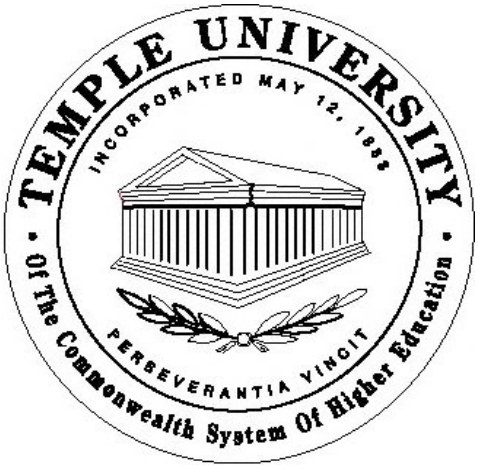
Temple University
Institute for Survey Research

2003
Philadelphia Area Survey
Pennsylvania Life Survey
PAS/PLS

Data Collection Report



Report Summary

During the Fall of 2003, the Institute for Survey Research (ISR) conducted the data collection phase of the 2003 Philadelphia Area Survey/Pennsylvania Life Survey (PAS/PLS) for Temple University and the William Penn Foundation. This report on the survey experience is intended to provide methodological detail to aid in interpreting study results and to inform the next iteration of the survey.

Interviews were conducted with 1,543 heads of households; 1,028 in the nine-county Philadelphia metropolitan region and an additional 515 from the 62 counties of Pennsylvania which were not included in the Philadelphia region. All interviews were conducted via Computer Assisted Telephone Interviewing (CATI) from ISR's Center for Telephone Interviewing (CTI). Random Digit Dialing (RDD) was used, and a few brief screening questions were asked to select the eligible respondent within a household. The eligible respondent was any adult (18 and older) who considered him/herself to be a head of the household. The interview was planned to average 30 minutes in length and included questions about housing choices, neighbors and neighborhoods, public services, employment, and community relations and involvement.

A hard copy draft of the core questionnaire was ready for programming in late July 2003, and the supplement approximately one week later. Programming began immediately, and the first CATI version became available for testing in early August. After several rounds of internal testing, the instrument was pre-tested with respondents of different ages, ethnicities, economic and geographic backgrounds. The questionnaire was then revised, finalized and programmed.

An automated call scheduler was programmed to organize the sample and to maximize opportunity for household contact by selecting cases to be called at strategically selected times by the appropriate staff. The original sample was comprised of 9,059 telephone numbers, 6,098 for PAS and 2,961 for PLS. The sample was released to CATI in replicates of varying size over the course of the data collection period in order to utilize as few numbers as possible to obtain the required number of interviews. The PAS sample included telephone numbers in nine counties, four in southern New Jersey and five in southeastern Pennsylvania. The PLS sample included telephone numbers in each of the 62 Pennsylvania counties not included in the PAS sample, distributed proportionally to population.

Three training conferences were conducted in September, 2003, and a total of 58 interviewers, 12 interviewing supervisors, and five assistants were trained on the survey. As part of training, all staff members were expected to be familiar with the contents of the PAS/PLS Interviewer's Manual which included a study overview, a chapter on the interviewer's role, guidelines for CATI contacting, screening, and interviewing respondent as well as a section listing "frequently asked questions" and their responses. Following lecture style presentations, interviewers were given the opportunity to role-play and practice interviewing techniques as a group.

Follow-up booster training sessions were also held in which interviewers listed situations from personal experience, and staff facilitated brainstorming and role-playing to demonstrate successful refusal conversion techniques.

Interviewing started on September 15, 2003 for both PAS and PLS. Data collection for PLS ended on November 6, while PAS data collection continued through December 11, 2003.

The average length of the interview was actually about 5 minutes longer than the planned 30 minutes, with the shortest interview taking only 10 minutes, and the longest spanning more than two hours.

All respondents who provided a name and a complete mailing address were sent a $10 postal money order upon completion of their interview. A two-sided one-page validation/verification letter and a business reply envelope accompanied the money order. The validation letter asked 12 questions, one factual question from within the interview and 11 about the interview, and provided an opportunity for comments about the interview and/or the interviewer. No evidence of invalid cases or faulty interviewing was found from this process.

As data collection progressed, the study encountered the usual problems that have contributed to the decline of response rates on RDD studies in recent years. These include the frustration of the public with telemarketers, caller ID and call-blocking technology, and discouragement of interviewers by large amounts of non-working, non-residential and non-assigned numbers. However, in addition to the usual RDD problems, there was tremendous furor over the "do not call list" in Pennsylvania during this study's field period, even resulting in a call to ISR from the Commonwealth's Do Not Call committee. A result was that we could not employ our usual refusal conversion attempts. The circumstances cited above resulted in a very high refusal rate of almost 50%.

Fortunately, low response rates, while clearly not preferred, are only indicators of potential, not actual, problems. Since the major concern with non-response is sample representativeness, a critical indicator of survey quality is the match between interview and population data on key demographics. In our study, the match for the PAS, the PLS and the U.S. Census for gender, ethnicity, and age of heads of household is generally quite good. Also, other examinations of the data show no evidence of non-

response bias. For example, regression analysis reveals that non-respondents did not significantly differ from respondents on critical variables such as geographic location, education, or income level of household heads.

TABLE OF CONTENTS

I: Overview of the Study

During the Fall of 2003, the Institute for Survey Research (ISR) conducted the data collection phase for the 2003 Philadelphia Area Survey/Pennsylvania Life Survey (PAS/PLS) for Temple University and the William Penn Foundation. This study seeks to produce reliable and accurate information on issues related to quality of life in the Philadelphia region (PAS) and the state of Pennsylvania (PLS), and where possible to determine the extent to which public perceptions correspond to actual conditions in these areas. The study further seeks to establish benchmark measures against which future data could be compared in order to assess change in key measures and the citizenry's perceptions of quality of life.

To this end, 1,543 telephone interviews were conducted with heads of households; 1,028 interviews in the nine-county Philadelphia metropolitan region and an additional 515 from the 62 counties of Pennsylvania which were not included in the Philadelphia region. All interviews were conducted via Computer Assisted Telephone Interviewing (CATI) from ISR's Center for Telephone Interviewing (CTI) on Temple University's main campus in Philadelphia, PA. Randomly generated telephone numbers were called and a few brief screening questions were used to select the eligible respondent within a household. The eligible respondent was any adult (18 and older) who considered him/herself to be a head of the household. The interview was planned to average 30 minutes in length and included questions about housing choices, neighbors and neighborhoods, public services, employment, and community relations and involvement.

A. *The Instrument*

A hard copy draft of the core questionnaire was ready for programming in late July 2003 and the supplement approximately one week later. Programming began immediately, and the first CATI version became available for testing on August 6, 2003. After several rounds of internal testing by Field Administrators and support staff, the instrument was scheduled for a formal pre-test.

The pre-test briefing was held on August 18, 2003. Attending were four experienced interviewers, the Field Administrator, project direction staff including graduate assistants, and CATI programmers. The pre-test objectives were outlined, and a mock CATI interview was administered using a round robin format. Seventeen previously recruited pre-test respondents were assigned to the interviewers, four each to three interviewers and five to the final interviewer.

A total of 17 pre-test interviews were conducted, 16 with the previously recruited respondents and one with a supplemental replacement. Respondents were recruited to represent the spectrum of demographics expected in the actual PAS/PLS sample. Of the 17 respondents, five were male and 12 were female; eight were African American, one was Hispanic, and eight were white/non-Hispanic. Pretest respondents ranged in age from 22 to 68 with an average age of 41. They resided in Western Pennsylvania, Southern New Jersey, Pennsylvania counties bordering Philadelphia, and 10 different City of Philadelphia zip code areas. The educational level of the 17 pretest respondents ranged from less than high school to graduate degrees; their annual household income ranged from less than $15,000 to more than $100,000.

The pre-test debriefing was held on August 22, 2003. Attending were the four pre-test interviewers, the Field Administrator, project direction staff, and CATI programmers. The instrument was reviewed

thoroughly, question-by-question, and many revisions were suggested. Some issues were resolved that day and were approved for CATI programming revisions, while others were left on the table for further discussion.

Programming and internal testing of each round of revisions continued until the CATI instrument was finalized on September 6, 2003.

B. *The Call Scheduler*

An automated call scheduler was programmed to organize the sample and to maximize opportunity for household contact by selecting cases to be called at strategically selected times by the appropriate staff. The original call scheduler program included the following basic principles:

- The cold calling hours for PAS/PLS were 10:00am through 9:00pm Mondays through Fridays and from noon through 8:00pm on both Saturdays and Sundays.
- These calling hours were divided into 13 call slots, five on weekdays and four on weekends.
- Once called but not screened, a case was eligible to be attempted again only after at least one full time slot had elapsed since the prior contact attempt.
- All unscreened cases were weighted in the queue so that those with fewer prior call attempts were accessed before those with a greater number of prior attempts.
- Each unscreened case was eligible to be called only once in 11 of the 13 slots and three times in each of the remaining two prime calling time slots.
- Each unscreened case was to be attempted a total of 17 times, once each in 11 slots and three times each in the remaining two slots, and then finalized if still unscreened.
- Only interviewers who had been designated as refusal converters were issued cases with a prior refusal in the call history.

Call Scheduler Calling Slots

Monday through Friday	*Saturday*	*Sunday*
Slot #1 1 Call 10:00am – 11:59am	No Calling	
Slot #2 1 Call 12:00pm – 2:59pm	**Slot #6** 1 Call 12:00pm – 1:59pm	**Slot #10** 1 Call 12:00 – 1:59pm
Slot #3 1 Call 3:00pm – 5:29pm	**Slot #7** 1 Call 2:00pm – 4:59pm	**Slot #11** 1 Call 2:00pm – 4:59pm
Slot #4 3 Calls 5:30pm – 6:59pm	**Slot #8** 1 Call 5:00pm – 6:29pm	**Slot #12** 1 Call 5:00pm – 6:29pm
Slot #5 3 Calls 7:00pm – 8:59pm	**Slot #9** 1 Call 6:30p – 7:59pm	**Slot #13** 1 Call 6:30pm – 7:59pm

An example of the **minimum** number of call attempts and calendar days required to finalize an unscreened case using this Call Scheduler was as follows:

1. Slot 1 Monday, September 15
2. Slot 3 Monday, September 15
3. Slot 5 Monday, September 15
4. Slot 2 Tuesday, September 16
5. Slot 4 Tuesday, September 16
6. Slot 6 Saturday, September 20
7. Slot 8 Saturday, September 20
8. Slot 10 Sunday, September 21
9. Slot 12 Sunday, September 21
10. Slot 4 Monday, September 22
11. Slot 4 Tuesday, September 23
12. Slot 5 Wednesday, September 24
13. Slot 5 Thursday, September 25
14. Slot 7 Saturday, September 27
15. Slot 9 Saturday, September 27
16. Slot 11 Sunday, September 28
17. Slot 13 Sunday, September 28

TOTAL: 17 attempts over 13 days

II: The Sample

The sample was comprised of 9,059 telephone numbers, 6,098 for PAS and 2,961 for PLS. It was generated by GENESYS Sampling Systems, a full service sampling company that has provided a wide variety of services to the survey research community since 1987. Since many of the phone numbers in a Random Digit Dial (RDD) sample could be non-residential or non-working numbers, GENESYS has developed a purging process called GENESYS-plus to eliminate a large portion of potentially ineligible numbers. This purged sample was purchased and released to CATI in replicates of varying size over the course of the data collection period. Sample was released in this manner in an effort to utilize as few numbers as possible to obtain the required number of interviews, thus maximizing the overall response rate. The sample release schedule was as follows:

Release Date	PAS	PLS	Total
9/15/03	3,454	1,561	5,015
9/23/03	700	435	1,135
9/29/03	462	217	679
10/01/03	226	218	444
10/13/03	1,121	530	1,651
11/20/03	135	- 0 -	135
TOTAL:	6,098	2,961	9,059

The PAS sample included telephone numbers in nine counties, four in southern New Jersey and five in southeastern Pennsylvania. The sample was distributed throughout these nine counties as follows:

Pennsylvania		New Jersey	
Bucks County	696 cases	Burlington County	497 cases
Chester County	573 cases	Camden County	594 cases
Delaware County	680 cases	Gloucester County	303 cases
Montgomery County	1,061 cases	Salem County	74 cases
Philadelphia County	1,620 cases	NJ Total:	1,468 cases
PA Total:	4,630 cases		

The PLS sample included 2,961 telephone numbers in the 62 Pennsylvania counties not included in the PAS sample. The sample was distributed throughout these 62 counties as follows:

County	Cases	County	Cases	County	Cases
Adams	27	Erie	91	Montour	4
Allegheny	511	Fayette	47	Northampton	113
Armstrong	15	Forest	4	Northumberland	33
Beaver	54	Franklin	44	Perry	11
Bedford	18	Fulton	5	Pike	19
Berks	130	Greene	12	Potter	9
Blair	39	Huntington	13	Schuylkill	50
Bradford	23	Indiana	25	Snyder	13
Butler	64	Jefferson	17	Somerset	23
Cambria	52	Juniata	3	Sullivan	6
Cameron	2	Lackawanna	78	Susquehanna	20
Carbon	22	Lancaster	158	Tioga	15
Centre	46	Lawrence	27	Union	14
Clarion	16	Lebanon	40	Venango	20
Clearfield	24	Lehigh	93	Warren	10
Clinton	14	Luzerne	114	Washington	69
Columbia	22	Lycoming	40	Wayne	27
Crawford	29	McKean	15	Westmoreland	130
Cumberland	78	Mercer	46	Wyoming	11
Dauphin	94	Mifflin	14	York	126
Elk	13	Monroe	59		

III: The Interviewing and Supervising Staff

Two half-day cross-training conferences were conducted on September 12, 2003. A total of 36 experienced interviewers, 12 supervisors, and three administrative assistants were trained at these half-day sessions. One full-day training conference was conducted on September 13, 2003 for 22 new interviewers, graduate and administrative assistants. All training was conducted at ISR's main office. A total of 58 interviewers, 12 CTI supervisors, and five assistants were trained on PAS/PLS.

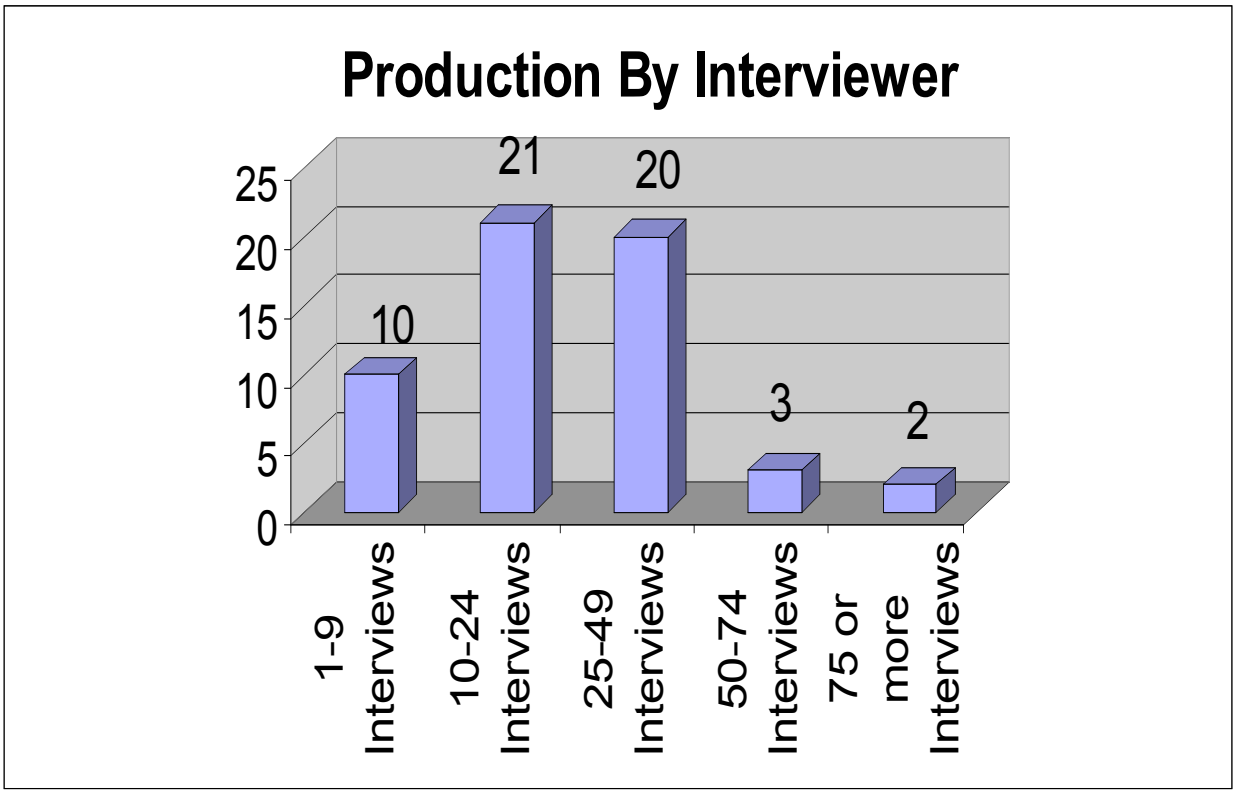
As part of training, all staff was expected to be familiar with the contents of the PAS/PLS Interviewer's Manual. It includes an overview of the study, a chapter on the interviewer's role, and guidelines for CATI contacting, screening, and interviewing respondents. The manual also includes a section listing "frequently asked questions" and their responses. Following the lecture style presentation, interviewers were given the opportunity to role-play and practice interviewing techniques as a group.

After approximately 10 days of data collection, all PAS/PLS staff attended additional training in the form of a seminar on the topic of avoiding and overcoming refusals. Each staff member attended one of the three two-hour sessions offered on this topic. These sessions began with a brief lecture on representative sample in a random digit dial (RDD) study and the importance of refusal conversion in social science survey research. The remainder of the seminars' time was dedicated to a highly interactive presentation of refusal scenarios and practical ways to overcome them. Interviewers listed situations from personal experience, and the Field Administrator facilitated brainstorming and role-playing to demonstrate successful refusal conversion techniques.

IV: Data Collection

A. *Pace and Production of Interviewing*

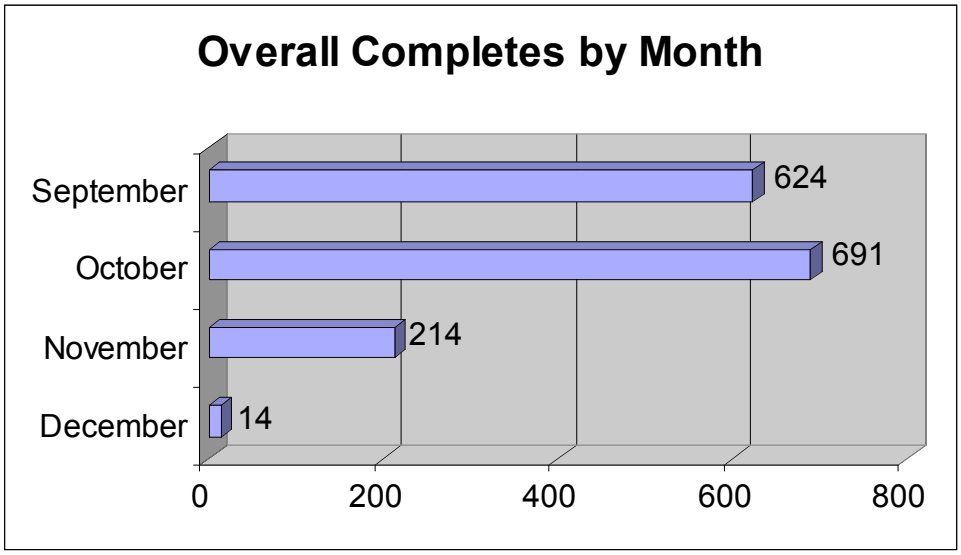
Production interviewing started on September 15, 2003 for both PAS and PLS. Data collection for PLS ended on November 6, 2003 after completing 515 PLS interviews. PAS data collection continued through December 11, 2003, completing 1,028 PAS interviews. A combined total of 1,543 interviews was completed for PAS/PLS. Of the 58 interviewers trained on this study, 56 (96.6%) completed at least one interview. The average production per interviewer was just under 26 interviews. The majority of interviews were conducted by the 56 interviewers; the remainder were conducted by supervisors, administrative assistants, the Graduate Assistant, and the Field Administrator.

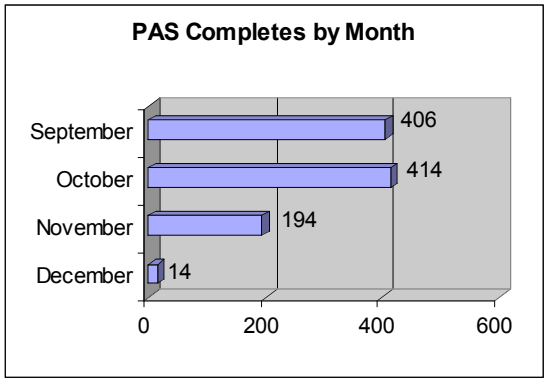


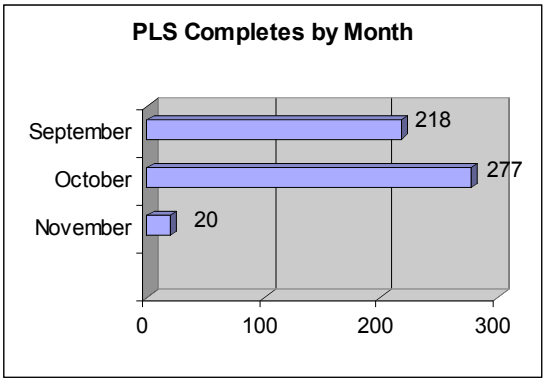
Interviewing began with an energetic surge as 54 interviews were conducted on the first day and 317 in the first week. The pace of production ebbed over time as a result of direct refusals and households who avoided possible participation by screening calls through answering machines and call management systems. Many call management tools, such as caller identification displays, are invisible to the data collector but greatly affect the data collection effort's outcome. Unfortunately, an accurate measurement of the effect of these silent devices is unavailable. However, other call management methods, such as call intercept and name announcement software, are audible and measurable. These call management methods were identified for 1,181 (13%) of the cases in the sample overall, 837 (13.7%) in PAS and 344 (11.6%) in PLS. Not surprisingly, 1,022 (86.5%) of those 1,181 cases remained unscreened without any direct household contact by the end of the data collection effort while only 56 (4.7%) became completed interviews.

As the sample became more thoroughly worked and calling slots became filled, the pace of production slowed dramatically. A combination of scheduled interviewing hours and respondent availability caused an over-abundance of call attempts in Slot #3 (3:00pm through 5:29pm on weekdays) very early in the data collection period. Since only one call attempt was permitted in that slot, the call scheduler lacked available cases other than scheduled appointments and callbacks during that time period. As a stopgap, a second call during Slot #3 was permitted for four days, October 7 – 10, 2003. This gave the CTI time to make the necessary permanent adjustments. On October 13, 2003 the PAS/PLS cold calling hours were restricted to 10:00am through 3:00pm and 5:30pm through 9:00pm on weekdays, while the weekend hours remained the same as originally scheduled, noon through 8:00pm Saturdays and Sundays. Interviewers were required to adjust their schedules accordingly.

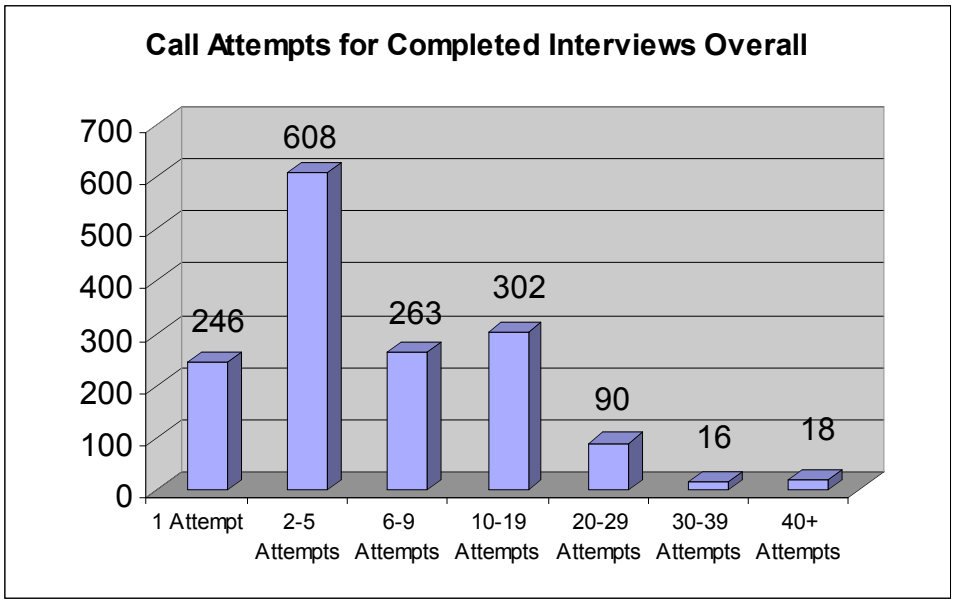
By October 21, 2003 it was determined that the remaining sample was too small in size and had experienced too many call attempts to allow for efficient staffing and production within the limits of the call scheduler's slot logic. As a result, the limits that had been imposed on the number of calls within each slot were eliminated and all cases became available in the queue 61 minutes after the prior call attempt, unless the outcome of that prior attempt necessitated alternate scheduling (e.g., an appointment had been scheduled or a refusal had been obtained). However, in an effort to increase calling efficiency, the limited cold calling hours (excluding Slot #3 calling) remained in effect throughout the remainder of the data collection period.

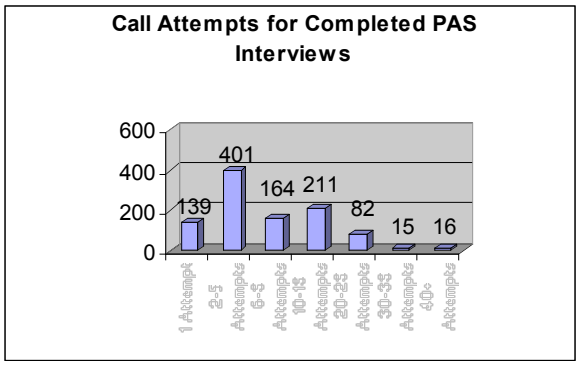


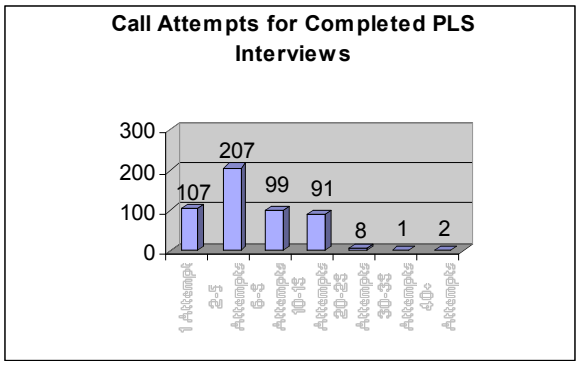




Overall, 246 (15.9%) participants completed the interview during ISR's first contact attempt. Another 608 (39.4%) participants completed the interview within the first five contact attempts. An additional 671 (43.5%) participants completed the interview between the sixth and 39th contact attempts. The final 18 (1.2%) interviews were conducted after more than 40 contact attempts. In general, PLS interviews were completed with fewer attempts than PAS interviews. For example, 20.8% (107) of PLS interviews were completed during the very first attempt, while only 13.5% (139) PAS interviews were completed so quickly. Another 40.2% (207) of PLS interviews were conducted within the first five contact attempts, while only 39% (401) were completed with the same amount of effort on PAS. Conversely, 16 (1.6%) PAS interviews were conducted after more than 40 contact attempts, while only two (.4%) PLS required such an extensive effort.

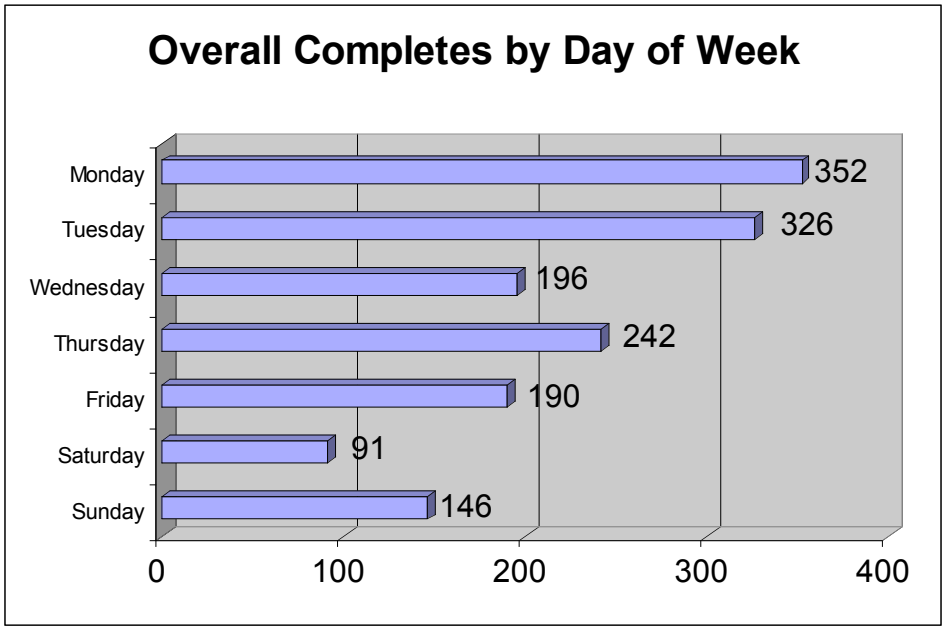


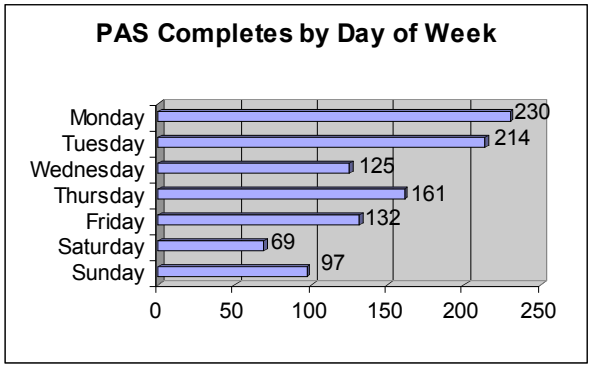


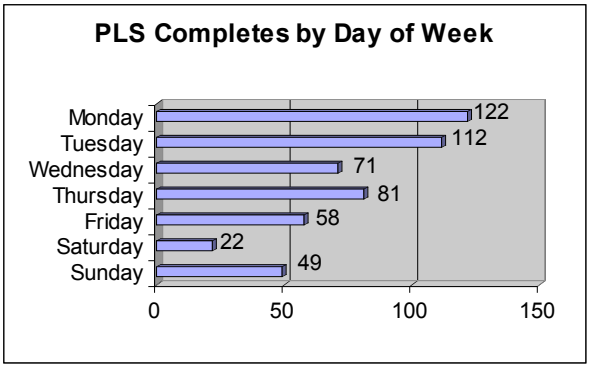


In the interests of representativeness, time slots for interviewing are spread across days and hours, even though some slots are much more productive than others. For example, the morning hours produced only 85 (5.5%) interviews, while the afternoon hours between noon and 4:00 pm were more than five times as productive with 447 (29%) interviews. The evening hours between 5:00 pm and 9:00 pm were the most productive by far with 1,011 (65.5%) interviews. The single most productive interviewing hour, between 7:00 and 8:00 in the evening, yielded 300 (19.4%) interviews. The production by time of day varied only slightly between PAS and PLS, with PLS yielding fewer (3.1%) morning interviews and greater (68.9%) evening interviews than PAS (6.7% and 63.8%, respectively).

Monday was the most productive day of the week for both PAS and PLS, producing a total of 352 (22.8%) interviews while Friday was the least productive weekday overall with 190 (12.3%) interviews. The weekend production was also sparse with Saturday producing a total of only 91 (5.9%) interviews and Sunday only 146 (9.5%) interviews.







Although the interview was planned to average 30 minutes, the average length of the interview was actually somewhat longer at over 35 minutes, with the shortest interview taking only 10 minutes and the longest spanning more than two hours at 157 minutes. The average length of the PAS and PLS interviews varied by less than one-half of one minute.

B. *HUDI's*

If a sample telephone number was called, and the phone was answered, but the answerer hung up without speaking while the interviewer was reading the introductory screen, the case was coded as a HUDI (Hang Up During Introduction). A HUDI was considered to be its own category, somewhat less promising than a fresh case, but somewhat more promising than a case where the informant or respondent verbally refused to be screened or interviewed. An invisible flag was set when a case was coded in CATI as a HUDI. This HUDI flag was set in a total of 1,418 cases (15.7%), 950 (15.6%) in PAS and 468 (15.8%) in PLS. A total of 122 (7.9% of 1,543 interviews) cases that had been flagged as HUDI's but had never verbally refused became completed interviews, 82 (8% of 1,028 interviews) in PAS and 40 (7.8% of 515 interviews) in PLS.

If the HUDI flag was set for three separate call outcomes on a single case, those three HUDI's were combined to equal one actual refusal code. This conversion of three HUDI's into one refusal occurred in a total of 121 cases, 78 in PAS and 43 in PLS. This process repeated itself to convert a total of six HUDI's into two refusals in 11 of those 121 cases, 10 in PAS and one in PLS.

C. *Verbal Refusals*

A total of 3,286 cases were flagged as informant or respondent refusals. However, as stated earlier, 121 of those were the result of HUDI's converting into refusals. The net total of cases for which a verbal refusal was obtained was 3,165 (34.9%), with 2,098 (34.4%) in PAS and 1,067 (36%) in PLS. Reasons given by informants and respondents for refusing to participate usually fell into one of three general categories: (1) they were on or wished to be on a "Do Not Call List"; (2) the interview took too long; (3) they simply did not "do surveys."

The initial protocol set two refusals as the threshold for finalizing a case as a firm refusal unless the first refusal included extreme language or other circumstances. However, a combination of the Pennsylvania Telemarketing Legislation Act controversy, the Philadelphia Mayoral Campaign polling, and the prevalence of residential call screening hardware and software created an environment of confused or misinformed and sometimes hostile prospective respondents. Most refused and then hung up the telephone without ever hearing or fully understanding the purpose and nature of the call.

The effect of the higher than anticipated refusal rate on the overall response rate precipitated a discussion of the practicality of finalizing cases after only two refusals and an exploration of ways to make the first few seconds of contact with a prospective participant more likely to result in an interview. On October 20, 2003, the introductory wording was revised and streamlined from four

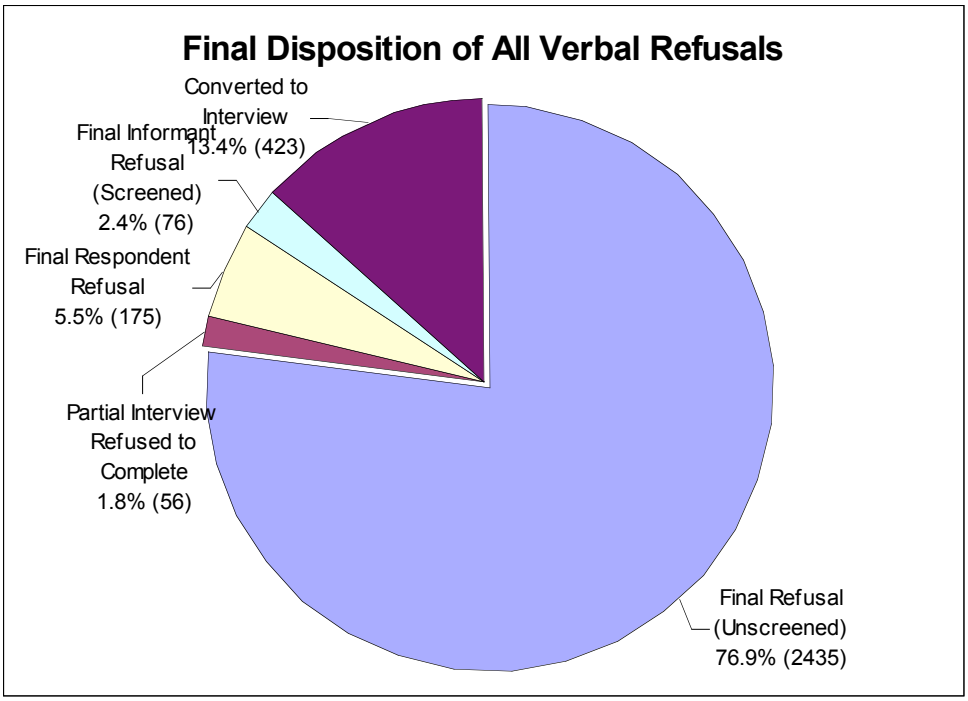
sentences to one, and the first question was changed from "May I speak with a head of the household?" to "Are you a head of this household?" to make the initial contact more efficient. The refusal counter capacity was raised from two to three, and all previously finalized refusals were re-released into the call scheduler queues on October 21, 2003.

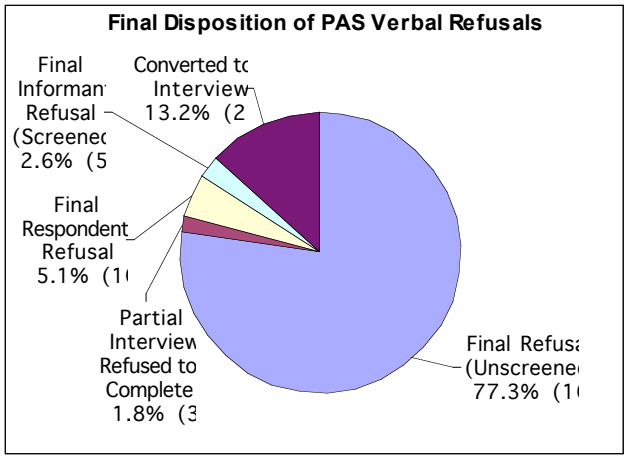
The infusion of these previously finalized refusal cases into the call scheduler created a severe imbalance of refusal versus non-refusal cases available in the queue. As a result, all cases were made available to all interviewing staff, and refusal conversion efforts dominated the data collection effort. A total of 423 (13.4% of 3,165 refusals; 27.4% of 1,543 interviews) prior refusals were converted into interviews between the launch of data collection on September 15, 2003 and the final refusal conversion effort on November 13, 2003. Two hundred seventy-seven (13.2% of 2,098 refusals; 26.9% of 1,028 interviews) of these conversions were in PAS and 146 (13.7% of 1,067 refusals; 28.3% of 515 interviews) were in PLS.

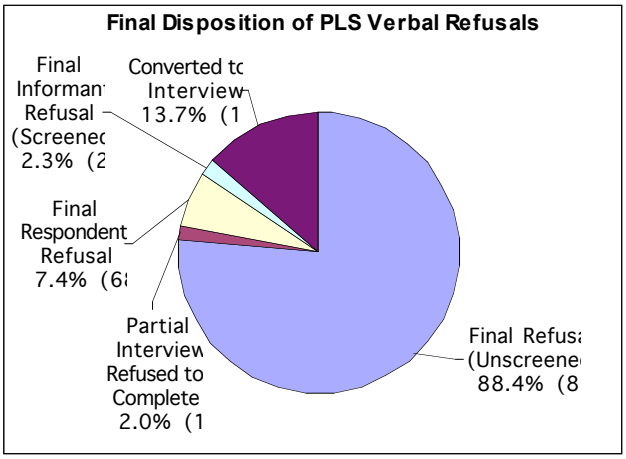
However, refusal conversion efforts were stopped completely in the afternoon of November 13, 2003 after receiving a telephone call from an Administrative Officer with Pennsylvania's Attorney General's Do Not Call Task Force. The officer indicated citizens had called his office with complaints regarding ISR's attempts to reach them for the study. While the officer agreed that the Telemarketing Legislation Act was not generally applicable to ISR's research efforts, he stated that further complaints might result in criminal and/or civil action being taken against ISR and/or Temple University. He advised ISR to stop calling any telephone number at which any refusal had ever been obtained, because the "voluntary relationship had been terminated by the citizen." He also stated that Temple University's telephone service system's practice of blocking the originating telephone number for outgoing calls was also a violation of the Telemarketing Legislation Act. He advised that a call

recipient must have the opportunity to accurately identify the company name and telephone number from which an incoming call originates. All data collection was stopped until these issues could be further investigated, and appropriate action could be taken. From comments of respondents and interviewers it is clear that "do not call" had become a cause, or at least an emotional issue, for many citizens at that point in time, and even our initial attempts to interview them were summarily refused.

Although Temple University's legal counsel and ISR thoroughly read and interpreted the Telemarketing Legislation Act in such a way that the officer's claims were considered unfounded, adherence to the spirit of the law was an important consideration. All pending refusals were finalized the next day, November 14, 2003. The coding program was also revised on this date to automatically finalize all newly obtained refusals from that point forward. Temple University's telephone services began working with Verizon to devise a way to make the origin of ISR's outgoing calls clearly identifiable to their recipients. Data collection efforts resumed on November 17, 2003, after three days of inactivity while these issues were researched and addressed.







D. *Other Noninterviews*

A total of 4,774 cases were finalized as something other than a completed interview or a refusal. Of those 4,774 finalized cases, only 159 (3.3%) had been screened while 4,615 (96.7%) had not. Of the 4,615 unscreened finalized cases, 2,579 (55.9%) had been determined to be non-working or non-residential telephone numbers, and another 102 (2.2%) were ineligible to participate because no one in the household could complete a screening in English. Two additional cases were ineligible because they were second phone lines within households that had already participated, and one was ineligible because it was the household of a PAS staff member.

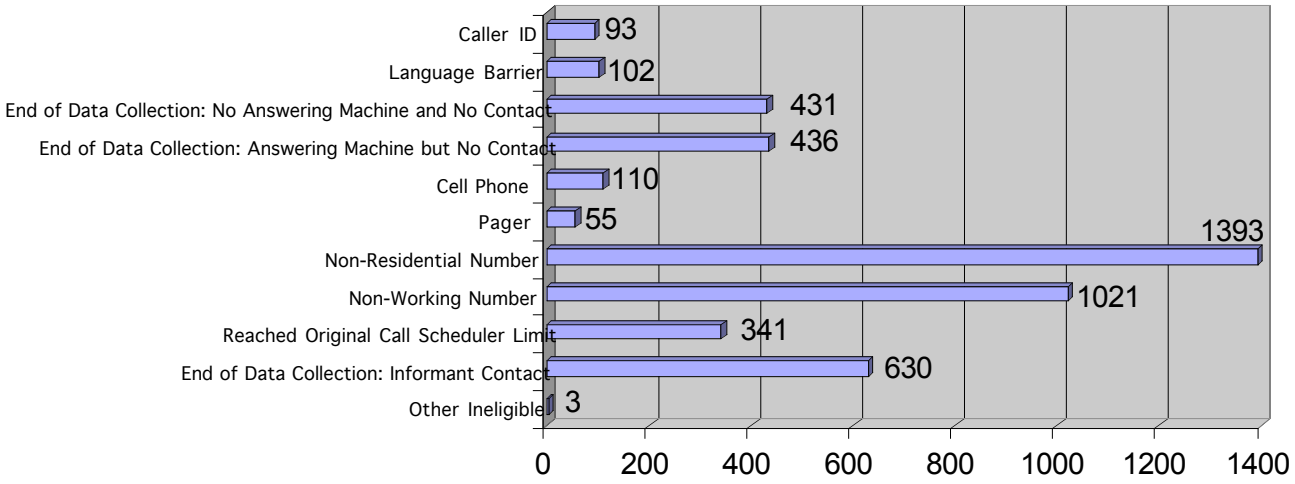
For 971 (21%) of the unscreened households, an informant who was not a head of the household had been reached, but ISR had never spoken with a head of the household. In 93 (2%) cases ISR was never able to connect the call through a call intercept system. For the remaining 867 (18.8%) unscreened cases, no contact was ever made with an informant of any kind. For 431 (49.7%) of these 867 unscreened cases without personal contact, ISR never reached any answering machine or voice mail

system. Since these numbers were called an average of just under 21 times, it is likely that these 431 telephone numbers were unassigned by the telephone company.

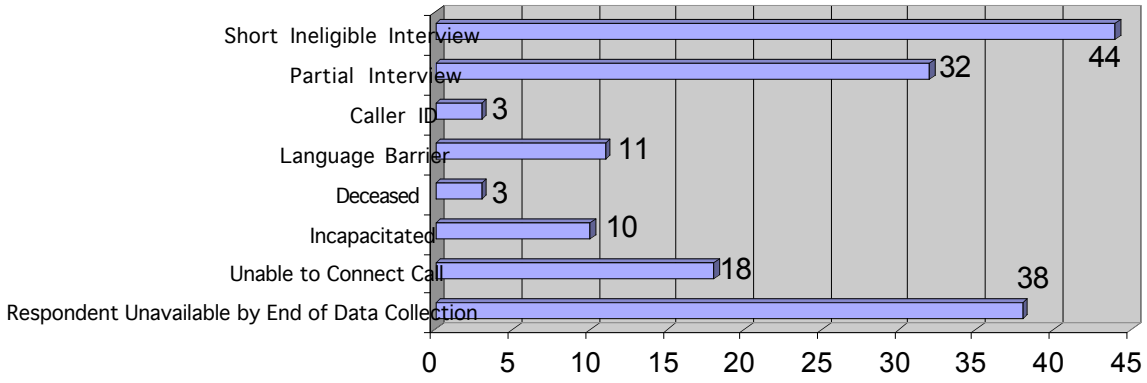
Of 159 screened finalized cases, 44 (27.7%) were completed short interviews with respondents who were ineligible to be included in the study, because they had not lived in the region of interest for at least six months. Another 32 (20.1%) were partial interviews that had not been completed before the end of the data collection period. In 11 (6.9%) cases a household member spoke English and completed the screening but the selected respondent could not complete the interview in English. In another 13 (8.2%) cases the selected respondent was incapacitated or deceased prior to completing the interview.

In 18 (11.3%) cases the telephone number became disconnected after the selection of the respondent but prior to beginning the interview. In another three (1.9%) cases a call management system would not allow the call to connect after the respondent had been selected. In the remaining 38 (23.9%) cases the data collection period ended prior to interviewing the selected respondent.

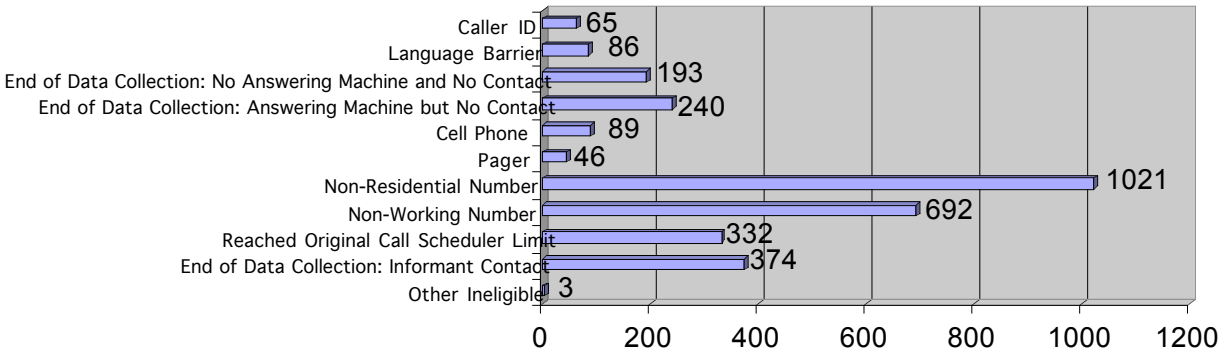
Final Disposition of All Unscreened Non-Refusal Cases



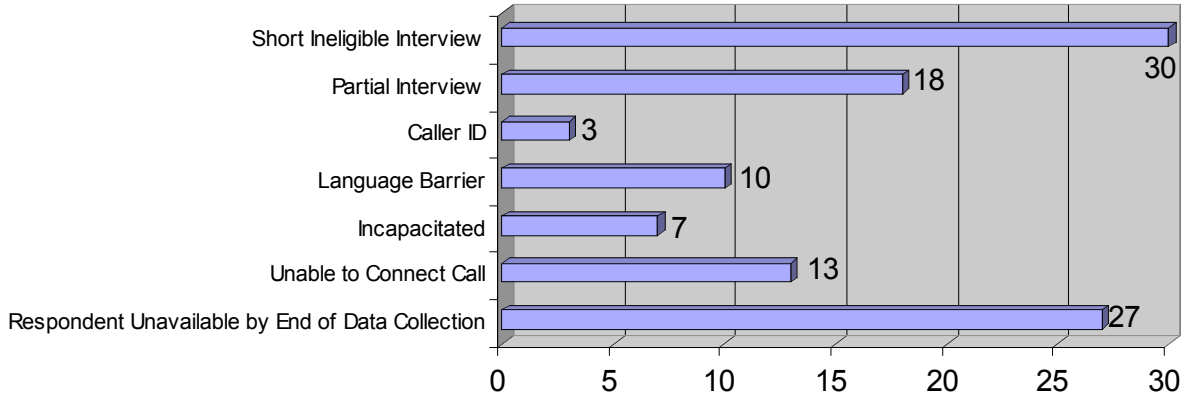
Final Disposition of All Non-Refusal Non-Interviews



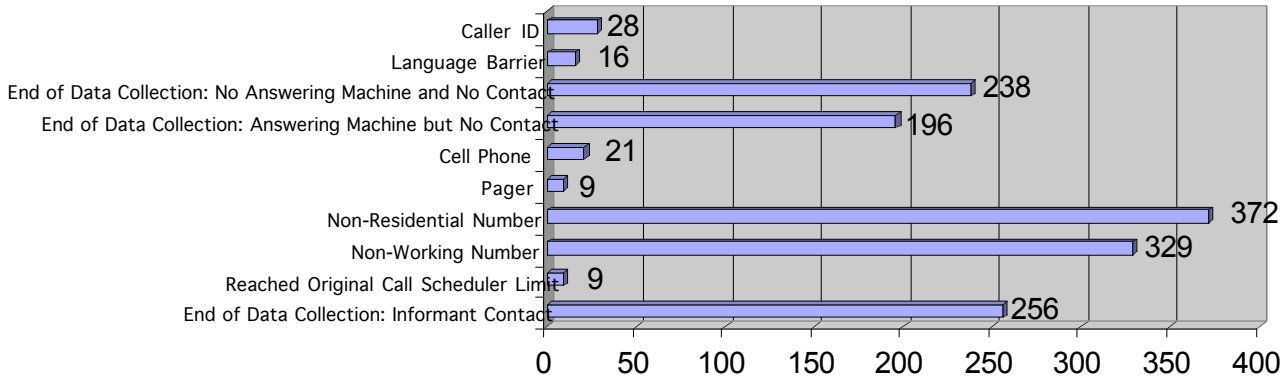
Final Disposition of Unscreened Non-Refusal PAS Cases



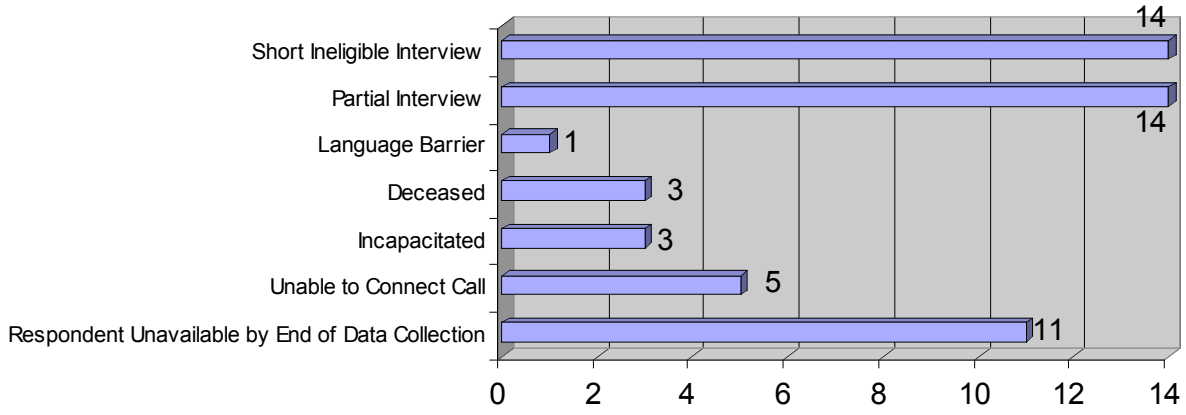
Final Disposition of PAS Non-Refusal Non-Interviews



Final Disposition of Unscreened Non-Refusal PLS Cases



Final Disposition of PLS Non-Refusal Non-Interviews



E. *Respondent Incentives and Validations*

All respondents who provided a name and a complete mailing address were sent a $10 postal money order upon completion of their interview. A two-sided one-page validation/verification letter and a business reply envelope accompanied the money order. The validation letter asked 12 questions, one factual question from within the interview and 11 about the interview, and provided an opportunity for comments about the interview and/or the interviewer.

Although 1,543 interviews were completed, only 1,440 (93.3%) validation letters were mailed to respondents because the remaining 103 (6.7%) refused to provide a name and/or a complete mailing address when interviewed. Of those 1,440 respondents to whom validation letters were sent, 668 (46.4% of letters sent; 43.3% of interviews) completed and returned them. No evidence of invalid cases or faulty interviewing was found from this process.

V: RESPONSE RATES AND REPRESENTATIVENESS

It is well established that response rates for RDD surveys have been rapidly declining, especially in the last 10 years (Smith 1994; Survey Research Laboratory 1999; Newport 2003, McGuckin et. al. 2003; Sawtooth 1999). There are many reasons for this, including the frustration of the public with telemarketers; technology-- especially caller ID and call-blocking, and discouragement of interviewers by large amounts of non-working, non-residential and non-assigned numbers. Adding to the usual RDD problems, there was tremendous furor over the "do not call list" in Pennsylvania during this study's field period. In fact, the list had become the subject of legal battles, for all intents and purposes, between the public and the telemarketers. Many potential respondents to our survey expressed anger at being called at all, and gave no chance to explain the purposes of the interview. Some even caused us to be called by the Pennsylvania Attorney General's "do not call committee" (see previous section). In this atmosphere, especially with a lengthy interview that could not be introduced as requiring only a few minutes to respond, refusals were a major source of non-response amounting to almost half the households contacted. An exacerbating factor was that we could not employ as many refusal conversion attempts and techniques as we usually find successful, for fear of further irritating residents and generating ill-will toward ISR and Temple.

In this current era of rapidly declining response rates, there is much variation in how and, indeed, whether, response rates are reported by survey organizations. The American Association for Public Opinion Research (AAPOR) has suggested some standardized reporting formats. However, the professional literature, documents, and communications from colleagues suggest that these formats are rarely used without substantial alteration. (AAPOR 2000, 41, SRL Newsletter, 1999, Vol 31). This is at least partly due to the conservative, i.e. very low, rates produced by these formulas. For example, the most stringent AAPOR definition would include in the denominator

virtually every category of non-response in our sample, except for telephone numbers absolutely known to be non-working or non-residential. In our case that yields a response rate of about 24%. However, the response rate becomes 36% if it is defined as an AAPOR "cooperation rate", which is the proportion of those actually contacted who are interviewed. At the other extreme, an "interview cooperation rate" or "interview completion rate" which is commonly reported by survey organizations, would include in the denominator only those households already screened and eligible, and would yield a rate of about 97% for our study.

Given the profusion and confusion of definitions, we will take the conservative approach-- rates calculated via AAPOR definitions are presented in detail in a technical Appendix following this section. However, it should be emphasized that low response rates, while clearly not preferred, are only indicators of potential, not actual, problems (Keeter et. al., 2000; Curtin et. al., 2000). Since the major concern with non-response is sample representativeness, a critical indicator of survey quality is the match between interview and population data on key demographics. Accordingly, for the current survey, Table 1 compares our study data from the PAS and PLS* with the corresponding Census data for gender, ethnicity, and age of heads of household. The table shows that the match is generally good. Gender of respondents to the survey matches the Census data closely, with the survey showing only slightly more female interviews (6 percentage points on PAS, 4 points on PLS) than the Census would predict. For ethnicity, African–Americans are over-represented in the PAS and PLS by 6 percentage points. Hispanics and Asians are slightly under-represented, but the small numbers involved make such differences unreliable. The major under-representation is of Caucasians in the PAS and PLS (7and 8 percentage points, respectively).

*PLS data discussed here are those for the entire state of Pennsylvania, 67 counties including the 5 county Philadelphia Region.

The age distribution shows only one category difference between survey and census of more than 4 percentage points—those aged 71 and above are under-represented by 8 percentage points in the PAS and PLS, in part due to poor hearing and other health-related reasons.

These relatively small demographic differences can be remediated by weighting procedures during data preparation routines with very little statistical impact on the data. Given the good match to Census data for the current survey, response rates are of less concern than they might otherwise be. Although there is always the possibility of some non-response bias in other categories, further non-response analysis shows no evidence for such bias. For example, mapping analysis identified no differences between respondents and non-respondents in re geographic location. In another analysis, proportions of households with heads with an education of BA or better, and with household incomes of $50,000 or more were investigated within zipcode with respect to nonresponse via regression analysis. No significant differences between respondents and non-respondents were found for this analysis involving a combination of education, income and specific location information.

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TABLE 1 Demographic Profile of PAS/PLS Respondents

	PAS Number of Cases	PAS %	Phila. Region Census* Data	PLS (62 PA counties) Number of Cases	PLS (62 PA Counties) %	PLS (62 PA Counties) Census* Data	**PLS (67 PA counties) %	State of PA (67 PA Counties) Census* Data
GENDER								
MALE	380	36.97%	42.90%	220	42.72%	44.55%	40.41%	43.96%
FEMALE	648	63.03%	57.10%	295	57.28%	55.45%	59.59%	56.04%
MI		0.00%	.		0.00%			
TOTAL	1028	100.00%		515	100.00%		100.00%	
ETHNICITY								
AA	265	25.78%	19.70%	27	5.24%	3.20%	15.40%	9.00%
WHITE	664	64.59%	72.00%	461	89.51%	93.00%	77.81%	85.80%
HISPANIC/LATINO	33	3.21%	4.40%	10	1.94%	2.10%	2.35%	2.70%
AMERICAN NATIVE	4	0.39%	0.30%	1	0.19%	0.10%	0.33%	0.20%
ASIAN	23	2.24%	3.10%	3	0.58%	1.00%	1.15%	1.70%
REFUSED	23	2.24%		6	1.17%		1.53%	
D/K	2	0.19%		0	0.00%		0.11%	
OTHER SPECIFY		0.00%		0	0.00%		0.00%	
MULTI-RACIAL	7	0.68%	0.40%	2	0.39%	0.60%	0.49%	0.50%
AMERICAN	5	0.49%		5	0.97%		0.71%	
MI	2	0.19%		0	0.00%		0.11%	
TOTAL	1028	100.00%		515	100.00%		100.00%	
AGE								
18-30	122	11.87%	11.00%	63	12.23%	11.90%	12.19%	11.50%
31-40	210	20.43%	19.70%	101	19.61%	17.30%	20.12%	17.90%
41-50	257	25.00%	22.80%	123	23.88%	21.30%	24.60%	21.50%
51-60	183	17.80%	18.60%	78	15.15%	17.70%	15.85%	18.20%
61-70	96	9.34%	13.20%	72	13.98%	12.00%	12.00%	12.60%
71-OLDER	116	11.28%	14.70%	60	11.65%	19.90%	11.42%	18.30%
REFUSED	1	0.10%		0	0.00%		0.06%	
D/K	43	4.18%		18	3.50%		3.77%	
MI		0.00%		0	0.00%		0.00%	
TOTAL	1028	100.00%		515	100.00%		100.01%	

* Source: CPS March Supplement, 2003 (households with telephones)

** Adjusted for oversampling of 5 county Philadelphia metropolitan region

APPENDIX I: CALL RESULTS AND AAPOR RESPONSE RATES

This appendix provides the detailed call results for the Philadelphia Area Survey (PAS) and the Pennsylvania Quality of Life Survey (PLS), including the response, cooperation, refusal, and contact rates, as defined by AAPOR.

1. Overview of the Call Results for the PAS and PLS Surveys

Table A.1 compares the call results for the PAS and PLS. In the PAS a total of 1,028 interviews were completed. To obtain these interviews, 6,098 telephone numbers were dialed, yielding 3,721 eligible households (61 percent of all numbers dialed) and 496 numbers with unknown eligibility (8.1 percent of all numbers dialed). Almost one-third of the numbers dialed (30.8 percent) for the PAS were not eligible households, and among the 3,721 eligible households, almost half (48.9 percent) refused the PAS interview. In the PLS a total of 515 interviews were completed. To obtain these interviews, 2,961 telephone numbers were dialed, yielding 1,971 eligible households (66.6 percent of all numbers dialed) and 245 numbers with unknown eligibility (8.3 percent of all numbers dialed). One-in-four of the numbers dialed (25 percent) for the PLS were not eligible households. Among the 1,971 eligible households, almost half (46.7 percent) refused the PLS interview.

A comparison of the PAS and PLS recruitment statistics reveals many similarities and some differences between the two samples. The PAS sample yielded proportionately fewer contacts with households (61 percent compared to 66.6 percent), a similar refusal rate among eligible households (48.9 percent compared to 46.7 percent), an almost identical rate of telephone numbers with unknown eligibility (8.1 percent compared to 8.3 percent), and a higher rate of ineligible telephone numbers (30.8 percent compared to 25 percent). It is likely that the differences in the sample yields are related to the fact that the PAS sample is urban (fewer households and more

ineligible numbers in Philadelphia) compared to the PLS sample, which is statewide (urban and rural).

Table A.1 Call Results for the PAS and PLS Samples

Results	PAS		PLS	
	Number	Percent	Number	Percent
All numbers called	6,098	100	2,961	100
All households contacted*	3,721	61.0	1,971	66.6
Unknown eligibility	496	8.1 [a]	245	8.3 [a]
Ineligible numbers	1,881	30.8 [a]	745	25.0 [a]
Refusals	1,821	48.9 [b]	921	46.7 [b]
Completed interviews	1,028	27.6 [c]	515	26.1 [c]

* Table assumes all contacted households are eligible
[a] Percent computed from total number of telephone numbers dialed.
[b] Percent computed from the total number of eligible households.
[c] Percent computed from the total number of eligible households. This rate is equivalent to the AAPOR Response Rate formula RR5. (See American Association for Public Opinion Research. 2000. *Standard Definitions: Final Disposition Codes and Outcome Rates for Surveys*. Ann Arbor, Michigan: AAPOR.

According to AAPOR, "There is no single number or measure that reflects total survey quality, and all elements should be used to evaluate survey research" (AAPOR 2000:41). Therefore, in the tables and text that follows, each of the standardized AAPOR rates that apply to the PAS and PLS are presented and discussed. These outcomes are the response rates RR1 and RR3; cooperation rates COOP1 and COOP3; refusal rates REF1 and REF2, and contact rates CON1 and CON2, each of which provides a different perspective on each survey's potential nonresponse

Error.[1] In addition, it should be noted that many other rates are often used in survey reports, such as the "interview completion rate"---the percentage of those who are successfully screened who agree to an interview--- obviously resulting in much higher completion rates

Table A.2 summarizes and compares the AAPOR rates for the PAS and PLS. Table A.3 provides the AAPOR rates and associated count details for the PAS, and Table A.4 provides the AAPOR rates and associated count details for the PLS. The correspondence between ISR's final result codes and the AAPOR result codes for the PAS is provided in Table A.5. The correspondence between ISR's final result codes and the AAPOR result codes for the PLS is provided in Table A.6.

Table A.2 Summary and Comparison of AAPOR Rates for the PAS and PLS

Definitions	PAS	PLS
RR1	0.244	0.232
RR3	0.254	0.240
COOP1	0.348	0.353
COOP3	0.361	0.359
REF1	0.432	0.416
REF2	0.450	0.429
CON1	0.701	0.658
CON2	0.730	0.679

1 Contact Rate 3 (CON3), Response Rate 5 (RR5), and Refusal Rate 3 (REF3) exclude telephone numbers with unknown eligibility from the equations. However, the assumption that there are no eligible cases among the cases of unknown eligibility (e=0) is only appropriate when it is valid to assume that none of the unknown cases are eligibles. Since it is highly unlikely that there are no eligible households among the telephone numbers with unknown eligibility, these rates are not appropriate for the PAS and PLS and are not reported.

Table A.3 AAPOR Call Result Rates and Associated Counts for the PAS

Code	Call Result	Count	Category*
1.00	**Interview**	1028	
1.10	Complete	1028	I
1.20	Partial	0	P
2.00	**Eligible Non-Interview**	2693	
2.10	Refusal and break-off	1821	R
2.20	Non-contact	766	NC
2.30	Other	106	O
3.00	**Unknown Eligibility**	496	
3.10	Unknown if household	496	UH
3.20	Unknown other	0	UO
4.00	**Not Eligible**	1881	
4.10	Ineligible other	3	
4.20	Fax/data line	0	
4.30	Non-working/disconnected	692	
4.40	Technological circumstances (cell, pager,	135	
4.50	Not a housing unit	1021	
4.70	No eligible respondent	30	
	Total numbers called=	**6098**	
e	**Proportion of unknown that are eligible**		0.66422706

Computed Response Rates

RR1	0.244
RR3	0.254
COOP1	0.348
COOP3	0.361
REF1	0.432
REF2	0.450
CON1	0.701
CON2	0.730

* These categories correspond to the elements used in the equations that follow.

Table A.4 AAPOR Call Result Rates and Associated Counts for the PLS

Code	Call Result	Count	Category*
1.00	**Interview**	515	
1.10	Complete	515	I
1.20	Partial	0	P
2.00	**Eligible Non-Interview**	1456	
2.10	Refusal and break-off	921	R
2.20	Non-contact	512	NC
2.30	Other	23	O
3.00	**Unknown Eligibility**	245	
3.10	Unknown if household	245	UH
3.20	Unknown other	0	UO
4.00	**Not Eligible**	745	
4.10	Ineligible other	0	
4.20	Fax/data line	0	
4.30	Non-working/disconnected	329	
4.40	Technological circumstances (cell, pager, etc.)	30	
4.50	Not a housing unit	372	
4.70	No eligible respondent	14	
	Total numbers called=	**2961**	
e	**Proportion of unknown that are eligible**		0.725699558

Computed Response Rates

RR1	0.232
RR3	0.240
COOP	0.353
COOP	0.359
REF1	0.416
REF2	0.429
CON1	0.658
CON2	0.679

* These categories correspond to the elements used in the equations that follow.

2. Response Rates for the PAS and PLS

AAPOR (2000:4) defines a response rate as "the number of complete interviews with reporting units divided by the number of eligible reporting units in the sample." The PAS and PLS response rates are defined as the number of completed interviews with an eligible respondent divided by the number of households. The two variations of this response rate (RR1 and RR2) reflect alternative ways to count the number of households. Response Rate 1 (RR1), the minimum response rate is the number of completed interviews (I) divided by the number of interviews (I+P) plus the number of non-interviews (refusal and break-off (R) plus non-contacts (NC) plus others (O)) plus all cases of unknown eligibility (unknown if housing unit (UH), plus unknown other (UO)).

Note that RR1 defines a complete interview as the number of completes (I) plus the number of partials (P). However, partials do not count as completed interviews in the PAS and the PLS, therefore, P=0 in all of the equations that follow, and included only to illustrate the exact correspondence between the computations of the PAS and PLS outcome rates and the standardized AAPOR definitions.

Using the minimum response rate formula, RR1, the PAS response rate is 24.4 percent and the PLS response rate is 23.2 percent.

$$RR1 = \frac{I}{(I + P) + (R + NC + O) + (UH + UO)}$$

where I = number of completed interviews (AAPOR 1.1), P = number of partial interviews counted as completes (AAPOR 1.2), R = number of refusals and break-offs (AAPOR 2.10), NC = number of non-contacts (AAPOR 2.20), O = number of other eligible non-interviews (AAPOR 2.30), UH = number of cases where it is unknown if the telephone number belongs to a household or occupied housing unit (AAPOR 3.10), and UO = number of cases where the residential status of the telephone number is unknown for other reasons (AAPOR 3.20).

Response Rate 3 (RR3) estimates what proportion of cases of unknown eligibility are actually eligible (e) and factors this estimate into the denominator. As explained by APPOR (2000:36), the estimation of e "must be guided by the best available scientific information on what share of eligibles make up among the unknown cases." The estimate must also be explicitly stated and detailed. In the PAS and PLS computations, e is equal to the number of eligible telephone numbers, defined as the number of completed interviews (Tables A.3 and A.4, count for code=1.00) plus the number of eligible non-interviews (Tables A.3 and A.4, count for code=2.00), divided by the total number of telephone numbers with known eligibility, defined as the number of completed interviews (Tables A.3 and A.4, count for code=1.00) plus the number of eligible non-interviews (Tables A.3 and A.4, count for code=2.00) plus the number of non-eligible telephone numbers (Tables A.3 and A.4, count for code=4.00). As indicated in Table A.3, the value of e for the PAS is .664, meaning that 66.4 percent of the telephone numbers with unknown eligibility are assumed to be eligible. For the PLS (see Table A.4), e is .726, meaning that 72.6 percent of the telephone numbers with unknown eligibility are assumed to be eligible.

$$RR3 = \frac{I}{\quad}$$

$$(I + P) + (R + NC + O) + e(UH + UO)$$

where I = number of completed interviews (AAPOR 1.1), P = number of partial interviews counted as completes (AAPOR 1.2), R = number of refusals and break-offs (AAPOR 2.10), NC = number of non-contacts (AAPOR 2.20), O = number of other eligible non-interviews (AAPOR 2.30), UH = number of cases where it is unknown if the telephone number belongs to a household or occupied housing unit (AAPOR 3.10), UO = number of cases where the residential status of the telephone number is unknown for other reasons (AAPOR 3.20), and e = estimated proportion of cases of unknown eligibility that are eligible, computed by applying the proportion of eligible and ineligible cases among those with known eligibility. Compared to RR1, RR3 yields slightly higher response rates. As indicated in Table A.3, RR3 for the PAS is 25.4 percent compared to an RR1 of 24.4 percent. For the PLS (see Table A.4), RR3 is 24 percent, compared to an RR1 of 23.2 percent.

3 Cooperation Rates for the PAS and PLS

Another way to look at a response rate is as a "cooperation rate." AAPOR (2000:38) defines a cooperation rate as "the proportion of all cases interviewed of all eligible units ever contacted." The PAS and PLS cooperation rates can be computed with two AAPOR formulae, the minimum cooperation rate (COOP1) and Cooperation Rate 3 (COOP3). Cooperation Rate 1 (COOP1) is the number of completed interviews (I) divided by the number of interviews (complete plus partial) plus the number of non-interviews that involve the identification of and contact with an eligible respondent (refusal and break-off (R) plus other (O)).

$$COOP1 = \frac{I}{\_\_\_\_\_}$$

$$((I + P) + R + O)$$

As indicated in Table A.3, COOP1 for the PAS is .348, indicating that 34.8 percent of the eligible respondents who were contacted agreed to complete the interview. For the PLS, COOP1 is .353, indicating that 35.3 percent of the eligible respondents who were contacted agreed to complete the interview.

Cooperation Rate 3 (COOP3) defines those unable to do an interview as also incapable of cooperating, and they are excluded from the denominator. This adjustment increases the cooperation rate for the PAS from 34.7 percent to 36.1 percent (see Table A.3). The increase for the PLS is negligible, increasing the cooperation rate from 35.3 percent to 35.9 percent (see Table A.4).

$$\text{COOP3} = \frac{I}{((I + P) + R)}$$

Still another rate often used as a response rate, though not advocated by AAPOR, is the "interview cooperation rate", sometimes called the "interview completion rate". It is equal to the number of completed interviews divided by the number of completed interviews plus all other successfully screened households. This yields the highest response rate of all-- in our case, 97%.

3. Refusal Rates for the PAS and PLS

AAPOR (2000:39) defines a refusal rate as "the proportion of all cases in which a housing unit or respondent refuses to do an interview, or breaks-off an interview of all potentially eligible cases." Refusal Rate 1 (REF1) is the number of refusals (R) divided by the number of interviews

(complete plus partial or I + P) plus the non-respondents (refusals (R), non-contacts (NC), and others (O)) plus the number of unknown eligibility (UH plus UO).

$$REF1 = \frac{R}{(I + P) + (R + NC + O) + (UH + UO)}$$

where R = number of refusals and break-offs (AAPOR 2.10), I = number of completed interviews (AAPOR 1.1), P = number of partial interviews counted as completes (AAPOR 1.2), R = number of refusals and break-offs (AAPOR 2.10), NC = number of non-contacts (AAPOR 2.20), O = number of other eligible non-interviews (AAPOR 2.30), UH = number of cases where it is unknown if the telephone number belongs to a household or occupied housing unit (AAPOR 3.10), and UO = number of cases where the residential status of the telephone number is unknown for other reasons (AAPOR 3.20). As indicated in Table A.3, REF1 is .432 for the PAS, meaning that 43.2 percent of the contacted households refused to complete the interview. For the PLS, REF1 indicates that 41.6 percent of the contacted households refused to complete the interview (see Table A.4).

Refusal Rate 2, (REF2) includes the estimated eligibles (e) among the unknown cases, similar to Response Rate 3 (RR3) above. As indicated in Table A.3, the inclusion of e increases the refusal rate from 43.3 percent for the PAS to 45 percent. The comparable refusal rate increase for the PLS is from 41.6 percent to 42.9 percent (see Table A.4).

$$REF2 = \frac{R}{(I + P) + (R + NC + O) + e(UH + UO)}$$

where R = number of refusals and break-offs (AAPOR 2.10), I = number of completed interviews (AAPOR 1.1), P = number of partial interviews counted as completes (AAPOR 1.2), R = number

of refusals and break-offs (AAPOR 2.10), NC = number of non-contacts (AAPOR 2.20), O = number of other eligible non-interviews (AAPOR 2.30), UH = number of cases where it is unknown if the telephone number belongs to a household or occupied housing unit (AAPOR 3.10), UO = number of cases where the residential status of the telephone number is unknown for other reasons (AAPOR 3.20), and e = estimated proportion of cases of unknown eligibility that are eligible, computed by applying the proportion of eligible and ineligible cases among those with known eligibility. As indicated in Table A.3, the value of e for the PAS is .664. For the PLS (see Table A.4), e is .726.

5. Contact Rates for the PAS and PLS

AAPOR (2000:40) defines a contact rate as "the proportion of all cases in which some responsible housing unit member was reached by the survey."

$$CON1 = \frac{((I + P) + R + O)}{((I + P) + R + NC + O + (UH + UO))}$$

where R = number of refusals and break-offs (AAPOR 2.10), I = number of completed interviews (AAPOR 1.1), P = number of partial interviews counted as completes (AAPOR 1.2), NC = number of non-contacts (AAPOR 2.20), O = number of other eligible non-interviews (AAPOR 2.30), UH = number of cases where it is unknown if the telephone number belongs to a household or occupied housing unit (AAPOR 3.10), and UO = number of cases where the residential status of the telephone number is unknown for other reasons (AAPOR 3.20). As indicated in Table A.3, the CON1 is 70.1 percent for the PAS, indicating that 70.1 percent of the numbers dialed reached a household. For the PLS, CON1 is lower, indicating that 65.8 percent of the numbers dialed reached a household (see Table A.4).

Contact Rate 2 (CON2) includes in the base only the estimated eligible cases among the undetermined cases (rather than assuming that all cases of indeterminate eligibility are actually eligible). This assumption is identical to the assumption made in the RR3 and REF2 computations.

$$CON2 = \frac{(I + P) + R + O}{(I + P) + (R + NC + O) + e(UH + UO)}$$

where R = number of refusals and break-offs (AAPOR 2.10), I = number of completed interviews (AAPOR 1.1), P = number of partial interviews counted as completes (AAPOR 1.2), NC = number of non-contacts (AAPOR 2.20), O = number of other eligible non-interviews (AAPOR 2.30), UH = number of cases where it is unknown if the telephone number belongs to a household or occupied housing unit (AAPOR 3.10), UO = number of cases where the residential status of the telephone number is unknown for other reasons (AAPOR 3.20), and e = estimated proportion of cases of unknown eligibility that are eligible, computed by applying the proportion of eligible and ineligible cases among those with known eligibility. As indicated in Table A.3, the value of e for the PAS is .664. For the PLS (see Table A.4), e is .726.