An Introduction to the Contact History Instrument (CHI) for the Consumer Expenditure Survey

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The Consumer Expenditure Survey (CE) Program introduced the use of the Contact History Instrument (CHI) with the CE Interview Survey in April 2005 and for use with the CE Diary Survey in March 2006. The CHI is designed to capture information about the data collection efforts and the interviewer's perceptions of interactions with the respondent when contact is made, regardless of whether an interview was conducted. Data from the CHI will be available for the first time with the 2009 CE Interview Survey public use microdata files. This article provides a brief overview of the CHI and a few illustrations of the insights that CHI data can provide about data collection efforts.

Background of the CHI

In 2002, the Census Bureau and the Interagency Household Survey Nonresponse Group sponsored a Response Rate Summit conference. The purpose of the summit was to provide a forum for discussion among experts in the field about how to address concerns related to the decreasing response rate trend in household surveys.[1] One of the recommendations that came out of the summit was that surveys should collect contact history information. This would provide data for two primary purposes: 1) to provide feedback to field staff about patterns that indicate what leads to successful or unsuccessful contact attempts, and 2) to provide data for a close examination of reasons for refusals, successful contact strategies, and differences between types of nonrespondents (refusals v. noncontact).[2]

The CHI was developed by the U.S. Census Bureau. It was designed to be a single instrument for use in all surveys that contract with the Bureau for data collection.[3] The first version of the CHI was fielded for the National Health Interview Survey (NHIS) in January 2004, and the NHIS CHI data were made available for public use with the release of the 2006 NHIS public use files. In addition to the NHIS and the CE, the Current Population Survey adopted the CHI in August 2009.

Description of the CHI

The CHI is a software application separate from the survey data collection instrument. The interviewer can access CHI via the survey's case management

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[1] Salvucci, S., Wenck, S., Hamsher, S., and Bates, N. (2002). Response Rate Summit: National Health Interview & Consumer Expenditure Quarterly Surveys. Summary Report. Synectics for Management Decisions, Inc., and U.S. Census Bureau. **http://www.fcsm.gov/ working-papers/summitreportfinal.pdf**

[2] Bates, N. (2003). Contact histories in personal visit surveys: the Survey of Income and Program Participation (SIPP) Methods Panel. AAPOR. **http://www.fcsm.gov/committees/ ihsng/aapor2003proceedingforpdf.pdf**

[3] Dyer, W. (2004). Contact History Instrument (CHI). **http://www.blaiseusers.org/2004/ papers/03.pdf**

system, or can launch CHI whenever the survey instrument is closed. The interviewer is instructed to record in the CHI every attempt made to contact the sample unit, and to do so as close as possible to the time the contact attempt was made.

The CHI prompts the interviewer for the following information about each contact attempt: the date and time of the attempt, the mode of the attempt (by personal visit or by phone), strategies the interviewer may have used to attempt to reach the respondent, and whether contact was made with the sample unit at that attempt. If the interviewer is unable to speak to someone at the sample unit, he or she can record reasons for noncontact. Alternatively, if the interviewer makes contact with the sample unit, the interviewer records whether or not an interview was conducted, and if so, whether it was partial or complete. If an interview could not be conducted, the interviewer records one or more reasons. In addition, regardless of whether there was an interview, the interviewer can record observations about the contacted sample unit member's behavior and/or concerns regarding survey participation. Exhibit 1 shows an overview of the flow of questions through the CHI.

The reporting of contact attempt strategies (exhibit 2), reasons for noncontact by mode of attempt (exhibit 3 for personal visit, exhibit 4 for phone), reasons for why an interview could not be conducted at a specific contact (exhibit 5), and the interviewer's observations about respondent behavior and concerns (exhibit 6) are made from "check all that apply" lists of options that accompany each of these questions. Exhibits 2 through 6 are screen shots from the CHI that show the response options for these characteristics of contact attempts.

Illustrations of information describing data collection effort from CHI

In addition to interviewers' notes recorded about a case, the CHI data constitute another source of information about interviewer-respondent interactions. The CHI data also provide insights to the overall data collection effort, and allow for the possibility of uncovering factors or behavior that promote or inhibit successful data collection. We offer a few illustrations of these insights, using CHI data from the CE Interview Survey for Interview 1 cases fielded in 2009. CHI information at Interview 1 is of methodological interest, because it provides a systematic description of interviewer effort, likelihood of contact, and the nature of interactions with sample unit members who are approached for the first time in the survey.

Effort expended to resolve a case. The number of contact attempts made to resolve a case with a final disposition is an indicator of the amount of effort interviewers exert to close out a case. A "final disposition" means that the interviewer closed out the case by classifying it as a *completed interview*, a *noninterview*, or *ineligible* (because the sample unit did not belong to the target population for the survey). The level of effort varies, but tends to be associated with the final disposition of the case. Completed interview cases are usually associated with relatively more cooperative respondents, and, thus, generally require fewer contact attempts to resolve the case. This fact is reflected in the CHI data. About 70 percent of the 12,106 sample units in the 2009 sample (for which there were CHI data) had been resolved as completed interviews by the fourth contact attempt, as illustrated in chart 1. Ineligible cases were also resolved fairly quickly—about 90 percent of these cases were classified as such by the fourth contact attempt. In contrast, relatively more effort was expended to resolve cases as noninterview—less than half of these cases were resolved by the fourth contact attempt, an indication that interviewers have to try harder to reach residents of these sample units, or that more attempts are needed before giving up on securing an interview. The CHI data also show that a lot of effort is expended to resolve the last 1 or 2 percent of cases still in the field. (It takes 15 or more contact attempts to resolve these cases.)

"Good" day-and-time combinations for first attempt to contact sample unit. Since costs are associated with each contact attempt, especially attempts made by personal visit, it would be cost effective if interviewers attempted to contact sample units at times when successful contacts and interviews are most likely to occur. The CHI data indicate that of the 12,106 first attempts made to contact sample units, 38.4 percent were made between 8 a.m. and 4 p.m. on Mondays through Thursdays, and 30.9 percent of those attempts resulted in contact with a sample unit member. (See chart 2.) However, it appears that evenings (4 p.m. to 9 p.m.) and weekends have slightly higher successful contact rates at first attempt. Therefore, interviewers may want to consider making a larger proportion of first attempts to contact sample units in the evenings and on weekends.

Contact strategies attempted prior to first contact with sample unit. Among the 9,465 first contacts made with sample unit members, 86.3 percent were made by personal visit. An average of 2.2 attempts was made to obtain a first contact by personal visit and 3.5 attempts to obtain a first contact by phone. An average of 1 strategy was used when a first contact with a sample unit member was made by personal visit (1.1 strategies), as well as by phone (1.2 strategies). The most frequently reported contact strategies used prior to first contact by both personal visit and phone were similar: "left appointment card or note with the sample unit," "checked with neighbor," and "advance letter given." (See chart 3.)

Reasons for incomplete interview or noninterview at first contact with sample unit. The primary reasons cited for an incomplete interview or noninterview at first contact with a sample unit are similar, regardless of whether first contacts were made by personal visit or by phone. The most frequently reported reason—more than a third of

the time—was "inconvenient time" for the sample unit. (See chart 4.) The next most frequently cited reason was reluctance on the part of the respondent.

Respondent concerns, attitude, and/or behavior at first contact with sample unit and final disposition. Interviewer observations about the contacted sample unit member, regardless of whether an interview was conducted, appear to be associated with final disposition of a case. For example, nearly two-thirds of cases where interviewers reported that respondents were concerned about time ("too busy", "interview too time consuming") or privacy had a final disposition of "completed interviews." (See chart 5.) In contrast, fewer than a third of cases where interviewers reported the contacted sample unit member exhibited hostility ("hang up/slam door", "hostile behavior") had a final disposition of "completed interviews." This is consistent with research studies supporting the usefulness of these interviewer-respondent interactions recorded in the CHI for predicting survey nonresponse.[4]

Recent survey methodological studies on the Consumer Expenditure Interview Survey have drawn on CHI data in their analyses. For example, in a study that attempted to quantify the magnitude of relative nonresponse bias for key survey measures in the CE Interview Survey, respondents were classified as *harder-to-contact* when more than 45 percent of their contact attempts resulted in noncontact and were treated as proxies for nonrespondents.[5] In a study of the effect of

incentives, indicators of respondent cooperation and estimates of field collection costs in the study were based on contact attempt information from the CHI.[6] In an exploratory study that examined trade-offs between fundamental survey performance measures for establishing the "optimal number" of contact attempts, CHI information were utilized to form comparison groups for analysis, and were inputs to the construction of a summary index for reporting quality.[7] In another exploratory study, interviewer reported observations about respondent behavior and concerns about survey participation in the CHI were found to strongly differentiate between the risk of first occurrence of nonresponse between groups of respondents with different types of concerns.[8]

Limitations of the CHI

A weakness of the CHI data is that it is based on each interviewer's self reports. There is no mechanism to ensure that the interviewer enters every contact attempt for a case in the CHI, or that any contact attempt will be recorded for a case. For example, out of the 12,304 Interview 1 sample addresses fielded in 2009 for the CE Interview Survey, 1.6 percent (198 cases) did not have any CHI records. Of these cases without CHI, 58.1 percent were resolved as ineligible, 28.3 percent as completed interviews, 5.6 percent as noninterview because

the sample unit refused the interview, and 3.1 percent as noninterview due to noncontact with the sample unit (no one home). There is also no verification that the correct reason for a noncontact is reported. Despite these limitations with the CHI data, survey methodologists have found information such as sample unit behavior and concerns reported by interviewers in the CHI to be very useful, especially in the absence of other information about nonrespondents.

A study on the quality of the CHI data for the CE Interview Survey is currently underway. This study is a collaborative effort undertaken with the National Health Interview Survey and the Current Population Survey, the other two surveys that also utilize the CHI.[9] The study will examine how the CHI is being used by the three surveys, and compare findings from the CHI across the three surveys. Without a "gold standard" to evaluate the CHI data, this comparative approach will shed some light on the extent of consistency of the CHI data within and across the three surveys.

Summary

This article gave an overview of the Contact History Instrument (CHI) and provided illustrations of how the CHI data can provide information about the data collection effort. CHI data for the 2009 CE Interview Survey will be released with the 2009 CE Interview Survey public use microdata files. The CHI data included in the public use files are for Interview 1 through Interview 5, for all eligible cases (that is, completed interviews and noninterviews) that have CHI records. ∎

[4] Groves, R. and Couper, M. (1996). Contact-level influences on cooperation in fact-to-face surveys. Journal of Official Statistics, 12, pp. 63–68.

[5] King, S.L., Chopova, B., Edgar, J., Gonzalez, J.M., McGrath D.E., and Tan, L. (2009). Assessing nonresponse bias in the Consumer Expenditure Survey. Proceedings of the Section on Survey Methods Research, American Statistical Association, pp. 1808–1816.
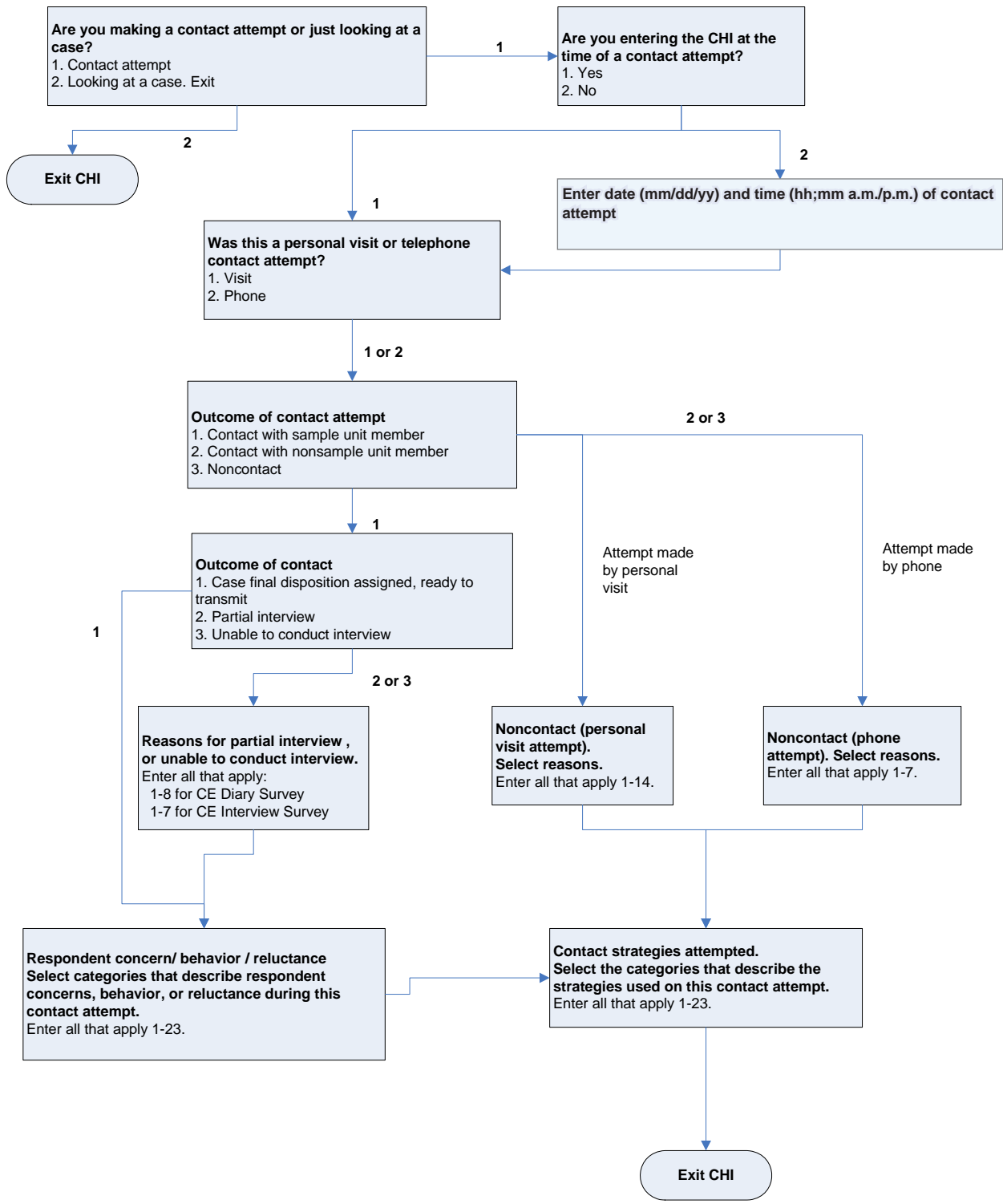
[6] Goldenberg, K.L., McGrath D.E., and Tan, L. (2009). "The effects of incentives on the Consumer Expenditure Interview Survey." Paper presented at the Annual Meeting of the American Association for Public Opinion Research.

[7] Safir, A., and Tan, L. (2009). Using Contact Attempt History Data to Determine the Optimal Number of Contact Attempts. Paper presented at the Annual Meeting of the American Association for Public Opinion Research.

[8] Tsai, S. and Tan, L. (2010). An exploratory study on the effect of pre-paid incentives on the first occurrence of nonresponse in the Consumer Expenditure Interview Survey. Internal BLS-DCES Internal Report.

[9] Bates, N., Dahlhamer, J., Phipps, P., Safir, A., and Tan, L. (2010). Assessing Contact History Data Quality and Consistency Across Several Federal Surveys. Paper to be presented at the Joint Statistical Meetings of the American Statistical Association.

Exhibit 1. **Question Flow in Contact History Instrument**

Are you making a contact attempt or just looking at a case?
1. Contact attempt
2. Looking at a case. Exit

— 1 →

Are you entering the CHI at the time of a contact attempt?
1. Yes
2. No

— 2 →

Exit CHI

— 2 →

Enter date (mm/dd/yy) and time (hh;mm a.m./p.m.) of contact attempt

— 1 →

Was this a personal visit or telephone contact attempt?
1. Visit
2. Phone

1 or 2

Outcome of contact attempt
1. Contact with sample unit member
2. Contact with nonsample unit member
3. Noncontact

2 or 3

1

Outcome of contact
1. Case final disposition assigned, ready to transmit
2. Partial interview
3. Unable to conduct interview

1

2 or 3

Attempt made by personal visit

Attempt made by phone

Reasons for partial interview , or unable to conduct interview.
Enter all that apply:
  1-8 for CE Diary Survey
  1-7 for CE Interview Survey

Noncontact (personal visit attempt). Select reasons.
Enter all that apply 1-14.

Noncontact (phone attempt). Select reasons.
Enter all that apply 1-7.

Respondent concern/ behavior / reluctance Select categories that describe respondent concerns, behavior, or reluctance during this contact attempt.
Enter all that apply 1-23.

Contact strategies attempted. Select the categories that describe the strategies used on this contact attempt.
Enter all that apply 1-23.

Exit CHI

Exhibit **2. CHI: response options for contact attempt strategies attempted**

Contact History Instrument v5.9.1 Created 09/13/2005

Forms   Answer   Navigate   Options   Help

CHI

◆ CONTACT STRATEGIES ATTEMPTED
  ◆ Select the categories that describe the strategies used on this contact attempt.
  ◆ Enter all that apply, separate with commas.

☐ 1.   Advance letter given
☐ 2.   Scheduled appointment
☐ 3.   Left note / appointment card
☐ 4.   Left promotional packet / informational brochure
☐ 5.   Called household
☐ 6.   Left message on answering machine
☐ 7.   FR will request No One Home Letter
☐ 8.   FR will request Refusal Letter
☐ 9.   FR will request Better Understanding Letter
☐ 10.   Called contact persons
☐ 11.   Stake-out
☐ 12.   Checked with neighbors

☐ 13.   Contacted other family members
☐ 14.   Contacted property manager
☐ 15.   Visited county assessor / post office / permit office
☐ 16.   On-line tracking database
☐ 17.   Sought help from SFR / RO
☐ 18.   Reassignment
☐ 19.   Offered incentive
☐ 20.   CED double placement
☐ 21.   Used MAF or ALMI
☐ 22.   None
☐ 23.   Other - specify

Strategies attempted

Exhibit 3. **CHI: response options for contact attempt by personal visit resulting in noncontact**

Contact History Instrument v5.9.1 Created 09/13/2005

Forms   Answer   Navigate   Options   Help

CHI

◆ NONCONTACT / PERSONAL VISIT
  ◆ Select the categories that describe this personal visit noncontact.
  ◆ Enter all that apply, separate with commas.

☐ 1.   No one home
☐ 2.   No one home -- appointment broken
☐ 3.   No one home -- previous note / letter taken
☐ 4.   Household does not answer door -- evidence someone is home
☐ 5.   Drive-by
☐ 6.   Multiple drive-bys - specify
☐ 7.   Unable to reach / locked gate / buzzer entry

☐ 8.   Address does not exist/unable to locate
☐ 9.   On vacation, away from home / at second home
☐ 10.   Spoke with neighbor
☐ 11.   Building management / doorman contact
☐ 12.   Completed case (Type B or C)
☐ 13.   Sample respondent moved - specify
☐ 14.   Other - specify

Noncontact Personal Visit

Exhibit 4. **CHI: response options for contact attempt by phone resulting in noncontact**

Contact History Instrument v5.9.1 Created 09/13/2005

Forms   Answer   Navigate   Options   Help

CHI

◆ NONCONTACT / TELEPHONE
  ◆ Select the categories that describe this telephone noncontact.
  ◆ Enter all that apply, separate with commas.

☐ 1. Got answering machine / service
☐ 2. No answer
☐ 3. Busy Signal
☐ 4. Disconnected
☐ 5. Wrong number
☐ 6. FAX number
☐ 7. Other - specify

Noncontact Telephone attempt

Exhibit 5. **CHI: response options for unable to conduct or complete interview when contact is made with sample unit**

Note: Both CE Interview Survey and CE Diary use the same Contact History Instrument. Option 7 is valid only for the CE Diary.

Exhibit 6. **CHI: response options for respondent behavior or concerns perceived by the interviewer when contact is made with the sample unit**
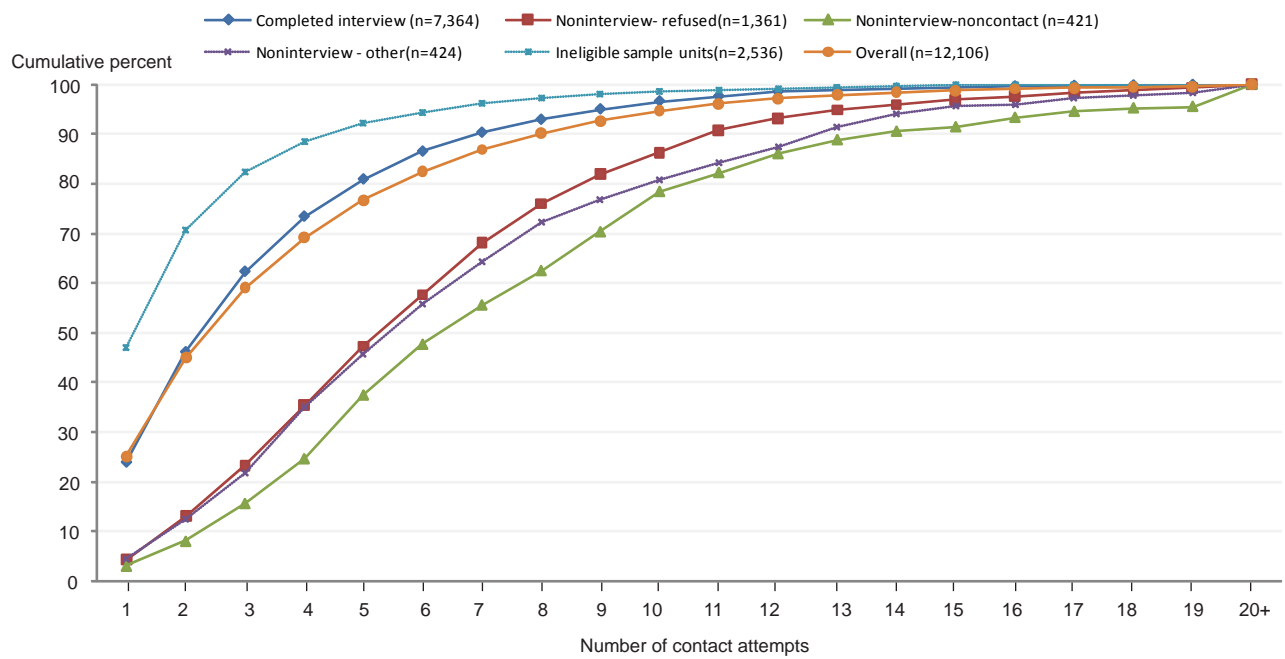
Chart 1. Number of contact attempts to final case disposition

2009 Consumer Expenditure Interview Survey, Interview 1

Legend:
- Completed interview (n=7,364)
- Noninterview- refused(n=1,361)
- Noninterview-noncontact (n=421)
- Noninterview - other(n=424)
- Ineligible sample units(n=2,536)
- Overall (n=12,106)

Cumulative percent

Number of contact attempts

Chart 2. Day and Time of 1st Attempts and 1st Contact with Sample Unit

2009 Consumer Expenditure Interview Survey, Interview 1

Legend:
- Percent distribution of 1st attempts (N=12,106)
- Percent distribution of 1st attempts that resulted in contact (N=4,195)

Percent

Days of week and time	1st attempts	1st attempts resulted in contact
Overnight	2.3	24.8
Mon-ThuDay	38.4	30.9
Mon-Thu Evening	27.3	40.8
Fri Day	7.5	38.1
Fri Evening	4.1	34.1
Sat Day	9.0	38.0
Sat Evening	4.0	32.3
SunDay	4.1	32.9
Sun Evening	3.2	37.7
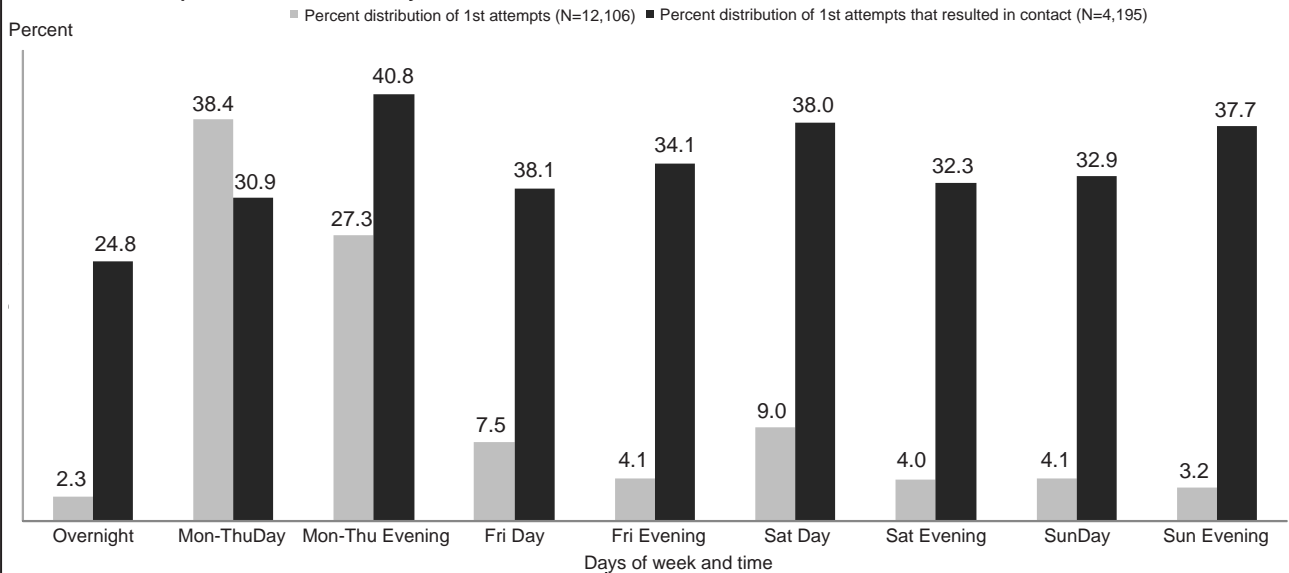
NOTE: Day: 8:00 a.m. to 4:00 p.m.   Evening: 4:00 p.m. to 9:00 p.m.   Overnight: 9:00 p.m. to 8:00 a.m.

Chart 3. Most frequently reported contact attempt stategies used prior to first contact with sample unit member

2009 Consumer Expenditure Interview Survey, Interview 1

■ First contact by personal visit (N=8,167)   ▨ First contact by phone (N=1,298)

Percent reporting

Strategy	Personal visit	Phone
Left note/appointment card	28.6	59.1
Checked with neighbor	8.4	16.6
Advance letter given	7.3	12.6
Left promotional information	7.3	17.6
Left message on answering machine	2.1	12.6
Requested "No One Home" letter	5.7	10.6

Strategy
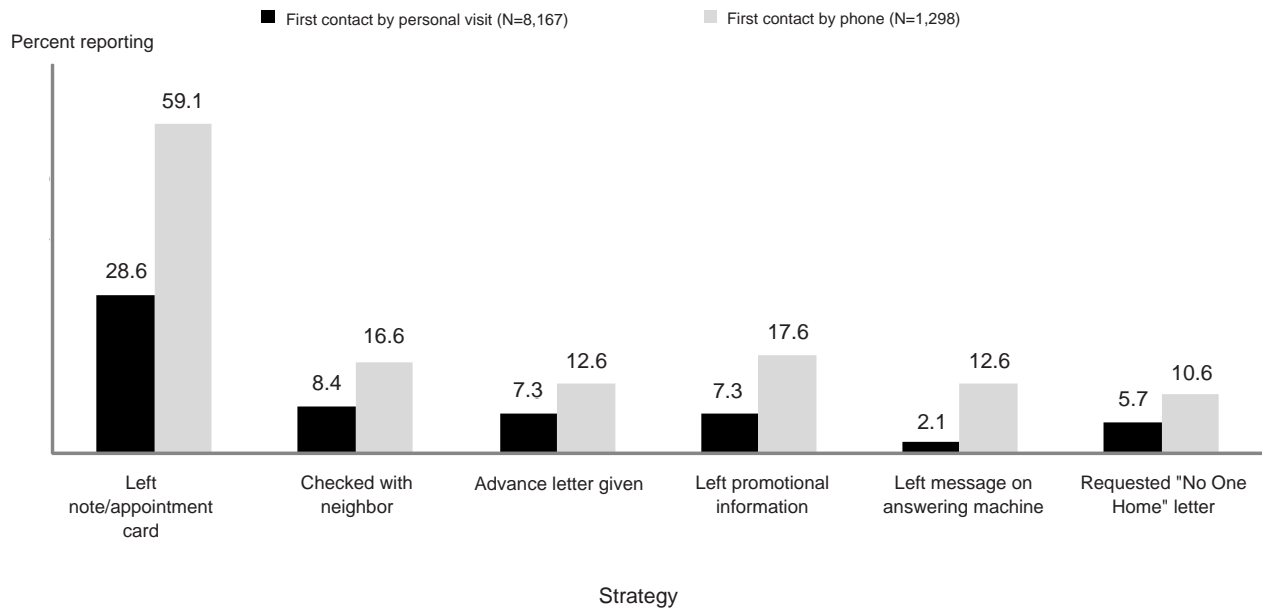
Chart 4. Reasons for incomplete interview of noninterview at first contact

2009 Consumer Expenditure Interview Survey, Interview 1

■ First contact by personal visit (N=4,574)   ▨ First contact by phone (N=794)

Percent reporting

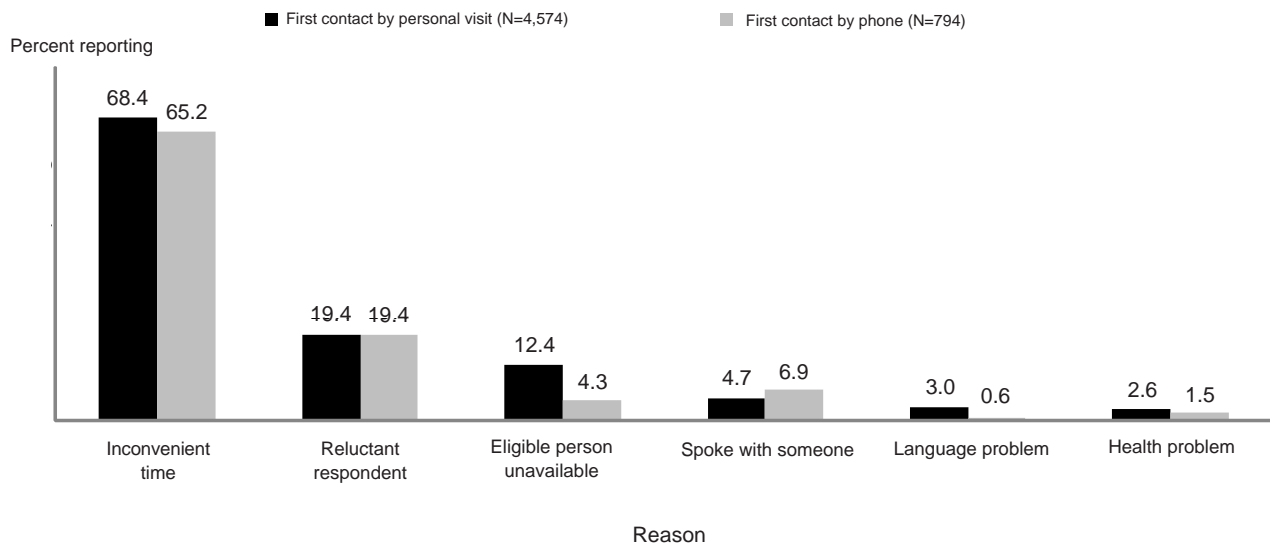| Reason	Personal visit	Phone
Inconvenient time	68.4	65.2
Reluctant respondent	19.4	19.4
Eligible person unavailable	12.4	4.3
Spoke with someone	4.7	6.9
Language problem	3.0	0.6
Health problem	2.6	1.5

Reason

Chart 5. **Selected respondent concerns reported at first contact and completed interviews**

2009 Consumer Expenditure Interview Survey, Interview 1

Percent reporting

■ Percent of cases reporting concern that were completed interviews

Concern	
Too busy	67.8
Too time consuming	62.6
Privacy	62.7
Anti-government	49.4
Not interested	41.2
Hang up/ slam door	32.6
Hostile behavior	16.4