Participation in the National Health Interview Survey: Exploring Reasons for Reluctance Using Contact History Process Data[1]

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1. Abstract

In 2002-2003, the Census Bureau designed an automated contact history data collection system known as the Contact History Instrument (CHI). The CHI was developed as a stand-alone Blaise instrument designed to work across all Census Bureau demographic computer-assisted personal interview (CAPI) surveys as part of the case management system. Interviewers use the CHI to record the number of contact attempts, mode, date and time of attempt as well as details behind various interim outcomes (e.g., reasons for refusals and strategies attempted).

Using CHI data from the 2005 National Health Interview Survey we explore the reasons why some households are reluctant to participate in the interview process. We base the analysis on 10 weeks of CHI data representing over 45,000 visit attempts to 15,000 households. We investigate the extent of reluctance, what the most frequently cited reasons are, and whether these vary by case characteristics such as region, urbanicity, or mode of contact. We also report how patterns of reluctance may change as the number of contacts increases. Finally, we examine whether the number of concerns expressed is related to refusal rates and also whether some reasons are more highly correlated with the decision to refuse.

2. Background

2.1 Decision to participate in a survey

The survey methods literature proposes various theories about why individuals choose to participate in surveys. Some theoretical perspectives focus on opportunity costs associated with the respondent burden that comes with survey participation while others look to social isolation theory to explain why some people choose to refuse. Broader theoretical underpinnings such as social exchange theory, the norm of reciprocity, and economic exchange can help explain why certain incentives work to encourage participation and under what conditions.

Groves, Caldini and Couper (1992) outline key socio-demographic and survey design factors including degree of social responsibility, mode of contact, survey length and topic, and characteristics of the sample person such as age, gender and income, and attributes of the interviewer including prior experience and demographic characteristics. The authors argue that the interaction of these factors impacts the respondent-interviewer interaction, which in turn has bearing on whether the respondent participates. Leverage-saliency theory (Groves, Singer and Corning, 2000), offers an explanation as to why the effectiveness of survey design features varies among subgroups. According to this theory, survey design attributes (e.g., advance letters, survey topic, incentives) exert different leverage on the cooperation decision depending upon the sample person. For example, incentives may have a great deal of leverage for someone who is not interested in the survey topic, but little to no leverage for a sample person for whom the survey topic is very salient.

The literature is full of empirical studies that manipulate, test, and measure the impact that survey design features have on one's decision to participate (e.g., Hembroff, Rusz, Raferty, McGee and Ehrlich, 2005; Groves, Presser, and Dipko 2004; Trussel and Lavrakas, 2004; Groves, Singer, and Corning, 2000; Singer, Van Hoewyk, and Maher, 2000). However, it's rare to find studies that document behavior of both respondents and nonrespondents prior to the final survey outcome. Such information is generally recorded more informally by way of interviewer notes and/or verbal communications among

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interviewers or between interviewers and supervisors. Consequently, the reasons why people decline to participate (or ultimately agree to participate) are usually anecdotal and rarely quantified in a meaningful way that can be analyzed alongside respondent data, ancillary sample data, or other survey process data. This paper does so by studying the reasons that households commonly give when declining to participate.

2.2 The National Health Interview Survey: background and methodology

The National Health Interview Survey is a household-based survey that has been conducted since 1957. Its primary purpose is to provide information on a continuing basis about the prevalence and distribution of illness, its effects in terms of disability and chronic impairments, and the kind of health services people receive. A core set of questions are asked every year, and one or more sets of supplemental questions are added each year to gather information on topics that are not covered in the core set of questions. For 2005 data collection, the NHIS includes a Cancer Topical Module as well as questions on Child Mental Health. On average, the NHIS takes about 1 hour to complete.

The Census Bureau collects the data for the National Centers for Health Statistics which is part of the Centers for Disease Control and Prevention. Originally administered as a paper questionnaire, the survey was moved to a DOS-based CAPI environment in 1996, and more recently, in 2004, to a Windows-based CAPI environment programmed using Blaise survey instrument software. The initial visit is made in person and the majority of subsequent contacts are personal visit as well. However, contact may be attempted by telephone if the respondent requests it, if it is the only way an interview can be completed, or other factors make telephone the most efficient mode. The NHIS is a one-time survey, that is, respondents are in sample only once.

2.3 The Contact History Instrument: background and history

The CHI was designed as a mechanism for systematically collecting process data from CAPI surveys conducted by the Census Bureau. Previous to the CHI, information about contact attempts was not automated and the study of such data was restricted to open-ended interviewer notes. This made analysis cumbersome and somewhat unreliable. The CHI is a stand-alone Blaise instrument residing in the CAPI case management system. It can be started from case management or is launched automatically whenever the survey instrument is opened. Interviewers are trained to complete a CHI record every time a contact attempt is made. This includes personal visit non-contacts, contacts with sample unit members, contacts with non-sample unit members, observational "drive-bys", and de-centralized phone calls placed from the interviewers' homes. Interviewers use the CHI to record the number of contact attempts, mode, date and time of attempt as well as details behind various interim outcomes (e.g., reasons for refusals and strategies attempted). Data from the CHI are displayed on individual laptops in the case management system for use by interviewers. CHI data are also displayed at case level and in aggregate report form for use by the regional offices. The CHI data are processed and provided as SAS datasets to headquarters and sponsors at set intervals throughout the data collection period. The CHI was first used in production for the 2004 NHIS.

3. Limitations of the data and analysis

This paper represents a descriptive bivariate analysis of survey process data with specific concentration on information about reluctance to participate in the NHIS. The results are exploratory in nature and are meant to inform future stages of a multivariate analysis. Because topic saliency may influence the decision to participate, the results presented here should not be generalized beyond health surveys.

Most of the analysis is conducted using households as the unit of analysis. While the NHIS samples households, there are instances where multiple unrelated families reside within the same dwelling unit. In these situations, a new case is "spawned" from the original and given a unique identifier and a blank slate for recording CHI. The CHI data for such cases can be somewhat convoluted as it becomes impossible to distinguish exactly which CHI record reflects contact for a particular family. To simplify the analysis we chose to ignore these complications and left the unit of analysis at the "household" level with the understanding that some households are really at the family level. This should not have a large impact on the analysis as families that are part of multiple-family households represented only 3.6 percent of the NHIS cases studied. The majority of analysis is restricted to in-scope cases and "screened-out" cases. Screened-out cases represent cases flagged as part of the oversampling process for black and Hispanic populations. Interviewers make contact with these households and administer some basic household demographic questions. Households flagged for the over-sample that do not contain any black or Hispanic members are screened-out of the NHIS. While these cases are not part of the final NHIS, interviewers must make contact and conduct a short interview in order to screen them out.

Another limitation is that information recorded in the CHI could reflect contact with different sample unit members. For example, on the initial visit, the interviewer may make contact with the wife of a married couple but on subsequent visits, make contact with the husband. Each CHI entry will reflect the reluctance/concerns/behaviors of the particular person (or persons) with whom the interviewer interacts, but the CHI does not have an indicator to link a CHI record with a particular sample unit member.

For much of the analysis, we report whether certain behaviors, concerns, or reluctance were recorded (yes or no). To simplify the analysis, we report whether a particular concern was reported *during at least one contact*. This suppresses some of the detail of the CHI data because in some cases, a particular concern was voiced multiple times over multiple contacts. Another limitation is that the CHI data does not reflect all of the NHIS cases studied during the 10 week time period[2]. There were a total of 15,434 sample cases completed during the 10 week period studied but CHI data was gathered for only 15,057 CHI households. Consequently, a small number of cases (2.4 percent) are not represented in our analysis. These resulted from a computer malfunction or, more likely, when interviewers purposely bypassed the CHI instrument.[3]

A final limitation is that CHI data are subjective to some degree. Interviewers are instructed to record the types of concerns, reluctance and behaviors they encounter at every contact. Some interviewers are inclined to perform this task with regularity while others may skip an entry here and there and/or may not select all categories that reflect a sample person's reluctance. In addition, because there are many categories (23), there is almost certainly an order effect to some degree. Another consideration is that interviewers can change if a reassignment is made (for example, the interviewer quits or goes on vacation or the case is re-assigned to a supervisory interviewer for refusal conversion). In these cases, more than one interviewer will have entered CHI data for the same household (13.4 percent of households studied had an interviewer reassignment).

To get a sense of how well CHI data reflect attempted contacts we compared the average number of personal visit CHI records to an independent measure of personal visits per case. This measure comes from the end of the NHIS survey whereby interviewers are asked to record the total number of personal visit attempts. We calculated the mean number of personal visit contact attempts for interviewed cases as reported in the CHI and compared it to the measure from the NHIS instrument[4]. The mean number of personal visits according to the CHI was 2.3 while the average from the instrument was 3.1. The median in both cases was 2. Which measure is most accurate, we cannot say. We suspect the CHI may under-represent attempts that do not result in a contact because interviewers may not always record them. On the other hand, we suspect the "total count" question from the instrument may over-represent number of attempts if interviewers feel compelled to err on the high side to indicate level of effort.

4. Results

4.1 How much reluctance was encountered?

To date, the NHIS continues to achieve a high response rate by industry standards. This is likely because the survey is federally sponsored and is conducted face-to-face with interviewers that have an average of 10 years experience (Bitzer, 2005). But, like other surveys, the NHIS has experienced decreased household response rates over the past decade. For example, the response rate was 95.5 percent in 1990 but had decreased to 86.9 percent by 2004 (U.S. Census Bureau, 2005). The lion's share of reasons for these noninterviews are refusals. CHI data represent information never before available that enable us to take a closer look behind households that express reluctance – both those who eventually participate as well as those who steadfastly refuse from beginning to end.

To begin, we examined the degree to which interviewers recorded certain concerns, reluctance, or behaviors that might indicate a barrier to cooperating with the NHIS. These behaviors were measured by a "reluctance" screen which listed common reasons for refusing or postponing survey participation. The screen consisted of 23 categories including a "no concerns" category. Interviewers encounter the screen every time they record having made contact with a sample unit member -- attempts resulting in a noncontact skip over the screen. The screen is a "mark all that apply" allowing multiple reasons to be recorded during a single contact. In cases where the sample unit member does not express any concerns or

[2] The 10 week period spanned the months of March, April, and May, 2005.
[3] Cases without a CHI record tended to be clustered among a small number of interviewers.
[4] Due to a data processing specification error, visit count from the instrument was available only for interviewed cases.

reluctance, interviewers are instructed to select the "no concerns" category. A catch-all "other specify" category is included to record information not specifically mentioned in the category list. Interviewers were trained to record the types of reluctance encountered on *each particular contact.* The screen is not intended to act as a cumulative measure of concerns/reluctance/behaviors voiced during previous contacts.

Since the CHI was designed to work across all Census Bureau surveys, not all categories apply to all surveys. For example, five of the categories are intended for panel or longitudinal surveys and, consequently do not apply directly to the NHIS (see Figure 1 for screen shot). For purposes of this paper, these categories are not included in the analyses[5].

We examined the reluctance screen data summarized at the household level for the entire sample and then by region. Chart 1 illustrates the frequency with which interviewers marked the "no concern" category during *at least one contact* with households. The results can be viewed as somewhat encouraging -- of households where one or more contact was made, interviewers indicated that close to three-quarters (72.3 percent) expressed no concerns/reluctance during at least one of the contacts. However, this indicator did vary across regions of the country[6]. For example, lack of concern was most prevalent in the Charlotte regional office that includes several southern states (Kentucky, Virginia, Tennessee, North Carolina and South Carolina). For this region, the percentage of "no concern" households was 81.5 percent. On the other hand, the New York regional office which covers parts of the Northeast and mid-Atlantic states (Pennsylvania, New York, Connecticut, and New Jersey) was much lower at 53.9 percent. And, in fact, the New York region had the lowest interview rate[7] of any region during the weeks studied (79 percent). But while the Charlotte region had a higher interview rate compared to New York (88 percent), it did not have the highest rate -- the Atlanta region had the absolute highest interview rate at 93 percent. In summary, our rudimentary examination of "no concerns" by response rates does not appear to yield a perfect one-to-one relationship.

4.2 Most common reasons for reluctance

Next, we examined the frequency of reasons among households that had some type of concerns. Chart 2 illustrates the relative frequency of categories selected. The base includes households for which at least one contact was made during the field period. The bars indicate the overall percent of households expressing a particular concern/reluctance/behavior during one *or more* contacts.

The most popular reason cited was time-related. In over 20 percent (21.1 percent) of households, interviewers indicated the sample unit members were "too busy" to participate in the survey at the time of contact. The next two most common reasons offered up were "privacy concerns" at just under 13 percent (12.6%) and "not interested/does not want to be bothered" at 12.1 percent. The fourth most cited reason was also time-related and deals with perceived respondent burden – "interview takes too much time" (9.5 percent of households cited this reason during at least one contact). Rounding out the remaining top ten reasons/behaviors are:

5) other – specify (open-ended write-in);
6) scheduling difficulties;
7) survey is voluntary;
8) does not understand survey/asks questions about survey;
9) anti-government concerns; and,
10) hangs up/slams door.

Because the "Other-specify" category was selected frequently, we closely examined the write-in responses. We found that about 15 percent of the "other-specify" entries actually reflected one of the close-ended categories available from the response option checklist, for example, respondent had privacy concerns or was too busy. The most frequently occurring write-ins were narratives indicating general apathy or opposition to the survey. Among others, these included respondents who viewed the survey as a waste of time with no personal benefit and those who were evasive and/or reluctant without giving a specific reason. Write-ins expressing such views accounted for roughly 20% of all responses. Second and third to

[5] In fact, there were a few instances where interviewers selected a category intended only for panel surveys. However, none of categories 16-21 were selected more than 1% of the time.
[6] The Census Bureau Field Division is divided into twelve regional offices, each encompassing various states and metropolitan areas.
[7] Interview rates were calculated by Regional Office for the 10 weeks studied. These rates do not reflect final interview rates.

this category were write-ins suggesting language barriers or health issues (concerning either the respondent's own health or the health of family members or friends) that prevented participation.

In Table 1, we break out distributions of concerns/reluctance/behaviors by urban versus rural sample cases[8]. A few distributions are noticeably different between the two. First, rural households had a higher incidence of at least one contact where "no concerns" was recorded (79.4 percent) compared to urban households (70.2 percent). This is not surprising considering that the NHIS (and other federal demographic surveys) routinely see higher interview rates in rural areas compared to urban centers. Urban households were more likely to express privacy concerns and say they were "not interested/do not want to be bothered" (see Table 1). Finally, urban households were more likely to use the excuse of being "too busy" compared to rural cases (22.9 percent versus 15 percent, respectively). In addition to urban/rural, we examined the reason codes by mode of contact[9] (data not shown). Overall, there were few differences between mode and the frequency and type of concern expressed. However, we did see a higher frequency of "scheduling difficulties" and "interview takes too long" when the contact was by phone compared to personal visit. Additionally, households were more likely to say "no concerns" during personal visits. In households where contact was made by personal visit, 59 percent indicated "no concerns" during one or more contacts compared to 50 percent when contact was by telephone.

We next compared and contrasted the top five reasons by Census Bureau regional office to explore the order and magnitude of any differences. As alluded to earlier, the New York region exhibited the highest absolute percentage of households that expressed concerns (any category) while the Charlotte region had the lowest frequency. But while the *degree* of concerns may have varied across the regions, the categories themselves and ordering was pretty much consistent. For example, with the exception of the Detroit, Kansas City and Dallas regions, the top five regional reasons mirrored the national top five (although not always in the exact same order). See table 2. The other three regions were more likely to have "asks questions about survey/does not understand survey" and "survey is voluntary" as part of their top five.

Thankfully *not* a part of the top five categories are two overtly negative behaviors: "hangs up/slams door" and "hostile/threatens interviewer." While these behaviors were fairly rare, the Philadelphia and Chicago regions had a higher tendency toward these behaviors as did the Boston and New York regions[10]. We compared the noninterview rates of these regions to others and found New York and Philadelphia to rank number 1 and number 2 respectively (20.8 percent and 19.5 percent respectively) while the Chicago and Boston regions did not rank in the top five noninterview regions (9.6 and 12.1 percent, respectively). Similar to earlier findings, results of our simplistic examination of the relationship between hostile/negative behavior and actual nonresponse is not so clear-cut. However, a multivariate analysis controlling for a host of other factors must be completed before valid inferences can be drawn.

We next explored the breadth of concerns expressed during contacts. The CHI was designed as a "mark all that apply" allowing interviewers to record as many different categories as they desired after *each* contact. But did they? Table 3 illustrates the frequency by which interviewers tended to record a single concern versus multiple concerns. The table is based upon households for whom a category other than "no concerns" was selected during at least one contact. Among this subgroup, interviewers selected only one concern category for close to 50 percent of households (46.6 percent)[11]. For another 21.7 percent, interviewers recorded two different categories during their contact(s) and for another 13.7 percent, 3 different categories were selected. As expected, the categories selected mirror the 'top 5' discussed from table 2.

4.3 Patterns of concerns and number of contacts

We next looked at unique patterns of concerns/reluctance/behaviors for households across contacts. Excluding households that did not exhibit any type of reluctance or only one kind of reluctance, over 800 different combinations of concerns/reluctance/behaviors were recorded. Table 4a shows the top 14 patterns of reluctance observed or heard by interviewers for households in which two unique concerns or behaviors were encountered. Altogether these combinations explain 67 percent of this group of households. In just over 20 percent of these households the interviewer recorded the

[8] The Census Bureau defines "urban" as housing units in urbanized areas (minimum of 50,000 persons) and in places of 2,500 or more persons outside urban areas. Housing units not classified as urban constitute "rural".

[9] Approximately 77 percent of the CHI records analyzed reflect personal visits and 23 percent were telephone.

[10] Philadelphia and Chicago both had close to 5% of households with hang up/slamming door during at least one contact – Boston had close to 4%. The New York region had over 3% of households exhibiting hostile/threatening behavior toward interviewers.

[11] Recall that the same category could have been recorded multiple times over different contacts.

household was too busy and had encountered either scheduling difficulties or complaints the interview took too much time – all time-related issues. Lack of interest in participating in the survey combined with being too busy – the household was not interested in investing the time to conduct the survey – makes up the third highest percentage (9 percent); and, too busy combined with the "other specify" entry round out the top four (6.9 percent). Time constraints do not appear to be an issue among 15 percent of these households which displayed various combinations of the following: concerns about privacy, lack of understanding of the survey, lack of interest, citing the voluntary nature of the survey, and even anti-government concerns.

Table 4b focuses on the households that expressed three unique patterns of reluctance. Eight percent of these households expressed all three kinds of time-related reluctance – too busy, interview takes too much time, and scheduling difficulties. While time and/or schedules are important factors in most other combinations shown in this table, so too are the other dimensions of participatory issues, including those mentioned earlier, such as interest, voluntary nature, privacy, and anti-government views. We also examined reluctance patterns among households that expressed four unique concerns. This group represented approximately 8 percent of all households where concerns were recorded. Among this group, some of the most common combinations included time-related excuses (too busy, interview takes too long, scheduling difficulties) coupled with either privacy concerns, disinterest in the survey, or the fact the survey was not mandatory (data not shown). In summary, in households where multiple concerns were expressed, interviewers tended to record category combinations that primarily reflect respondent burden concerns with privacy concerns, anti-government concerns or the voluntary nature of the survey cited as added dimensions of concern.

We next examined type of reluctance as contact with a household progressed. One hypothesis is that respondents may use delay tactics to avoid participation during early contacts as a way to politely refuse (a type of so-called soft refusal). If this is so, do concerns become more crystallized and numerous with successive contacts? Or, conversely, do concerns expressed early on (e.g., privacy concerns, does not understand the survey) get resolved by knowledgeable interviewers and thus, become less noticeable as the number of contacts increases?

To explore this topic, we constructed a variable reflecting the contact number with each household. The analysis was limited to households with between one and five contacts (which account for 99% of households where some contact was made). Table 5 illustrates the distribution of selected reluctance/concerns/behaviors recorded across the first through fifth contact.

The distribution of concerns/reluctance/behaviors varied in some cases across contact number. As the number of contacts increased, respondents became more likely to put off the interview with excuses of "too busy" or "not interested/doesn't want to be bothered". Interviewers also recorded an increase in the incidence of "scheduling difficulties" and "breaks appointments" as time and the number of contacts wore on. The latter categories are similar to those reported by Bates and Henly (2005) who found that attriters in a panel survey were more likely display "stalling" techniques in the wave prior to leaving the panel. Interviewers also recorded an increase in the number of hang ups/door slams as number of contacts increased – likely reflecting a feeling of harassment or unwarranted intrusion with repeated visits. However, for some categories, the trend was not necessarily upward as contacts increased. For example, privacy concerns and comments about the survey being voluntary remain fairly steady over multiple contacts. An obvious trend in Table 5 is that the frequency of "no concerns" decreases as number of contacts increases. For sixty-three percent of first contacts, interviewers recorded "no concerns" during the visit. This figure dropped to thirty-seven percent by the fifth contact obviously paralleling households' increased willingness to voice reluctance or display reluctant behavior as interviewers made repeated visits.

We did not find evidence to support Groves and Couper (1998) who report that as the number of contacts to a sample unit increases, the number of questions and comments by both respondents and interviewers tends to decrease. Instead, the percentage of households that asked questions about the survey was small (3-5 percent) and constant over the first through fifth contacts. Table 6 illustrates the average number of concerns expressed by contact number. During the first contact, the average is less than one but increases slightly as the number of contacts grows. Grove and Heeringa (2005) hypothesize that if questions about a survey decrease over time, then nonresponse bias itself may also decline since all the different reasons for refusing to participate become exhausted over time. A further investigation of sample units that had questions and concerns over time may shed more light onto this theory (but are not explored here).

4.4 Reluctance and refusal

In the final section of the paper we focus more narrowly on a specific research question – namely, whether households that displayed concerns/reluctance/behaviors were more likely to end up as nonrespondents. Earlier we examined broad relationships between concerns and response rates at the regional level, while here we shift to the household level. We began

by subsetting households into three groups: those for whom interviewers recorded "no concerns" during *all contacts;* those for whom "no concerns" was recorded during *at least one contact;* and finally, those for whom interviewers recorded concerns *during all contacts*. Logically, one might infer that the latter group requires more effort and persuasion on the part of interviewers because during all contacts at least one type of reluctance/concern or tentative/negative behavior was noted. Roughly 56 percent of households in the time period studied had no concerns at any time, while 17 percent had concerns during some visits and 28 percent expressed concerns during all visits.

Chart 3 illustrates the large difference in refusal rates between the three groups. Among households that never expressed concerns, the final refusal rate was less than 1 percent. This compares to a 3.9 percent refusal rates among households that expressed concerns during some, but not all contacts and a refusal rate of 13.6 percent for households that expressed concerns during all contacts. We next examined the relationship between the *number* of concerns recorded and refusal to participate. We examined households by the number of unique concerns that interviewers recorded over contacts with the households – the category "no concerns" was excluded from the analysis. The resulting base is 4,993 households that expressed at least one concern. Chart 4 suggests the relationship between volume of concerns and refusal to participate is linear and positive. Households for whom interviewers recorded only one unique concern had a refusal rate of 5 percent compared to 20 percent for households expressing five different concerns. This provides some validation that the CHI screen worked as intended, that is, as a mechanism to gauge respondent reluctance. While there may have been between-interviewer variation in the extent to which interviewers used the CHI and selected among the mark all that apply categories, it still appears to have functioned as a predictor of participation on some level.

Charts 5 and 6 illustrate the survey refusal rates among households that expressed a particular concern/reluctance/behavior during one or more contacts. Refusal rates were above average for some categories compared to others. For example, among households that indicated they were "not interested/do not bother", the survey refusal rate was 26.2 percent while the overall refusal rate was only 4.5 percent. Likewise, those who expressed reluctance because the "survey is voluntary" refused to participate in the survey at a rate of 23.6 percent. Other noticeably high categories were: those who broke appointments and put off interviewers (13.4 percent refusal) and those with privacy concerns and anti-government comments (10.8 percent and 20.6 percent refusal rates, respectively).

Categories are continued in Chart 6 where households that were hostile/threatening or hung up or slammed the door all had above average refusal rates (40.0 and 38.8 percent refusal rates, respectively). Interestingly, households that did not understand the survey or asked questions about the survey had refusal rates very close to average. In Groves and Heeringa (2005), the authors cite evidence of an increased willingness to respond among households that asked questions about the survey. This could result from the question-and-answer process successfully engaging the respondent and maintaining interaction, a critical component to gaining cooperation according to Groves and McGonagle's theory-guided interviewer training protocol (Groves and McGonagle, 2002). Or, more simply, interviewers may simply have been successful in answering the respondent's question or more fully explaining the purpose of the survey, thereby persuading them to participate. Not surprisingly, households where no concerns were expressed had refusal rates well below average (1.0 percent refusal rate).

5. Conclusions

In this paper we use survey process data from contact history records to quantify the reasons why some households are reluctant to participate in the NHIS. We found that in households where contact was made, a large majority (72.3 percent) expressed "no concerns" about participating in the survey during at least one contact with a sample unit member. However, this lack of concern varied across regional offices and between urban and rural sample cases. In general, we discovered that urban areas and regional offices containing large metropolitan areas were more likely to express concerns compared to rural sample cases and regional offices containing smaller cities and towns. At the regional level, we did not detect a perfect correlation between amount of concerns expressed and noninterview rates.

Several of the most popular concerns expressed were time-related, (too busy, interview takes too much time, and scheduling difficulties). These likely reflect the perceived amount of response burden and opportunity costs involved in taking time to participate. For busy people with little interest in the topic, participation is likely a hard sell. It would be interesting to analyze a recently available new time-use survey (the American Time Use Survey), to determine the amount of "free" time available in today's households and how it varies across different subgroups.

The second most frequently-cited concern was privacy concerns. We wondered if these concerns have increased over the last decade with the rising media coverage of identity theft and computer database security breaches. We consulted an article by DeMaio (1980) that examined reasons for refusals to the Current Population Survey in 1977. In that study, interviewers recorded verbatim the reasons given at the time of refusal. The open-ended data were coded and the three refusal reasons most often cited were: invasion of privacy (18 percent), voluntary nature of the survey (17 percent), and unfavorable past experience as a survey respondent (9 percent). Interestingly, two of these three reasons also appeared in the NHIS "top ten" reasons some 28 years later. Also of interest is that time-related reasons were *not* evident in the 1977 study (although the open-ended nature of that study may have contributed to this somewhat) .[12] Undoubtedly, time constraints are probably a bigger barrier today to getting a "foot in the door,", compared to 1977.

We discovered that some concerns tend to be expressed more often as the number of contacts increases. For example, interviewers were more likely to record that sample members were too busy, had scheduling difficulties, or had broken appointments as time wore on. We also discovered that interviewers tended to record only a few unique concerns among households that had any – close to 50 percent recorded only one type of concern while another 22 percent had two.

A preliminary examination of reluctance codes recorded in the CHI and final survey outcomes codes yielded evidence that the former can be used to predict the latter. Households that expressed concerns at every contact had a much higher refusal rate than those that had none (a 13.6 percent refusal rate versus less than 1 percent, respectively). Likewise, households that expressed a variety of concerns had higher refusal rates compared to those who had only a few. And finally, some concerns/behavior/reluctance categories appear more related to eventual refusal than others. For example, households that cited the non-mandatory nature of the survey, expressed anti-government concerns, said they weren't interested in the survey, and/or hung up on or slammed the door had refusal rates ranging anywhere from 20 to 40 percent, well above the average of 4.5 percent. However, while we found excuses of "too busy" were the most frequently given reason not to participate, the refusal rates for those providing this excuse were not that far above average (8.5 percent) indicating that this type of reluctance is often overcome.

In conclusion, we are excited about the wealth of information the CHI data represents. For the first time, we are able to forge a union between process data, frame variables, and survey data for purposes of exploring refusals and potential nonresponse bias. For these reasons, the applications to survey methods research are large indeed. We acknowledge that this paper only scratches the surface and look forward to additional analysis with additional surveys and a more multivariate perspective. One area for potential research is to examine whether certain concerns/reluctance/behaviors tend to correlate or cluster together – perhaps using factor analysis or item response theory. Such analysis would go beyond our examination of reluctance category patterns to help identify whether there are underlying dimensions or constructs that help explain reluctance to participate. If these factors can be isolated and codified, perhaps further training strategies can mitigate them.

We also plan to model the response process across different surveys and include sample frame variables, survey variables, CHI variables, and perhaps even Census tract variables as predictors. Ultimately, CHI data can be used to look for evidence of response bias by comparing critical survey indicators of those who ever refused (for certain reasons) with those who never refused. In panel surveys, CHI data can be used to better equip interviewer staff with the information necessary to target, and convert, likely attriters. CHI data will continue to be utilized as a tool to prioritize potential refusals, identify candidates for refusal conversion, and better understand the impact that nonresponse has on official survey estimates.

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6. References

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[12] In the CPS study, the author notes that over half of the open-ended codes fell into an "other" category but that no one "other" reason was selected more than 11 percent of the time. The article does not detail what the "other" categories were.

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Figure 1.
Concerns/Behavior/Reluctance screen from the Contact History Instrument (CHI)

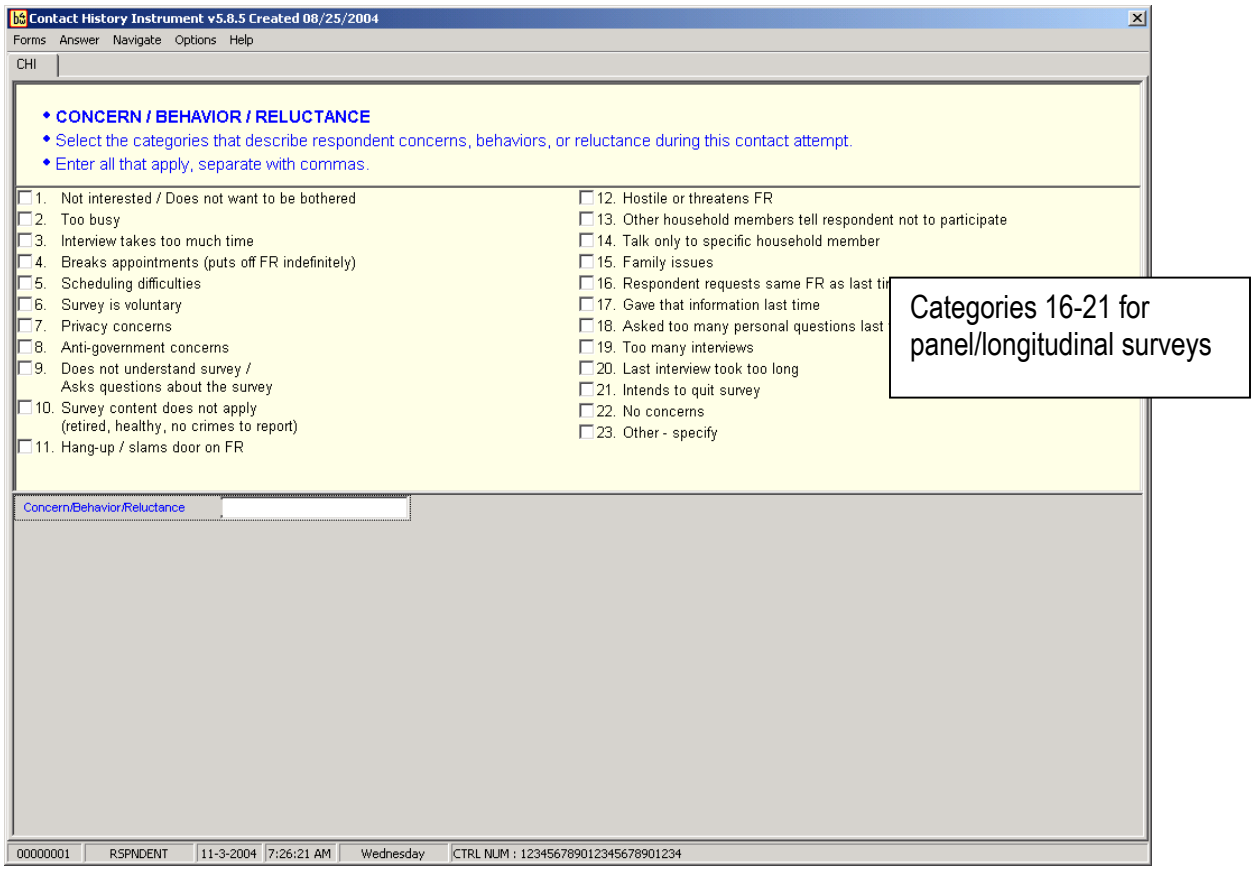

Chart 1. Percent of Households with at least one contact with 'No Concerns' by Regional Office (response rates in parenthesis)

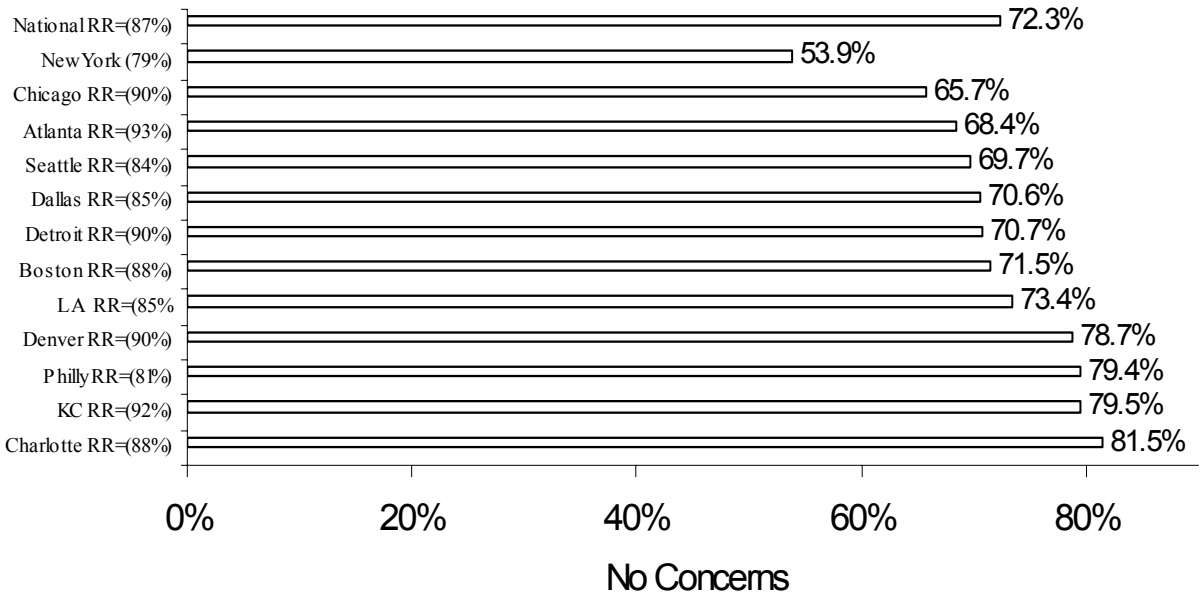

Chart 2. 2005 NHIS CHI Data* – Percent of Households Displaying Concern/Reluctance/Behavior (recorded at 1 more or contact)

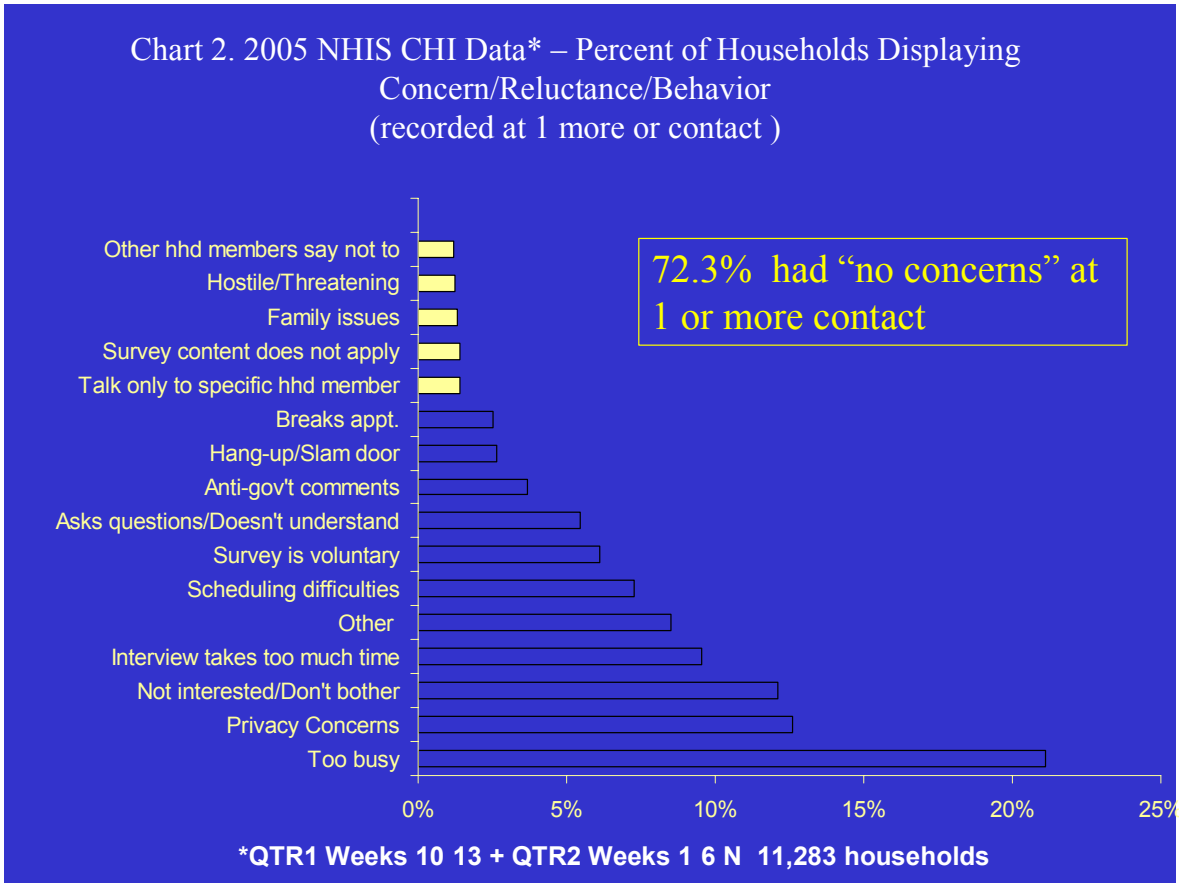

Table 1. Concerns/Reluctance/Behavior by Urban vs. Rural

Type of Reluctance	Total %	Urban %	Rural %	x^2	d.f.	p
No concerns	72.3	70.2	79.4	84.5	1	<.001
Too busy	21.1	22.9	15.0	76.0	1	<.001
Privacy concerns	12.6	13.6	9.3	34.1	1	<.001
Not interested/Does not want to be bothered	12.1	13.4	8.0	53.7	1	<.001
Interview takes too much time	9.5	10.2	7.2	22.1	1	<.001
Other specify	8.5	8.9	7.0	9.3	1	<.01
Scheduling difficulties	7.3	7.8	5.7	12.1	1	<.001
Survey is voluntary	6.1	6.6	4.7	11.5	1	<.001
Does not understand survey/ Ask questions about the survey	5.4	5.6	4.8	2.3	1	0.13
Anti-government concerns	3.7	3.8	3.2	2.4	1	0.12
Hang-up/slams door on FR	2.7	2.7	2.6	.07	1	0.80
Breaks appointments (puts off FR indefinitely)	2.5	2.8	1.5	15.1	1	<.001
Talk only to specific household member	1.4	1.6	0.7	11.4	1	<.001
Survey content does not apply	1.4	1.5	1.1	1.9	1	0.17
Family issues	1.3	1.4	1.0	2.8	1	0.09
Hostile or threatens FR	1.2	1.3	1.0	1.6	1	0.21
Other household members tell respondent not to participate	1.2	1.3	1.0	1.5	1	0.22
Total N	11283	8685	2598			

Table 2.
Concerns/Reluctance/Behavior by Regional Office

	Total	Boston	New York	Philly	Detroit	Chicago	KC	Seattle	Charlotte	Atlanta	Dallas	Denver	L A	X^2	d.f.	p
Too busy	21.1%	22.6%	32.9%	17.1%	19.0%	24.9%	17.6%	21.9%	15.00%	20.8%	19.2%	20.1%	26.3%	121.08	11	<.0001
Privacy concerns	12.6%	14.2%	16.3%	10.7%	17.2%	13.6%	8.9%	16.5%	7.0%	14.5%	13.8%	9.7%	10.9%	99.33	11	<.0001
Not interested/Don't bother	12.1%	13.6%	22.7%	12.3%	11.9%	16.1%	9.7%	12.6%	7.2%	11.6%	11.9%	10.1%	10.7%	115.07	11	<.0001
Interview takes too much time	9.5%	8.4%	13.4%	9.2%	12.0%	14.3%	7.4%	8.8%	6.3%	11.8%	6.8%	9.8%	8.3%	82.96	11	<.0001
Other reasons	8.5%	8.5%	16.1%	10.4%	6.0%	11.4%	4.3%	9.6%	8.3%	10.6%	5.6%	7.7%	6.1%	114.09	11	<.0001
Scheduling difficulties	7.3%	7.9%	8.6%	8.8%	6.8%	10.5%	6.2%	8.7%	6.3%	7.1%	4.4%	7.9%	5.8%	44.07	11	<.0001
Survey is voluntary	6.1%	6.1%	9.2%	5.4%	7.2%	9.8%	4.5%	7.7%	3.9%	5.5%	5.7%	4.3%	5.6%	61.15	11	<.0001
Asks questions/doesn't understand	5.4%	3.9%	5.2%	6.7%	8.9%	8.3%	6.7%	5.7%	2.4%	7.0%	5.0%	2.9%	3.0%	93.04	11	<.0001
Anti-gov't comments	3.7%	3.8%	5.0%	1.9%	4.1%	5.8%	2.2%	5.3%	2.4%	5.2%	3.0%	2.3%	2.7%	58.20	11	<.0001
Hangs up/slams door	2.7%	3.7%	3.2%	4.8%	3.0%	4.8%	2.2%	1.4%	1.6%	2.1%	2.5%	2.5%	1.3%	57.67	11	<.0001
Breaks appt's -puts off FR indefinitely	2.5%	2.0%	3.9%	2.9%	2.1%	4.5%	1.9%	3.6%	1.1%	2.1%	2.0%	3.0%	1.9%	41.91	11	<.0001
Talk only to a certain HHD member	1.4%	1.0%	3.0%	1.4%	0.8%	1.7%	1.3%	1.8%	1.7%	1.0%	1.0%	1.3%	1.6%	19.42	11	<.0001
Survey contents does not apply	1.4%	1.4%	3.9%	1.4%	1.4%	1.5%	1.6%	1.8%	0.5%	0.7%	0.9%	0.6%	2.2%	48.99	11	<.0001
Family issues	1.3%	1.1%	2.5%	1.4%	0.8%	2.0%	0.7%	1.3%	1.6%	1.2%	1.2%	1.0%	1.4%	17.26	11	<.0001
Hostile/threatens Interviewer	1.2%	1.5%	3.4%	1.8%	1.6%	1.4%	0.8%	0.7%	0.9%	1.7%	0.5%	1.4%	0.5%	42.43	11	<.0001
Other members say not to participate	1.2%	1.5%	2.4%	1.0%	0.7%	2.0%	0.8%	1.1%	1.4%	1.6%	0.8%	1.2%	0.7%	21.33	11	<.0001
Total N	11283	810	596	773	764	1022	893	1011	1140	1239	1171	836	1028			

Table 3.
Frequency of Selected Concerns/Reluctance/Behaviors
by Number of Concerns Selected
(Base: 4,993 households that expressed concerns)

Number of Concerns	*% of Households*	*Most Freq. Selected Category*
1	46.6%	Too busy (33%)
2	21.7%	Too busy (51%) Privacy concerns (26%)
3	13.7%	Too busy (57%) Not interested/don't bother (41%) Privacy concerns (38%)
4	8.3%	Too busy (70%) Not interested/don't bother (56%) Privacy concerns (51%) Interview takes too much time (40%)
5+	10.0%	Too busy (80%) Not interested/don't bother (79%) Privacy concerns (70%) Interview takes too much time(60%) Survey is voluntary (57%)
Total	100%	

Table 4a. Patterns of Concern/Reluctance/Behavior Among Households Expressing Two Unique Types of Reluctance Across Contacts

Patterns of Reluctance		*Percent*	*Number*
Too busy	Scheduling difficulties	10.9	118
Too busy	Interview takes too much time	9.9	107
Too busy	Not interested	9.0	97
Too busy	Other specify	6.9	74
Too busy	Privacy concerns	4.1	44
Privacy concerns	Does not understand survey	4.1	44
Interview takes too much time	Privacy concerns	3.8	41
Not interested	Privacy concerns	3.3	36
Not interested	Survey is voluntary	3.0	32
Too busy	Does not understand survey	3.0	32
Does not understand survey	Other specify	2.5	27
Survey is voluntary	Privacy concerns	2.4	26
Privacy concerns	Other specify	2.2	24
Privacy concerns	Anti-government concerns	2.2	24
Subtotal		**67.3**	**726**
Total		100	1081

Table 4b. Patterns of Concern/Reluctance/Behavior Among Households Expressing Three Unique Types of Reluctance Across Contacts

Patterns of Reluctance			*Percent*	*Number*
Too busy	Interview takes too much time	Scheduling difficulties	8.2	56
Not interested	Too busy	Interview takes too much time	5.6	38
Not interested	Too busy	Survey is voluntary	3.1	21
Too busy	Scheduling difficulties	Other specify	2.8	19
Too busy	Interview takes too much time	Privacy concerns	2.6	18
Not interested	Privacy concerns	Anti-government concerns	2.6	18
Not interested	Survey is voluntary	Privacy concerns	2.6	18
Not interested	Too busy	Privacy concerns	2.6	18
Too busy	Scheduling difficulties	Privacy concerns	2.5	17
Not interested	Too busy	Other specify	2.2	15
Too busy	Privacy concerns	Anti-government concerns	2.1	14
Too busy	Breaks appointments	Scheduling difficulties	2.1	14
Subtotal			**39.0**	**266**
Total			100	682

Table 5. Percent Expressing Certain Concerns at Contacts 1 -5

	Contact Number				
Concern/Reluctance/Behavior	*1st*	*2nd*	*3rd*	*4th*	*5th*
No concerns	63%	49%	40%	38%	37%
Too busy	15%	21%	23%	25%	24%
Privacy concerns	8%	11%	12%	11%	11%
Not interested/don't bother	8%	12%	15%	14%	15%
Other (specify write-in)	5%	7%	8%	8%	7%
Scheduling difficulties	4%	7%	11%	12%	11%
Survey is voluntary	4%	6%	7%	7%	2%
Asks Questions/doesn't understand	3%	4%	5%	4%	3%
Anti-gov't comments	2%	3%	3%	4%	3%
Hangs-up/slams door	1%	3%	4%	5%	7%
Breaks appointments/puts off FR	1%	2%	5%	7%	8%
Talk only to specific member	1%	2%	2%	1%	3%
Survey contents does not apply	1%	1%	1%	1%	0%
Family issues	1%	1%	2%	1%	2%
Hostile/threatening	1%	1%	2%	2%	2%
Other household members say not to	1%	1%	1%	1%	3%
Total N (18, 308)	11,283	4,311	1,675	646	239

Table 6. Number of Concerns Expressed at Contacts 1-5

	Contact Number				
	1st	*2nd*	*3rd*	*4th*	*5th*
Mean	0.6	0.9	1.1	1.1	1.1
Median	0.0	0.0	1.0	1.0	1.0
Total N (18,308)	11,283	4,311	1675	646	239

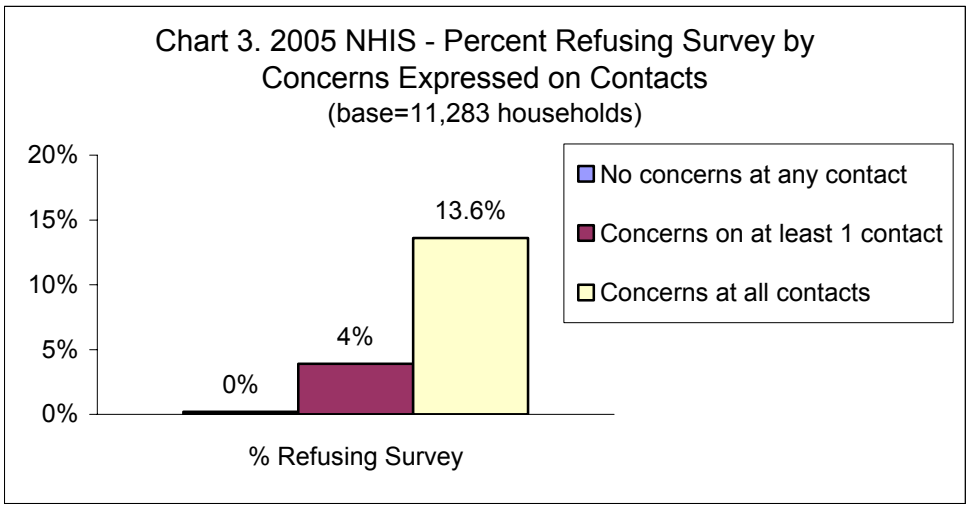
Chart 3. 2005 NHIS - Percent Refusing Survey by Concerns Expressed on Contacts
(base=11,283 households)
20%
15%
10%
5%
0%
0%
4%
13.6%
No concerns at any contact
Concerns on at least 1 contact
Concerns at all contacts
% Refusing Survey

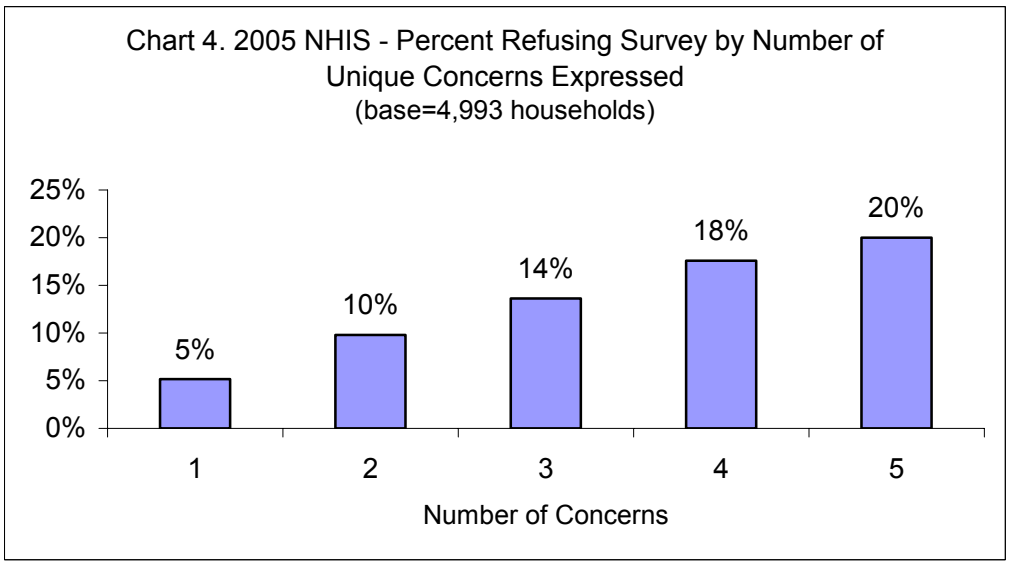
Chart 4. 2005 NHIS - Percent Refusing Survey by Number of Unique Concerns Expressed
(base=4,993 households)
25%
20%
15%
10%
5%
0%
5%
10%
14%
18%
20%
1
2
3
4
5
Number of Concerns

Chart 5. 2005 NHIS - Percent Refusing Survey by Concerns / Reluctance/ Behavior

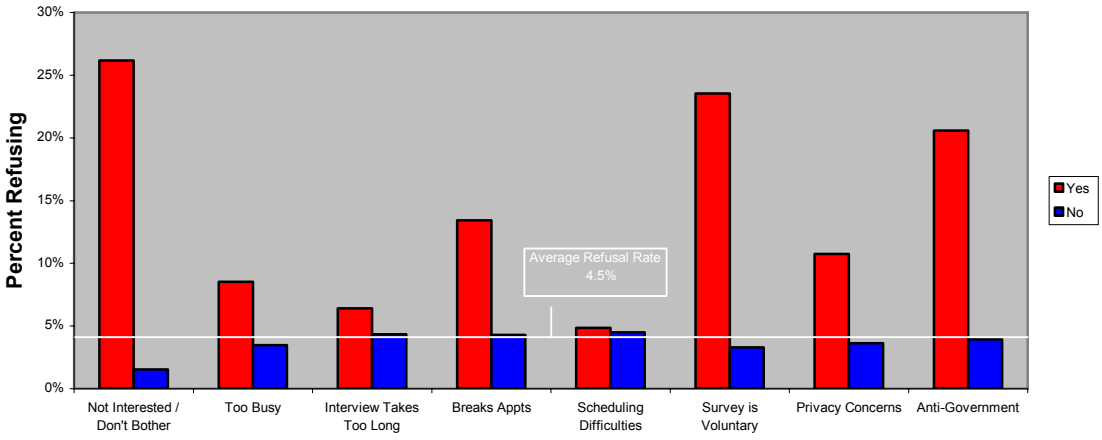

Chart 6. 2005 NHIS - Percent Refusing Survey by Concerns / Reluctance / Behavior (cont.)