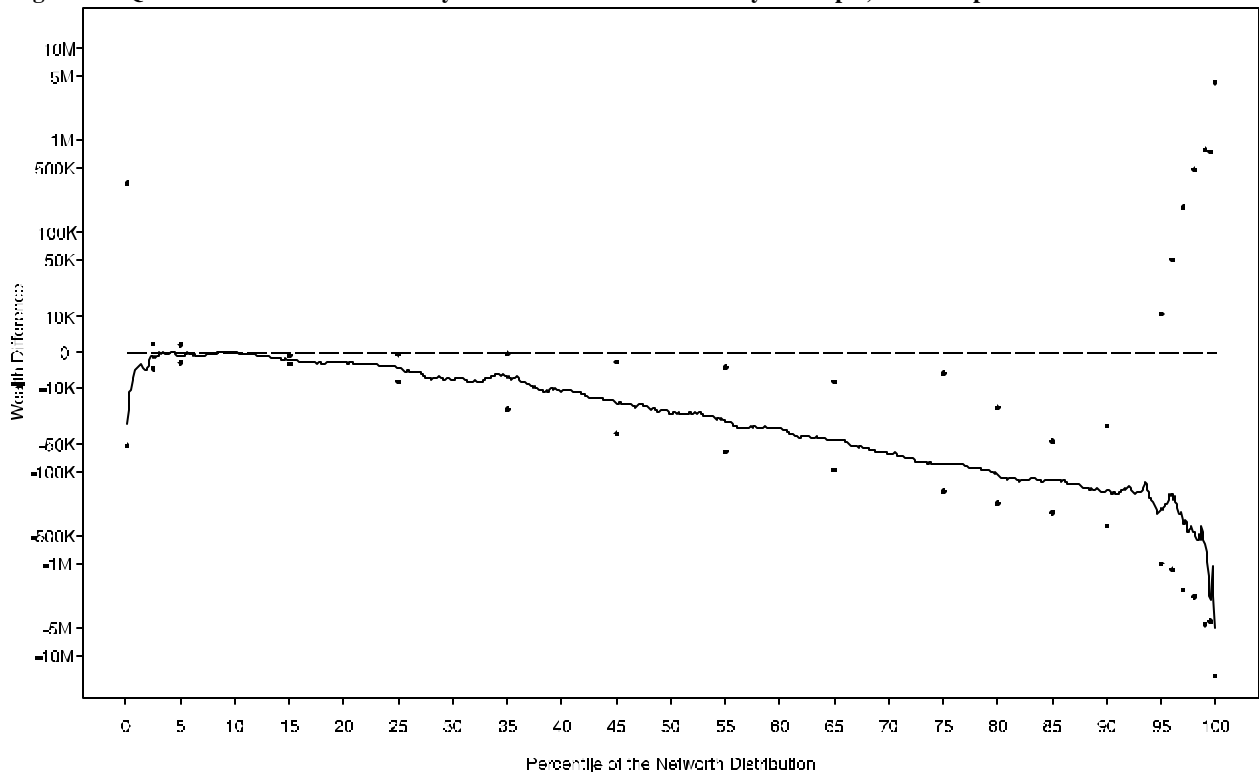


Figure 14: Q-D Plot of Net Worth of Early minus Late Cases Defined by Contacts, Full Sample.

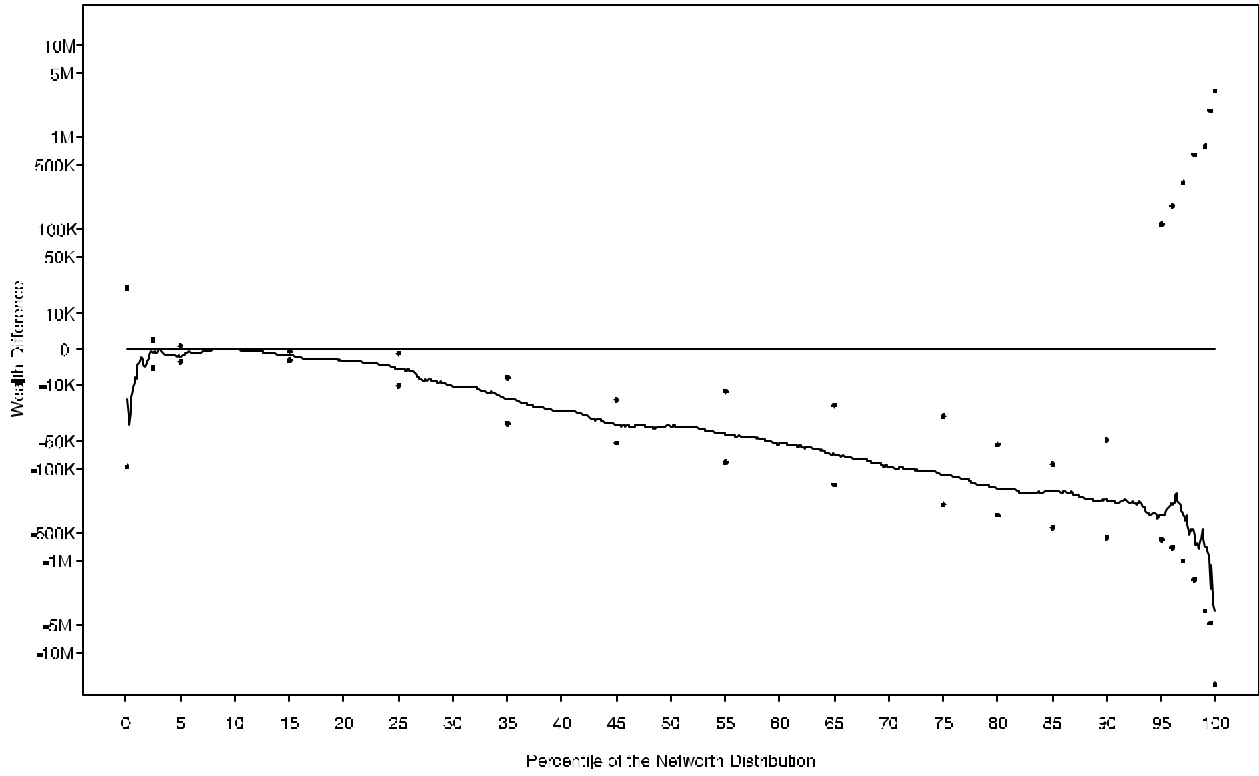
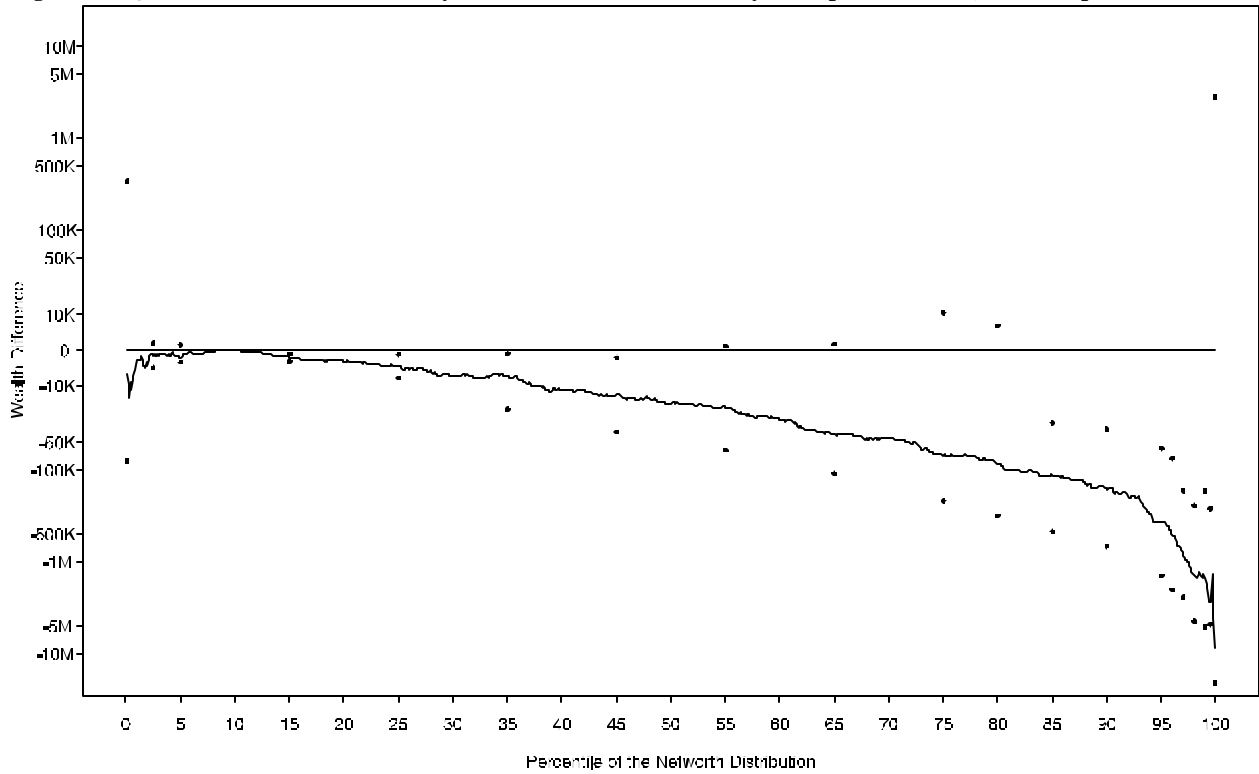
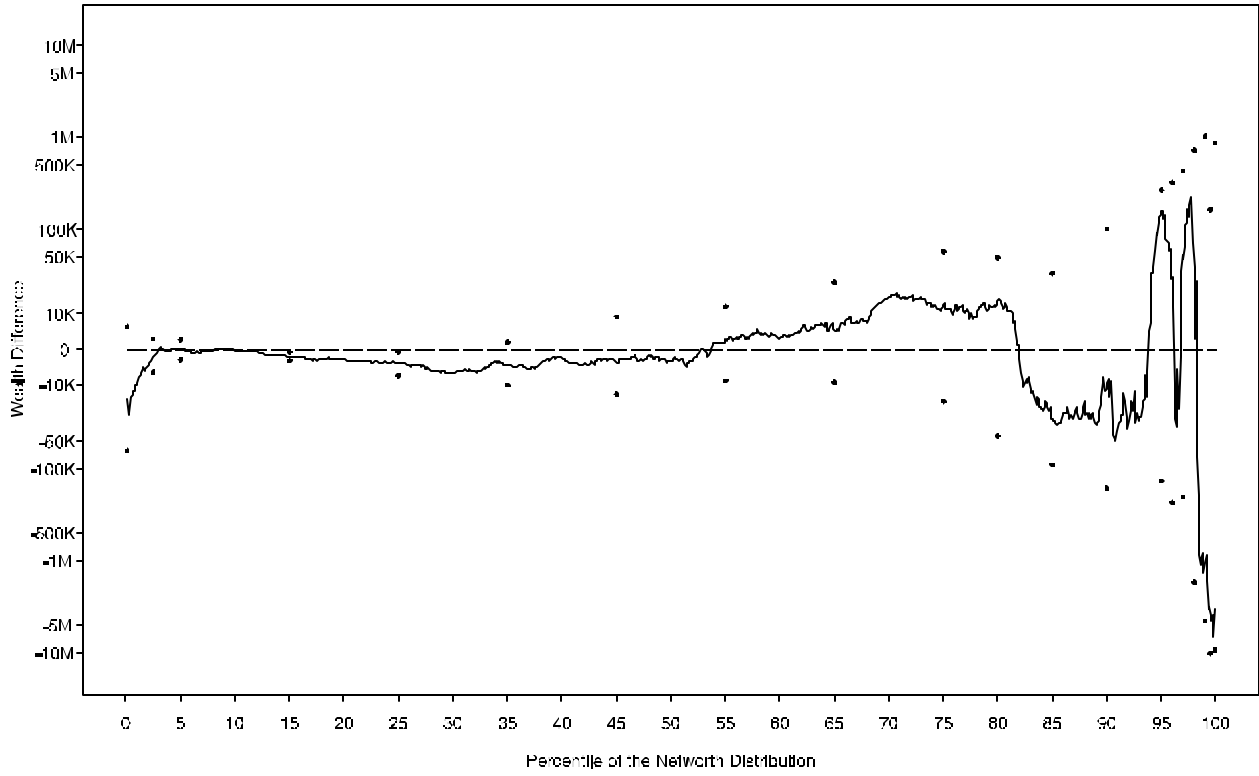


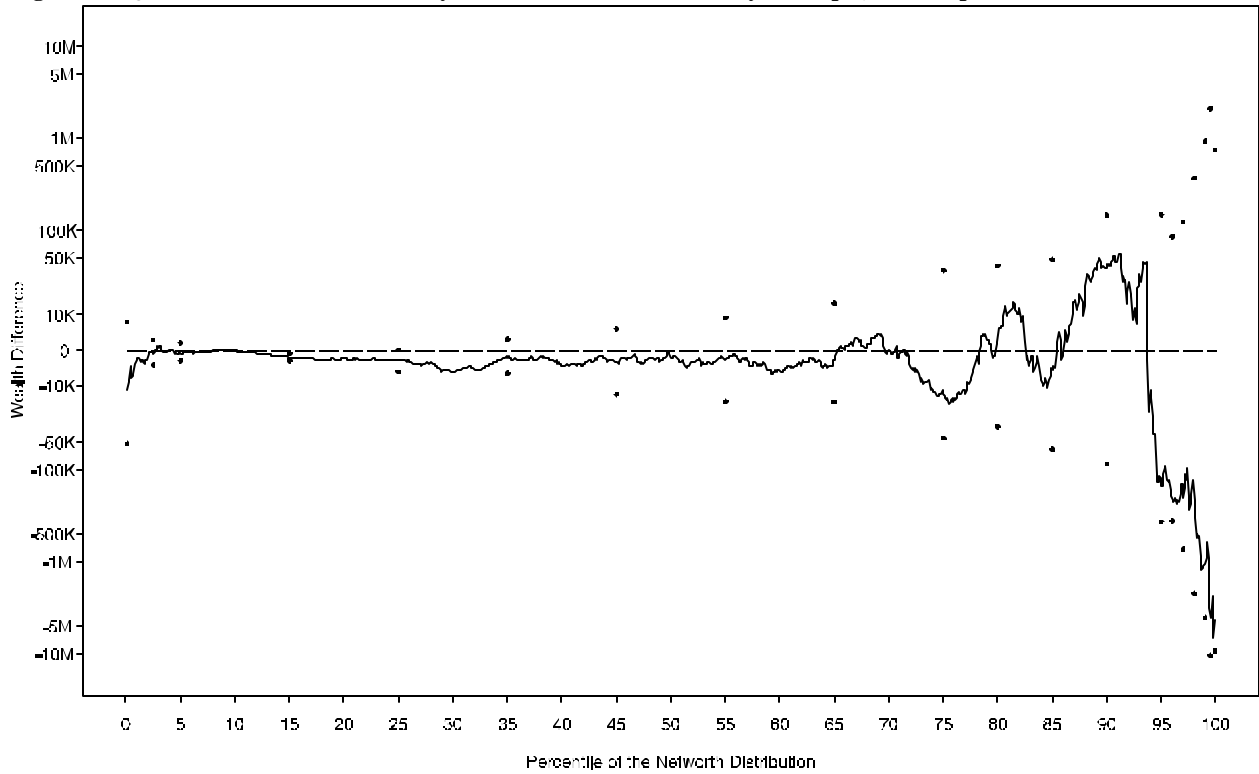
Figure 15: Q-D Plot of Net Worth of Early minus Late Cases Defined by Multiple Indicators, Full Sample.



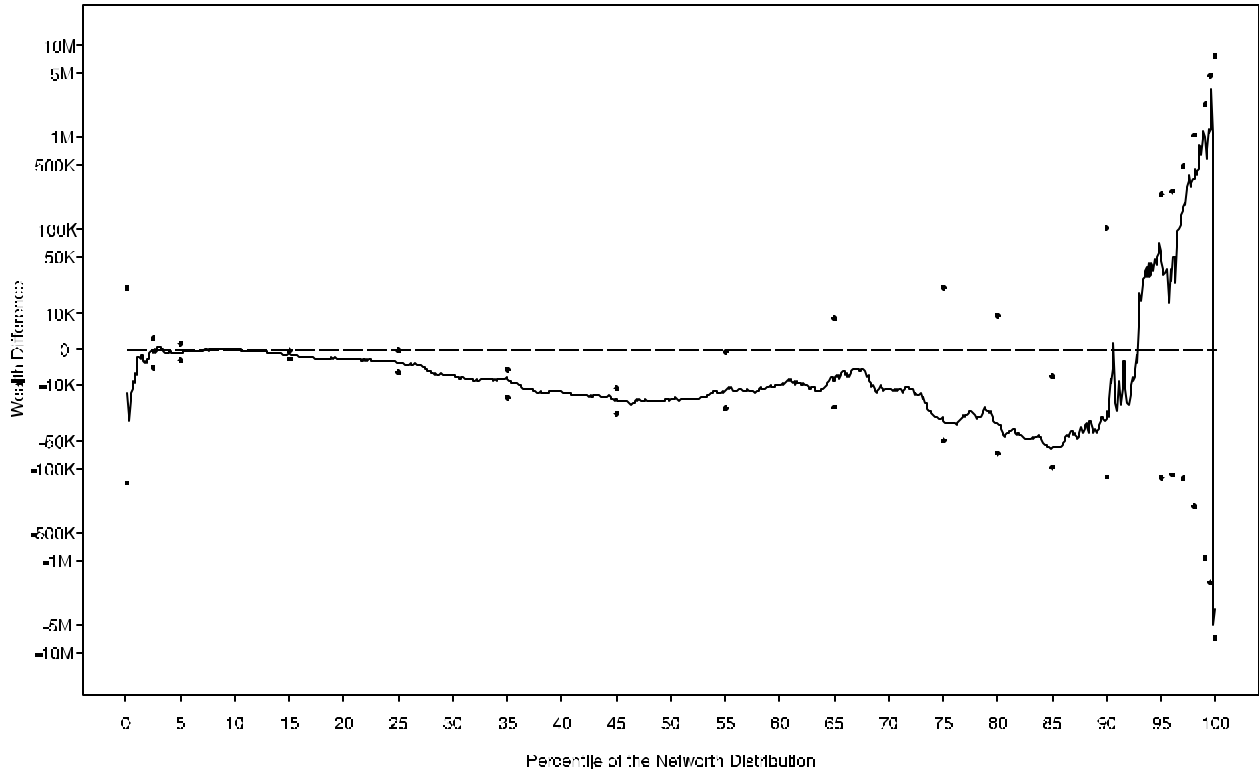
**Figure 16: Q-D Plot of Net Worth of Early minus Late Cases Defined by Days, AP Sample.**



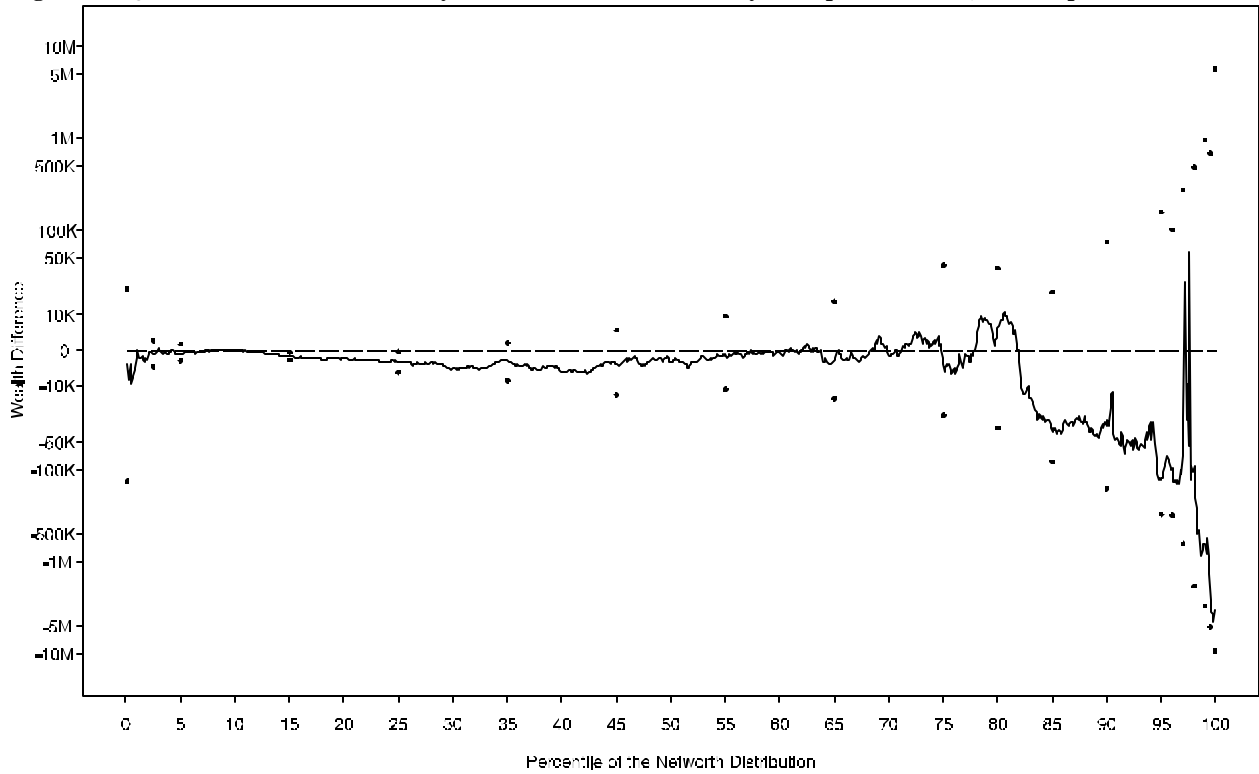
**Figure 17: Q-D Plot of Net Worth of Early minus Late Cases Defined by Attempts, AP Sample.**



**Figure 18: Q-D Plot of Net Worth of Early minus Late Cases Defined by Contacts, AP Sample.**



**Figure 19: Q-D Plot of Net Worth of Early minus Late Cases Defined by Multiple Indicators, AP Sample.**



**Table 5: Indications of Complexity of Interviews, by Various Sample Groups, AP and List Sample, 1998 SCF.**

	Full Sample	<u>Days</u>		<u>Attempts</u>		<u>Contacts</u>		<u>Multiple criteria</u>	
		<100	\$100	<8	\$8	<4	\$4	Early	Late
# dollar questions asked									
Median									
AP sample	27	27	27	27	26	26	28	27	26
List sample	48	48	47	47	50	47	49	47	48
75 <sup>th</sup> percentile									
AP sample	38	38	37	39	37	38	38	39	37
List sample	58	58	58	57	60	58	59	57	59
90 <sup>th</sup> percentile									
AP sample	48	48	47	48	47	47	48	48	47
List sample	69	70	68	69	70	69	69	69	70
95 <sup>th</sup> percentile									
AP sample	53	54	51	54	53	53	53	54	52
List sample	78	77	80	77	79	77	79	78	77
% with a business									
AP sample	12.4	12.7	11.9	12.7	11.8	11.7	13.8	12.7	12.0
List sample	62.3	59.7	68.0	53.4	68.5	58.2	67.7	59.2	66.5
% with investment real estate									
AP sample	17.4	17.9	16.3	18.3	15.5	17.2	17.7	18.5	15.8
List sample	58.6	55.2	66.2	55.2	64.1	56.3	61.6	54.9	63.8
% with a pension from current job									
AP sample	19.0	18.7	19.7	19.2	19.1	17.6	21.5	18.6	19.8
List sample	35.4	33.7	39.0	32.6	39.9	32.5	39.2	33.4	38.2
% owning stock									
AP sample	17.5	17.5	17.5	17.3	18.0	17.7	17.2	17.2	17.9
List sample	60.2	57.9	65.4	57.6	64.5	58.8	62.2	58.4	62.8
% owning bonds									
AP sample	2.6	2.4	3.1	2.6	2.7	2.6	2.6	2.7	2.4
List sample	24.0	23.7	24.6	22.6	26.3	23.5	24.7	23.4	24.8
% owning mutual funds									
AP sample	15.7	17.0	12.5	16.6	13.7	16.5	14.1	17.1	13.5
List sample	43.1	43.6	41.9	43.4	42.6	43.0	43.3	42.9	43.5



**Table 6: Median, and 75<sup>th</sup>, 90<sup>th</sup> and 95<sup>th</sup> Percentiles of the Distribution of the Number of Missing Values for Dollar Variables, Various Sample Groups, AP and List Samples, 1998 SCF.**

	Full Sample	<u>Days</u>		<u>Attempts</u>		<u>Contacts</u>		<u>Multiple criteria</u>	
		<100	\$100	<8	\$8	<4	\$4	Early	Late
Missing values									
Median									
AP	1	1	1	1	1	1	1	1	1
List	3	3	5	3	4	3	4	3	4
75 <sup>th</sup> percentile									
AP	4	4	4	4	4	4	4	4	4
List	11	9	14	10	14	10	12	9	13
90 <sup>th</sup> percentile									
AP	9	8	9	9	8	8	9	9	8
List	26	24	30	23	30	24	29	23	30
95 <sup>th</sup> percentile									
AP	14	15	14	15	14	14	15	15	14
List	38	34	45	34	43	34	41	32	43

#### IV. Comparisons of Early and Late Cases with Nonrespondents

Whatever differences there may be between early and late cases, these are at least cases that we have been able to interview. A more pressing question is whether we can use some aspect of late cases to improve the compensations we make for the cases that we cannot interview. For the SCF, there are three sources of information available to compare directly the nonrespondents with the late respondents. First, information can be linked from the 1990 Census to the SCF using the census tract data from the AP sample design. For the list sample, the frame contains a nine-digit ZIP code, which can be used to map to a roughly equivalent census tract.<sup>23</sup> Second, for all cases, interviewers are asked to record some information about the neighborhood around the sampled address (in the case of the AP sample) or the home of the sampled person (in the case of the list sample). Third, there are frame data available for the list sample on some financial characteristics and a few demographic characteristics.

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<sup>23</sup>As shown in table 7b, in a small number of list sample cases, it was not possible to match to the Census data, presumably because the address was in an area with no residents in the 1990 Census, or because of deficiencies in the files used to match the Census data.

Table 7a shows the median level across SCF AP observations in various sample sub-groups of some attributes of the census tracts where the sample address is located. Over the census tracts of all actual survey participants in that sample, the median percent of people aged 25 and over with a college degree was 16.07 percent, and the corresponding figure for the census tracts of all nonrespondent cases was 18.59 percent; the medians for nonrespondent cases also show neighborhoods with higher incomes, higher home values, and somewhat higher rents. At least for these variables there is some correspondence between the late cases and the nonrespondents. Comparing the 75<sup>th</sup> percentiles rather than the medians (see appendix table A1) yields a similar impression. The weakness of the relationships may indicate that nonrespondents tend to be different from both early and late survey participants, or it may simply reflect the fact that the Census data were eight years out of date at the time of the 1998 SCF.

For the list sample, the Census data give a similar picture of the differences between respondents and nonrespondents (table 7b). However, the relationship between the late cases and the nonrespondents is a little weaker, and this impression is not changed by looking at the differences in the 75<sup>th</sup> percentiles (appendix table A2). For the list sample respondents, there is an additional data issue beyond the timeliness of the Census data: it appears that a fair proportion of list sample cases had addresses that were not the respondent's home address—most often in such cases, the address provided was a business address. Thus, there are likely to be situations where the census tract characteristics differ from those of the correct home address.

One limitation of the data based on interviewers' observations is that in some cases the neighborhood around the respondent's home was not observed. For the both samples, this situation may have occurred when the respondent lived in a gated community or other inaccessible area, or when the case was passed to a second interviewer for attempted completion by telephone before the neighborhood observations were completed. Again, the presence of non-home addresses for the list sample may be a problem for list sample cases. Nonetheless, a few things stand out at least for the nonrespondent neighborhoods in the AP sample: These areas were more likely to be purely residential, the interviewer was less likely to observe anyone on the street for purposes of describing the

racial/ethnic composition of the neighborhood. Notably, the nonrespondent neighborhoods were more likely to be unusually wealthy and less likely to be unusually poor. However, as with the census tract characteristics, there is no clear relationship between the late cases and the nonrespondent cases. For the list sample, it is much harder to draw any conclusions because of the very high fractions of unobserved neighborhoods. The only apparent relationship is that the nonrespondents and the late cases are quite similar in terms of the proportion of unobserved neighborhoods.

Clearer information on the nonrespondent cases in the list sample is available from the original frame data which provides income values for 1996. To separate out some of the effects of differential sampling rates, table 9 splits the list sample cases into those from strata 1-3, and those from the substantially wealthier strata 4-7. To give a sense of the relative shapes of the distributions, the table provides both the medians and the 75<sup>th</sup> percentiles of the distributions of the frame variables shown. Generally, the list sample respondents who were interviewed later tended to be younger than the earlier respondents. The nonrespondents had a median age about the same as that for the full set of participants, but right tail for the nonrespondents is more skewed. For strata 1-3, characteristics of the nonrespondents and the full set of participants are not very different, with the possible exception of financial income (the sum of interest and dividend incomes), and there is little difference between all participants and the late cases. For the higher-stratum cases, there are much clearer differences: the medians and 75<sup>th</sup> percentiles are substantially higher for nonrespondents than for the full set of participants. However, there is little consistent relationship between the values for the late cases and the nonrespondents. In the context of probit models using frame data along with with controls for the list sample strata, the nonrespondents are significantly different from both the late cases and the full population of participants.

**Table 7a: Median Over Observations in Various Sample Groups of Characteristics of Census Tract, AP Sample, 1998 SCF.**

	All participants	Days		Attempts		Contacts		Multiple criteria		Nonrespondents
		<100	\$100	<8	\$8	<4	\$4	Early	Late	
Avg. # people in HH	2.65	2.65	2.66	2.65	2.65	2.65	2.65	2.64	2.66	2.65
Age, all people										
% age 25+	64.43	64.61	64.30	64.71	63.75	64.55	64.37	64.70	63.85	65.13
% age 65+	11.78	12.14	10.69	12.17	10.83	12.04	11.12	12.14	10.94	11.91
Education, age 25+										
% less than HS	22.16	22.89	21.05	22.89	21.06	22.94	21.42	22.50	21.70	20.50
% HS degree	29.82	29.71	29.90	30.72	28.36	29.86	29.34	30.53	28.80	30.11
% some college	24.96	24.79	25.32	24.86	25.09	24.73	25.55	24.88	25.09	25.88
% college degree	16.07	15.78	16.70	15.77	17.70	15.42	17.86	15.91	16.66	18.59
Marital status, age 15+										
% married	57.97	57.43	58.38	58.18	55.99	57.97	57.97	58.09	57.20	58.19
% separated/divorced	10.39	10.31	10.48	10.11	11.07	10.27	10.72	10.17	10.76	10.04
% widowed	6.82	6.99	6.36	6.86	6.54	6.86	6.64	6.86	6.64	6.64
Race/ethnicity										
% white	90.92	90.92	90.92	91.55	88.72	90.93	90.91	91.31	90.07	92.10
% black	2.64	2.64	2.61	2.58	3.04	2.67	2.58	2.58	2.78	2.29
% Hispanic	1.77	1.66	2.01	1.59	2.44	1.59	2.27	1.57	2.27	2.22
% males 16+ working	76.44	75.89	77.86	76.02	77.24	76.05	77.00	76.04	76.99	77.13
% females 16+ working	58.21	57.93	59.94	57.99	59.29	57.90	58.79	58.01	58.66	58.88
Median income (\$)	28888	28112	29876	28942	28558	28171	29832	28888	28835	31176
% HHs in poverty	0.10	0.11	0.09	0.10	0.10	0.11	0.10	0.10	0.10	0.08
Avg. num. vehicles	1.85	1.84	1.87	1.86	1.81	1.85	1.85	1.86	1.82	1.87
Avg. commute (min.)	21.40	21.10	22.00	21.15	21.90	21.20	21.70	20.90	21.90	22.00
Median house value (\$)	73000	71250	76500	70200	78800	69600	78400	70100	76600	80500
Median rent (\$)	426	418	445	422	438	417	440	421	438	459
% owner-occ. HUs	68.10	68.59	67.38	70.29	63.55	69.93	69.20	70.21	65.47	68.23
% vacant HUs	6.95	6.96	6.93	7.01	6.80	7.11	6.69	7.03	6.79	6.21
<i>Memo item:</i>										
# obs. data not available	85	46	37	55	30	46	38	50	35	81

**Table 7b: Median Over Observations in Various Sample Groups of Characteristics of Census Tract, List Sample, 1998 SCF.**

	All participants	Days		Attempts		Contacts		Multiple criteria		Nonrespondents
		<100	\$100	<8	\$8	<4	\$4	Early	Late	
Avg. # people in HH	2.67	2.67	2.66	2.67	2.67	2.64	2.71	2.67	2.67	2.65
Age, all people										
% age 25+	68.64	68.48	69.21	68.43	69.33	68.63	68.69	68.39	69.21	69.70
% age 65+	12.16	11.90	12.87	12.06	12.72	12.06	12.61	11.99	12.71	12.71
Education, age 25+										
% less than HS	9.35	9.42	8.95	9.59	8.88	9.30	9.37	9.31	9.37	8.65
% HS degree	19.93	20.06	19.74	20.55	19.22	19.87	20.06	20.08	19.77	17.97
% some college	25.85	25.82	26.05	26.02	25.71	26.38	25.26	26.13	25.58	25.22
% college degree	40.13	39.87	41.62	39.49	41.34	39.72	41.32	40.06	40.26	43.88
Marital status, age 15+										
% married	61.21	61.37	60.79	61.21	61.05	60.97	61.79	61.46	60.94	60.89
% separated/divorced	8.78	8.77	8.86	8.78	8.79	8.93	8.39	8.71	8.87	8.54
% widowed	5.86	5.79	6.09	5.85	5.92	5.65	6.11	5.76	6.09	5.90
Race/ethnicity										
% white	93.68	93.58	93.92	93.11	94.23	93.57	93.87	93.57	93.90	93.41
% black	1.34	1.37	1.25	1.37	1.26	1.40	1.23	1.40	1.27	1.39
% Hispanic	2.92	2.72	3.35	2.89	2.95	2.89	2.94	2.87	3.09	2.97
% males 16+ working	79.38	79.36	79.40	79.36	79.41	79.55	79.24	79.45	79.36	79.31
% females 16+ working	58.83	59.18	57.54	59.14	58.11	59.61	57.53	59.39	57.82	57.70
Median income (\$)	47963	47363	50271	47222	49896	46712	49267	47616	48706	51361
% HHs in poverty	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Avg. num. vehicles	2.03	2.03	2.03	2.03	2.03	2.02	2.05	2.04	2.02	2.02
Avg. commute (min.)	23.60	23.50	23.80	23.70	23.60	23.60	23.70	23.60	23.60	23.70
Median house value (\$)	179300	173500	193200	180500	178150	172500	188450	182400	174500	205750
Median rent (\$)	643	636	663	638	649	647	639	642	648	682
% owner-occ. HUs	77.16	76.94	77.55	76.82	77.80	75.92	78.30	77.71	75.91	76.26
% vacant HUs	5.46	5.31	5.88	5.40	5.73	5.49	5.44	5.40	5.69	6.14
<i>Memo item:</i>										
# obs. data not available	8	5	3	6	2	4	4	4	4	8

**Table 8a: Percent Distribution of Various Sample Groups Over Selected Characteristics Measured by Interviewer Observation in Sample Neighborhoods, AP Sample, 1998 SCF.**

	All participants	Days		Attempts		Contacts		Multiple criteria		Nonre-pondents
		<100	\$100	<8	\$8	<4	\$4	Early	Late	
<b>Building type</b>										
Not observed	1.3	0.9	2.2	0.7	2.5	0.8	2.1	0.8	2.1	3.7
All residential	64.5	63.3	67.1	65.9	61.3	64.0	65.2	66.0	62.1	68.4
Mostly residential	25.1	26.8	21.2	24.4	26.6	25.5	24.3	24.1	26.6	22.2
Mixed res./non-res.	7.0	6.6	8.0	6.7	7.6	7.0	6.9	6.6	7.5	4.3
Mostly non-res.	1.5	1.8	0.7	1.5	1.3	1.7	1.1	1.7	1.1	1.1
None in view	0.7	0.7	0.7	0.7	0.7	0.9	0.4	0.8	0.6	0.3
<b>Condition of dwelling</b>										
Not observed	1.3	0.9	2.2	0.7	2.5	0.8	2.1	0.8	2.1	3.7
Worse than others	9.7	10.2	8.5	10.0	9.0	10.1	9.1	10.2	9.0	6.9
As good as others	82.7	82.7	82.8	83.0	82.1	82.5	83.1	82.8	82.7	84.5
Better than others	5.6	5.5	5.8	5.5	5.8	5.7	5.3	5.5	5.7	4.6
None in view	0.7	0.7	0.7	0.7	0.7	0.9	0.4	0.8	0.6	0.3
<b>Race/ethnicity of area</b>										
Not observed	1.3	0.9	2.2	0.7	2.5	0.8	2.1	0.8	2.1	3.7
Mostly black	7.7	8.1	7.0	7.2	9.0	7.9	7.4	7.4	8.4	4.0
Mostly Hispanic	3.1	2.8	3.7	2.3	4.7	2.6	3.9	1.9	4.9	1.3
Mostly non-Hisp. white	59.1	58.9	59.7	60.7	55.6	58.8	59.7	60.4	57.1	59.6
Black, Hispanic	2.0	2.4	0.9	1.7	2.5	2.0	1.8	1.8	2.2	1.1
Black, non-Hisp. white	7.9	8.3	6.7	8.6	6.2	8.7	6.4	8.6	6.7	7.2
Hisp. non-Hisp. white	4.6	4.2	5.4	4.5	4.8	4.0	5.6	4.5	4.8	3.6
Bl., Hisp.,non-Hisp. white	7.4	7.7	6.7	7.7	6.7	8.0	6.4	8.3	6.0	7.5
Other mixed	2.3	1.9	3.3	1.8	3.6	2.1	2.8	1.5	3.7	4.5
Other	0.9	0.9	0.7	0.8	0.9	1.0	0.7	1.0	0.6	1.3
No one observed	3.8	3.9	3.7	3.9	3.6	4.1	3.3	3.9	3.6	6.2
<b>Wealth of neighborhood</b>										
Not observed	1.3	0.9	2.2	0.7	2.5	0.8	2.1	0.8	2.1	3.7
Unusually wealthy	3.7	3.2	4.8	3.8	3.5	3.7	3.8	3.7	3.7	5.7
Unusually poor	10.2	11.0	8.5	10.6	9.4	11.4	8.2	9.3	9.3	4.3
Neither unus. wealthy/poor	84.8	84.9	84.4	84.9	84.6	84.1	85.9	84.6	85.0	86.3

**Table 8b: Percent Distribution of Various Sample Groups Over Selected Characteristics Measured by Interviewer Observation in Sample Neighborhoods, List Sample, 1998 SCF.**

	All participants	Days		Attempts		Contacts		Multiple criteria		Nonrepondents
		<100	\$100	<8	\$8	<4	\$4	Early	Late	
<b>Building type</b>										
Not observed	21.1	16.7	31.0	16.1	29.3	18.0	25.3	14.9	29.8	33.8
All residential	64.1	67.4	56.8	68.1	57.6	66.0	61.6	68.5	58.1	54.8
Mostly residential	11.0	11.6	9.5	11.9	9.5	11.8	9.9	12.3	9.1	8.2
Mixed res./non-res.	2.4	2.5	2.2	2.4	2.5	2.7	2.0	2.6	2.1	1.7
Mostly non-res.	0.6	0.8	0.2	0.6	0.5	0.8	0.3	0.6	0.6	1.0
None in view	0.7	1.0	0.2	0.9	0.5	0.7	0.8	1.0	0.3	0.5
<b>Condition of dwelling</b>										
Not observed	21.2	16.7	31.0	16.1	29.3	18.1	25.3	15.0	29.8	33.8
Worse than others	4.3	4.8	3.0	4.6	3.7	5.1	3.1	5.2	3.0	2.3
As good as others	68.9	71.8	62.5	72.4	63.3	70.9	66.4	72.8	63.5	60.0
Better than others	4.9	5.6	3.3	5.9	3.2	5.2	4.4	6.0	3.4	3.5
None in view	0.7	1.0	0.2	0.9	0.5	0.7	0.8	1.0	0.3	0.5
<b>Race/ethnicity of area</b>										
Not observed	21.1	16.7	31.0	16.1	29.3	18.0	25.3	14.9	29.8	33.7
Mostly black	0.9	1.2	0.2	1.2	0.4	1.2	0.5	1.1	0.5	0.6
Mostly Hispanic	0.8	1.2	0.0	1.1	0.4	0.8	0.8	1.0	0.5	0.4
Mostly non-Hisp. white	56.9	59.0	52.3	59.6	52.5	58.4	54.9	61.6	50.4	47.3
Black, Hispanic	0.5	0.4	0.7	0.5	0.4	0.5	0.5	0.6	0.3	0.2
Black, non-Hisp. white	1.6	1.9	0.9	1.9	1.1	2.0	1.1	2.0	1.1	1.3
Hisp. non-Hisp. white	1.7	1.5	2.0	1.5	1.9	1.5	1.9	1.7	1.6	0.8
Bl., Hisp.,non-Hisp. white	2.1	2.5	1.3	2.6	1.4	2.4	1.7	2.3	1.9	1.2
Other mixed	2.6	2.7	2.4	3.3	1.4	3.4	1.6	3.1	1.9	2.8
Other	0.3	0.5	0.0	0.4	0.2	0.3	0.3	0.5	0.2	0.6
No one observed	11.4	12.4	9.3	11.7	11.1	11.4	11.5	11.1	11.8	11.1
<b>Wealth of neighborhood</b>										
Not observed	21.1	16.7	31.0	16.1	29.3	18.0	25.3	14.9	29.8	33.7
Unusually wealthy	30.6	30.9	29.9	30.7	30.6	30.3	31.1	32.1	28.6	28.9
Unusually poor	1.1	1.5	0.2	1.4	0.5	1.0	1.1	1.5	41.1	0.4
Neither unus. wealthy/poor	47.2	50.9	38.8	51.8	39.5	50.6	42.5	51.5	0.5	36.2

**Table 9: Sample Frame Data on 1996 Characteristics of Respondent by Various Groups and of Nonrespondents, List Sample, 1998 SCF.**

	All participants	Days		Attempts		Contacts		Multiple criteria Nonrespondents		
		<100	\$100	<8	\$8	<4	\$4	Early	Late	pondents
<i>Age of filer (years)</i>										
Median: str. 1-3	48	48	47	49	45	50	45	49	45	49
Median: str. 4-7	54	54	55	55	53	56	52	55	53	54
75%ile: str 1-3	58	60	54	61	53	61	54	61	54	62
75%ile: str. 4-7	64	64	65	65	63	66	62	66	63	66
<i>All figures below in thousands of dollars</i>										
<i>Wages</i>										
Median: str. 1-3	21.5	20.7	22.4	18.3	28.1	22.8	18.9	18.5	27.2	22.3
Median: str. 4-7	47.2	49.1	42.1	44.1	54.0	41.4	54.9	41.4	56.8	70.4
75%ile: str 1-3	68.1	66.7	89.5	66.7	74.0	67.5	68.6	64.8	83.5	65.0
75%ile: str. 4-7	240.0	231.8	279.2	215.7	282.6	198.9	289.6	199.1	291.2	379.1
<i>Financial income</i>										
Median: str. 1-3	0.8	0.7	0.9	0.9	0.6	1.0	0.5	0.9	0.6	1.4
Median: str. 4-7	77.4	69.6	97.7	73.3	83.1	79.1	76.4	74.8	81.2	181.8
75%ile: str 1-3	5.7	6.7	4.3	6.7	4.2	7.3	3.7	6.8	3.9	9.2
75%ile: str. 4-7	361.8	338.7	391.6	327.1	439.2	361.8	355.0	330.6	391.6	900.5
<i>Capital gains/losses</i>										
Median: str. 1-3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Median: str. 4-7	15.2	16.7	13.8	14.7	17.4	17.8	12.5	16.7	13.0	29.5
75%ile: str 1-3	0.9	0.8	1.5	1.1	0.5	1.7	0.2	0.9	1.1	0.7
75%ile: str. 4-7	248.1	211.1	274.9	225.0	260.0	275.6	163.8	235.1	251.4	527.9
<i>Adjusted gross income</i>										
Median: str. 1-3	45.7	45.5	46.4	45.3	46.1	48.6	41.0	45.9	43.3	49.2
Median: str. 4-7	686.8	634.1	814.9	632.0	773.9	640.2	766.0	612.9	835.5	1035.0
75%ile: str 1-3	103.5	103.5	103.6	102.2	104.5	104.1	101.0	97.8	107.7	99.8
75%ile: str. 4-7	2179.0	2157.0	2230.0	2180.0	2176.0	2275.0	2057.0	2157.0	2212.0	4335.0
<i>Itemized deductions</i>										
Median: str. 1-3	8.2	7.6	8.6	7.6	8.7	7.7	9.1	7.6	8.8	8.7
Median: str. 4-7	59.7	55.6	63.8	57.2	61.4	57.1	60.3	55.6	63.2	101.7
75%ile: str 1-3	17.6	17.3	18.0	16.8	21.5	16.8	20.9	16.4	22.5	19.5
75%ile: str. 4-7	216.9	207.8	250.2	220.5	215.8	229.6	206.3	222.2	215.4	413.6
<i>Charitable deductions</i>										
Median: str. 1-3	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Median: str. 4-7	5.7	5.6	5.8	5.6	5.7	5.6	5.7	5.4	6.2	7.7
75%ile: str 1-3	1.2	1.2	1.1	1.2	1.4	1.2	1.2	1.3	1.0	1.3
75%ile: str. 4-7	19.7	18.3	22.5	20.0	19.6	20.9	19.2	19.2	20.3	37.1
<i>Real estate deduction</i>										
Median: str. 1-3	0.4	0.1	0.7	0.0	1.1	0.0	1.0	0.0	0.9	0.6
Median: str. 4-7	6.1	5.8	7.1	5.7	7.2	5.5	7.3	5.5	7.3	8.9
75%ile: str 1-3	2.7	2.6	3.4	2.6	3.0	2.5	3.5	2.5	3.4	3.1
75%ile: str. 4-7	14.0	12.8	16.3	13.3	15.3	14.2	13.8	12.8	15.1	21.6



#### **IV. Summary and Future Research**

The data from the SCF presented here suggest that there are differences in some of the economic and other characteristics of respondents and nonrespondents, and that these differences are present in a weaker form in the contrast between the cases that are early and those that are late in one of the senses defined here early and late cases. However, for general purposes, the differences between the early and late cases is not dependably strong. It could be that we are dealing with relatively complicated mixtures of people, some of whom will almost never cooperate, some of whom will agree to be interviewed with modest efforts, and some of whom are very hard to interview. With even random variations of effort, it could be extremely difficult to untangle the underlying relationships without some prior sense of the structure. However, it could also be that the definitions of lateness used in this paper as proxies for difficulty are not the ones we really want: We may not be observing reliable indicators of lateness or we may need to filter the existing indicators through a more complex model accounting for managerial and behavioral factors.

The deployment of interviewers has a strong effect on the timing of work, and it almost certainly has a strong effect on the rate at which interviewers attempt to complete cases. Unfortunately, the decisions made in allocating field personnel are rarely captured in a systematic way that would be useful for analysis. Moreover, it would be very hard to believe that management decisions affecting respondents' and interviewers' incentives do not have a very powerful effect on the arrangement of work at the level that is clearly visible only to the interviewers. To keep their jobs or to be eligible for bonus pay, interviewers typically have to complete a specified quota of cases. Such standards alone have the effect of steering interviewers away from efforts on cases that may be or may be expected to be particularly difficult. Field management staff review cases in a way that makes it highly unlikely that all such cases would be ignored altogether, but even a marginal shading of effort could cumulate to a serious problem. The fact that largely equivalent groups in the AP sample and the list sample have such widely differing response rates and that the list sample cases are so much more likely to be censored in terms of their outcome underscores this point. Interviewers know that, unconditionally, list sample cases are more difficult than AP cases, but they do not have access to the stratifying information that

would let them know when list cases are the relatively “easy” ones. The outcome appears to be a general shying away from list sample cases.

To make further progress in understanding and coping with unit nonresponse, research is needed on many fronts. At this point, probably no area is as little understood as the nature of the incentives that guide the performance of field work and the application of effort to cases. To make progress here, additional measurements are needed. Plans are underway with NORC colleagues to devise new data capture techniques for the 2001 SCF.

A related approach that may help in some cases to control nonresponse bias is more active management of “field stratification,” which I take to mean the integral across all field-related activities that shape the distribution of types of completed cases. If one could identify cases that were more likely to be in the nonrespondent group—as wealthier sample units appear to be in the SCF—then it may be possible to monitor and control the allocation of effort—such as more intensive refusal conversion—to these cases during the field period. This action is much more likely to be feasible with surveys using some type of computer-assisted interviewing where it is possible to view the status of data collection at very frequent intervals. A benefit is that it could be possible to increase estimation efficiency and to avoid or minimize dependence on some types of post-stratification of the survey weights. A possible problem in such cases is differential treatment effects. If the very act of trying harder to get a completed case tends to change a respondent’s behavior, this approach could induce complex response biases. However, differential effort is routinely applied for other purposes in very many surveys, but we typically have only fragments of the information that we would need to understand the effects of that effort. The way forward with both traditional practice and more targeted practice is recognizing the importance of field operations and improving our ability to measure the key dimensions of that work.

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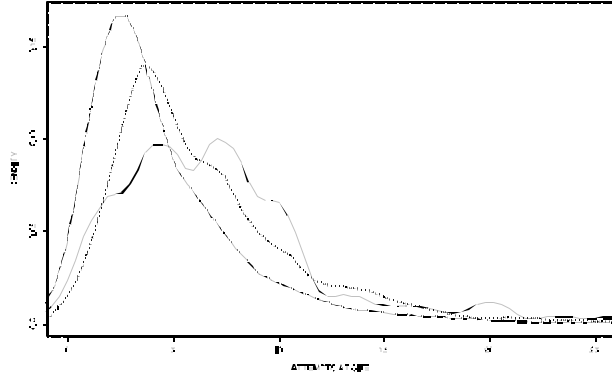
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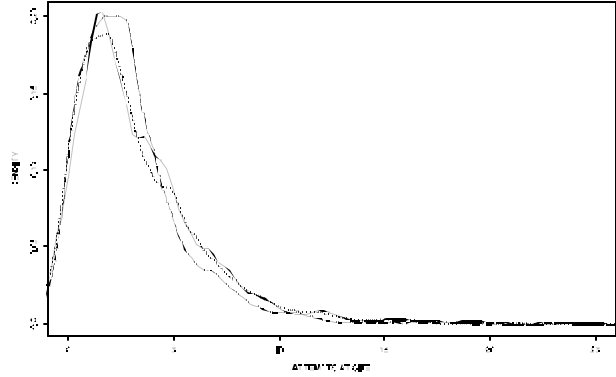
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## **APPENDIX**

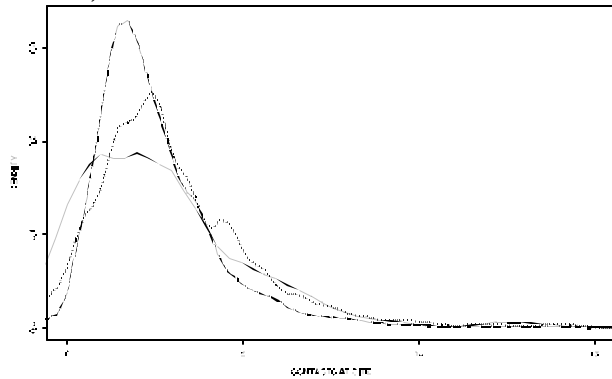
**Figure A1a: Density of On-Site Attempts; AP Sample; Completed, Refused, and Censored Cases; 1998 SCF.**



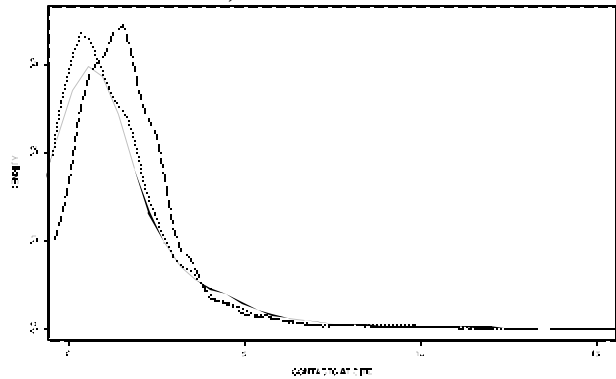
**Figure A1b: Density of On-Site Attempts; List Sample; Completed, Refused, and Censored Cases; 1998 SCF.**



**Figure A2a: Density of On-Site Contacts; AP Sample; Completed, Refused, and Censored Cases; 1998 SCF.**



**Figure A2b: Density of On-Site Contacts; List Sample; Completed, Refused, and Censored Cases; 1998 SCF.**



**Table A1: 75<sup>th</sup> Percentile Over Observations in Various Sample Groups of Characteristics of Census Tract, AP Sample.**

	All participants	Days		Attempts		Contacts		Multiple criteria		Nonrespondents
		<100	\$100	<8	\$8	<4	\$4	Early	Late	
Avg. # people in HH	2.91	2.91	2.93	2.91	2.93	2.91	2.91	2.91	2.93	2.90
Age, all people										
% age 25+	68.46	68.48	68.11	68.46	68.39	68.39	68.74	68.40	68.52	69.54
% age 65+	15.80	16.04	15.19	16.04	15.05	15.85	15.69	16.04	15.35	16.07
Education, age 25+										
% less than HS	32.34	32.80	31.27	32.33	32.37	32.84	30.64	32.37	32.15	29.57
% HS degree	36.05	36.03	36.13	36.40	34.68	36.19	35.69	36.29	35.10	36.05
% some college	30.34	30.31	30.34	30.31	30.74	30.28	30.99	30.31	30.47	30.95
% college degree	26.57	25.80	27.89	25.80	28.38	25.99	26.97	25.94	26.95	28.38
Marital status, age 15+										
% married	65.04	64.92	65.39	65.40	63.97	65.34	64.51	65.39	64.17	65.34
% s/d	13.92	13.85	13.94	13.44	14.71	13.73	14.05	13.66	14.16	13.24
% widowed	9.48	9.69	8.76	9.62	9.09	9.62	9.19	9.62	9.16	9.09
Race/ethnicity										
% white	97.18	97.33	96.68	97.57	95.99	97.24	96.96	97.57	96.48	97.24
% black	11.42	13.14	9.45	11.50	11.21	13.85	9.44	12.12	11.18	8.75
% Hispanic	7.03	6.99	7.66	5.53	9.76	5.94	9.17	6.09	8.50	7.07
% males 16+ working	81.69	81.22	82.82	81.23	82.64	81.12	82.68	81.26	82.46	82.43
% females 16+ working	64.66	64.16	66.26	63.83	66.65	64.16	65.43	64.01	65.48	64.97
Median income (\$)	37440	37027	38555	37351	37933	37351	37933	37027	38223	40079
% HHs in poverty	0.18	0.19	0.17	0.18	0.18	0.19	0.17	0.18	0.18	0.15
Avg. num. vehicles	2.11	2.11	2.12	2.14	2.08	2.12	2.11	2.14	2.09	2.15
Avg. commute (min.)	25.20	25.20	25.25	25.10	26.00	25.10	25.40	25.05	25.90	25.80
Median house value (\$)	116300	111300	119200	108200	128900	107800	131900	107800	126900	131900
Median rent (\$)	534	521	553	531	552	521	552	523	545	593
% owner-occ. HUs	81.41	81.38	81.46	81.68	80.10	81.43	80.81	81.68	80.64	81.82
% vacant HUs	11.48	11.41	11.90	11.46	11.81	11.94	10.83	11.46	11.81	10.20
<i>Memo item:</i>										
# obs. data not available	85	46	37	55	30	46	38	50	35	81



**Table A2: 75<sup>th</sup> Percentile Over Observations in Various Sample Groups of Characteristics of Census Tract, List Sample.**

	All participants	Days		Attempts		Contacts		Multiple criteria		Nonrespondents
		<100	\$100	<8	\$8	<4	\$4	Early	Late	
Avg. # people in HH	2.96	2.97	2.96	2.96	2.97	2.94	2.99	2.95	2.97	2.95
Age, all people										
% age 25+	73.67	73.48	74.50	73.22	74.30	73.79	73.51	73.18	74.37	75.89
% age 65+	17.00	16.70	17.97	16.49	17.95	16.58	17.80	16.39	18.04	18.16
Education, age 25+										
% less than HS	17.52	17.92	16.55	18.38	16.47	17.55	17.23	17.81	17.23	16.14
% HS degree	28.28	28.92	27.54	28.98	27.41	28.19	28.47	28.99	27.54	25.90
% some college	30.77	30.59	30.98	30.93	30.31	31.35	29.83	30.88	30.44	29.91
% college degree	56.80	56.96	56.58	55.89	57.99	56.12	57.56	56.78	57.35	57.91
Marital status, age 15+										
% married	67.36	67.45	66.98	67.35	67.39	67.29	67.52	67.37	67.35	67.33
% s/d	11.72	11.59	12.35	11.98	11.53	12.12	11.44	11.86	11.68	12.01
% widowed	8.27	8.14	8.41	8.13	8.49	8.07	8.62	8.09	8.47	8.25
Race/ethnicity										
% white	97.07	97.06	97.07	96.97	97.22	97.07	97.05	97.15	97.04	97.07
% black	3.94	4.20	3.44	4.16	3.61	4.13	3.88	4.00	3.89	3.73
% Hispanic	6.03	5.94	6.22	6.20	5.72	6.21	5.66	6.03	6.03	6.20
% males 16+ working	83.76	83.83	83.66	83.82	83.71	83.93	83.42	83.81	83.68	83.42
% females 16+ working	65.08	65.20	64.74	64.83	65.24	65.51	64.15	65.33	64.83	64.41
Median income (\$)	67563	65214	71284	66832	68986	65201	69516	66399	69504	71122
% HHs in poverty	0.08	0.08	0.08	0.08	0.07	0.08	0.07	0.08	0.08	0.08
Avg. num. vehicles	2.32	2.33	2.29	2.32	2.32	2.31	2.34	2.33	2.30	2.33
Avg. commute (min.)	27.40	27.35	27.70	27.40	27.25	26.90	28.10	27.35	27.50	27.55
Median house value (\$)	323200	308750	357500	315100	333250	308500	337800	316300	330100	374900
Median rent (\$)	874	865	905	875	872	854	894	872	875	919
% owner-occ. HUs	87.96	87.97	87.95	87.61	88.54	86.61	89.40	87.74	88.33	88.80
% vacant HUs	9.82	9.36	11.22	9.56	10.10	10.02	9.60	9.49	10.24	11.10
<i>Memo item:</i>										
# obs. data not available	8	5	3	6	2	4	4	4	4	8

