

## An Assessment of the Effect of Misreporting of Phone Line Information on Key Weighted RDD Estimates

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### Abstract

Random-digit dialing (RDD) surveys typically incorporate a weighting factor that corrects for overrepresentation of households with multiple eligible landlines. The information that is used for the phone line adjustment is self-reported in one or two questions at the end of the survey and the wording varies substantially across surveys. Few studies have addressed whether these phone line estimates are subject to misreporting that might affect the weighting adjustment. In this paper, we compare weighted estimates from major national RDD surveys to those based on extended series of phone line items from studies that are viewed as having higher quality phone line estimates. We also develop a set of modified weights that account for misreporting of phone lines in two national RDD surveys and then re-estimate key figures from each survey to determine if the measurement error impacts survey estimates.

**KEY WORDS:** Random-Digit Dialing (RDD), weighting adjustment, measurement error

### 1. Introduction

Telephone surveys, such as the Behavioral Risk Factor Surveillance System (BRFSS), Survey of Consumers, and Harris Poll, provide key estimates to government policymakers, social scientists and public health researchers. These widely-cited studies use a random-digit dialing (RDD) sampling frame to select a probability sample of the landline telephone population. One limitation of the RDD frame is the overrepresentation of households with multiple landlines. A post-survey weighting adjustment which is the reciprocal of the number of landlines must be applied in order to produce accurate survey estimates (Kish, 1965; Kish, 1990; Lee and Forthofer, 2006; Massey and Botman, 1988). This weighting adjustment is standard practice in RDD studies.

The information that is used for the phone line weighting adjustment is typically self-reported by the respondent in one or two questions at the end of the survey and the wording of these questions varies substantially across studies. The measurement goal is to obtain a correct report of the number of landlines that could be answered for a household survey. Cell phones, lines that are only

used by a computer or fax machine, and lines that are exclusively used for business purposes should not be included in the count. The following two questions were asked in the CDC's 2006 Behavioral Risk Factor Surveillance System (BRFSS), the largest ongoing telephone survey in the world:

- Do you have more than one telephone number in your household? Do not include cell phones or numbers that are only used by a computer or fax machine.
- How many of these numbers are residential numbers?

From 2002-2005, the long-running Harris Poll used the following question: How many separate telephone lines with different telephone numbers do you have in the home you are in now which can receive phone calls? Do not count those which are only used for faxes or modems.

In the 1980's, the impact of weighting for multiple landlines and any errors in reporting this information was likely minimal as a very small percentage of telephone households (3% - FCC, 1988) maintained multiple lines. Today, however, more than 15% of households have multiple landlines and nearly 60% of households with landlines also subscribe to cellular phone service (FCC, 2005; Tucker and Brick, 2005). The growth in cell phone penetration is striking. Based on data from the Bureau of Labor Statistics Consumer Expenditure Interview Survey, 17% of households had both a cell phone bill and landline bill in 2000 but by 2003, this figure had skyrocketed to 45% (Tucker et al., 2004). More than half of U.S. households with landline and cellular service maintain two or more cell phone lines according to 2004 Current Population Survey (CPS) data (Tucker et al., 2004). These changes in telephone technology have likely made the reporting of eligible phone lines in RDD surveys a complex problem that has the potential to impact survey estimates.

A few recent studies have begun to investigate respondent accuracy in reporting phone line information. Initial work in this area by Roth, Montaquila and Brick (2001) and Triplett and Abi-Habib (2003) suggests that respondents inflate their phone line estimates by including cell phones and devoted fax or computer lines. The Adult Special Study which was conducted in conjunction with the 1999

NHES collected data from 1,082 U.S. adults 16 and older who were selected using a list-assisted RDD sample. Respondents were asked the standard two NHES phone lines questions as well as several questions on whether the household had a cell phone and/or a computer or fax line and if those lines are ever answered. These data were then used to assess misreporting on the standard phone lines items. About 41% of households reported that they had a cell phone and 4% of these households included their cell phone when asked the standard NHES items for phone line weighting. Nearly 15% of households reported that they maintained a telephone line for a computer or fax machine. Only about a third (35%) of households with a computer or fax line indicated that they would answer this line at least some of the time but 61% counted the computer or fax line in their report of additional phone lines. This study provides initial evidence of overreporting of cell phone lines and dedicated computer and fax lines in the standard NHES phone lines items.

Triplett and Abi-Habib (2003) compare data from an extended series of phone lines items that were administered to 40,000+ NSAF 2002 adult respondents with FCC data on multiple telephone line households. In line with Roth et al. (2001), Triplett and Abi-Habib suggest that respondents overreport cell phones in their phone line estimates. When comparing their data with the 1999 NHES Adult Special Survey, Triplett and Abi-Habib also found that a larger percent, 50%, of the 2002 NSAF respondents would answer a telephone number used for a computer or fax machine, as compared to 35% among the 1999 NHES respondents. As technology has made it possible for households to use one landline for both internet and voice communication it may become more difficult for respondents to accurately report the number of phone lines that they ever answer.

While these initial studies are an important first step in understanding potential measurement error in phone line reporting, there has been little effort to assess whether inaccurate reporting impacts weighted estimates from RDD surveys. This paper has two major aims. First, we assess the variability in responses to the phone lines item(s) across major national RDD surveys that attempt to cover the U.S. household landline population and compare the estimates to those based on extended series of phone lines items from three studies that might be viewed as having higher quality or “gold standard” estimates: 2003 and 2005 NHES, 2003 CPS Supplement on Cell Phone Usage, and 2002 NSAF. Our second aim is to develop a set of modified weights that reflect overreporting or underreporting of phone lines in two national RDD surveys and then re-estimate key figures from each survey to determine if the reporting error has an impact on survey estimates.

The remainder of this paper is organized as follows. Section 2 summarizes the basic design features of four major RDD surveys and the CPS, while Section 3 provides an overview of the analytic methods that were used in the paper. Results are presented in Section 4. Section 5 summarizes the main conclusions and suggests some possible limitations and areas for further study.

## 2. Data Sources

This section provides a brief summary of the CPS and four RDD surveys that are analyzed in this paper.

### *Current Population Survey – Cell Phone Supplement*

For more than 50 years, the Current Population Survey (CPS) has been the main source of data on the U.S. labor force, including the widely-cited unemployment rate. The survey is conducted by the Bureau of the Census for the Bureau of Labor Statistics. The sample is an area probability sample and about 57,000 households are interviewed monthly. The study uses a 4-8-4 (4 months in, 8 months out, 4 months in) panel design. The first interview is conducted in-person while later interviews are typically administered by telephone. In most cases, one respondent reports for all eligible household members. Recent response rates are between 90-94%.

Periodically, the CPS includes a one-time supplement to collect key demographic data from a large U.S. household sample. About 32,000 CPS telephone households that were in months 2, 3, or 5-7 of their panel participation completed the 2004 Cell Phone Use Survey supplement. The supplement gathered detailed information on landline and cell phone use.

### *National Household Education Survey (NHES)*

The U.S. Department of Education’s National Center for Education Statistics conducts the NHES every two years to monitor the educational experiences of the U.S. population. In this analysis, we use data from the most recent surveys that gather information on adults: the NHES Adult Education for Work-Related Reasons Survey (2003) and the NHES Adult Education Survey (2005). The NHES Surveys use a list-assisted RDD sample with oversampling of Black and Hispanic residents and phone numbers that can be matched to a mailing address. From January to April 2003, 12,725 telephone interviews were conducted to gather information about participation in formal education programs and informal career-related learning activities. The response rate for the 2003 Survey was 49%. The methodology for the 2005 Survey was similar to that used for the 2003 Survey. Nearly 9,000 telephone interviews were administered by Westat interviewers from January through April 2005. The final response rate for the 2005 Survey was 47.6%.

*National Survey of America's Families (NSAF)*

Sponsored by the Urban Institute, the 2002 NSAF was the third in a series of large national telephone surveys that examined the effects of changes in the administration of government assistance programs for children and the poor in the U.S. The sample included a list-assisted RDD sample of more than 400,000 telephone numbers supplemented by an area probability sample to capture non-telephone households. Households estimated to be under 200% of the federal poverty level and households with children were oversampled. Households where all members are 65 or older were not eligible for the NSAF. More than 40,000 interviews were conducted by Westat from February to October 2002. The final response rate was 51.9%.

*Behavioral Risk Factor Surveillance System (BRFSS)*

Initiated in 1984, the BRFSS is the largest ongoing telephone survey in the world. The BRFSS is conducted by the Centers for Disease Control and Prevention (CDC) and state health departments in the 50 states, the District of Columbia, Puerto Rico, Guam and the Virgin Islands. The aim of the BRFSS is to gather annual state-level estimates of health behaviors that are associated with chronic illnesses, injuries and infectious diseases in the U.S. adult population. A disproportionate stratified list-assisted RDD sampling approach is used in nearly all of the states. Each telephone number in the frame is assigned to either a high-density stratum or a medium-density stratum based on the number of listed household numbers in its hundred block. To obtain reliable sub-state estimates, more than half of the states oversample from geographic strata within their state. Each state health department conducts their own telephone data collection either in-house or using a subcontractor. Data collection takes place throughout the year. The number of completed interviews and response rate for 2002-2005 follow: 363,074 interviews (51.1%) - 2005, 307,810 interviews (52.7%) - 2004, 267,269 interviews (53.2%) - 2003, and 250,529 interviews (58.3%) - 2002. In part of this analysis, we focus on BRFSS estimates for South Carolina. In 2005, 8,650 BRFSS interviews were conducted in South Carolina and the response rate was 60.2%. Weights are produced that compensate for unequal probabilities of selection due to disproportionate stratification, number of adults in the household, and number of eligible phone lines. There is also a post-stratification adjustment to age-by-sex or age-by-race/ethnicity-by-sex population totals in the region or state.

*Harris Poll*

Conducted by Harris Interactive (formerly Louis Harris and Associates) for more than 40 years, the Harris Poll gauges public opinion on a wide range of topics,

including politics, the economy, foreign affairs, and sports and entertainment. The Poll is conducted by telephone and web with a nationally representative sample of U.S. adults on a monthly basis. This analysis uses telephone survey data from the April 2002, June 2003, February 2004, and August 2005 Harris Polls. Approximately 1,000 telephone interviews are completed over a 4-6 day data collection period. Estimates are weighted to account for unequal probabilities of selection due to the number of adults in the household and multiple telephone lines. There is also a post-stratification adjustment to age, sex, race/ethnicity, education, region, and size of place (urbanicity) totals for the U.S. population. The analysis presented here accounts for weighting but assumes no stratification or clustering in the sample design.

**3. Methods**

This analysis uses both qualitative and quantitative methods. The first author conducted a cognitive expert review of the phone lines item(s) from the BRFSS and Harris Poll. A cognitive expert review is a questionnaire assessment technique in which a questionnaire design expert attempts to identify problems with the wording and structure of questions, the response alternatives, the order of questions, instructions to interviewers for administering the questionnaire, and the navigational rules of the questionnaire that may affect the reliability and validity of survey items.

The percent of households with one landline for voice conversation was calculated for five national surveys and presented in Figure 2. Differential household probabilities of selection were incorporated in the estimates when available. Imputed values were also used when provided. Otherwise, missing data were excluded from the analysis. Missing data rates on the phone lines items were typically low.

In order to assess the potential effect of misreporting phone line information on weighted survey estimates, we first calculated key estimates from the 2005 BRFSS and August 2005 Harris Poll using the appropriate person or household survey weight with the original phone line correction. We then re-calculated the estimates using three modified weights that reflected different distributions of the phone line weight for each of the surveys. In addition to calculating point estimates and standard errors, we also examine the loss due to weighting for each of the weights that incorporate different levels of misreporting. The loss due to weighting was calculated as the square of the coefficient of variation of the final weight. All analyses took into account stratification, clustering and weighting in the sample design where appropriate. When available, imputed values were used. Otherwise, missing data were excluded from the analysis.

There were minimal levels of missing data and the uncertainty due to imputation is not reflected in this analysis. Analyses were performed using SAS Version 9.13.

For the BRFSS and Harris Poll, the original weight was assumed to have reporting error and the distribution of the weight variable was modified to attempt to correct for overreporting or underreporting based on the cognitive expert review and comparison of the survey estimate with the gold standard estimates in Figure 2. It should be noted that since the BRFSS is designed to produce state-level estimates, we used 2005 South Carolina data for this analysis. The BRFSS estimate appears to reflect some underreporting so we explored the effect on weighted estimates if some percent of households who reported one landline reported two or three lines. The three scenarios were 2% (1.8% assigned to 2 landlines, .15% assigned to 3 landlines), 4% (3.7%-2 landlines, .3%-3 landlines), and 15% (13.9%-2 landlines, 1.1%-3 landlines) of one landline households failing to report additional eligible landlines. It was assumed that the misreporting was random among those who reported one eligible landline.

In the Harris Poll, respondents appear to overreport the number of eligible landlines. Three modified weights were developed which assigned some percent of respondents who reported two eligible landlines a value of one eligible landline for weighting purposes. The four modified weights for the Harris Poll were based on the following assumptions: 30%, 50%, or 75% of two or three landline households overreporting one or two landlines. Again, it was assumed that misreporting was random among households who reported two or three landlines.

## 4. Results

### 4.1 Cognitive Expert Review of Phone Lines Items

As a first step in this analysis, we highlight a number of potential comprehension problems with questions and response options for the phone lines items (see Figure 1). The first BRFSS phone lines question is a yes/no item. Respondents may be more inclined to say “yes” simply due to a tendency to agree with yes/no items (“yea saying” bias). There is an explicit instruction to exclude cell phones which should reduce overreporting of cell phones but it appears early in the instruction. Respondents may be more focused on the last part of the instruction which instructs them to exclude dedicated computer and fax lines. It is unclear how to interpret the phrase “residential number” in the second phone lines item. Business lines are not explicitly excluded in the BRFSS item series.

The Harris Poll phone lines item is lengthy with complex phrases, such as “separate telephone lines”, “different

telephone numbers”, and “home you are in now”. The last phrase of this item, “which can receive calls”, which is likely to be remembered due to recency effects in aural communication, may trigger estimates based on the number of *phones* that can receive calls rather than the number of *lines*. There is no instruction to exclude cell phones which may lead to overreporting. The response option “only one” also might encourage overreporting of phone lines that seem plausible to include. As in the BRFSS, business phone lines are not explicitly excluded. There is an instruction to exclude dedicated fax and modem lines which should reduce misreporting of these types of lines. However, it should be noted that once respondents hear the question they may be less likely to pay attention to subsequent instructions. In addition, interviewers may not always read the instruction if the respondent answers as soon as the end of the question is read.

### 4.2 Estimates of Percent of Households Reporting One Landline for Four National RDD Surveys and the CPS

The percent of households reporting one landline used for voice conversation for each of the major national RDD surveys and the CPS is shown in Figure 2. The NHES, CPS and NSAF estimates are the higher quality or gold standard estimates. The NSAF estimate of the number of households with one landline in 2002 is 88.3%. The NHES estimate of one landline households in 2005 is 92.2%. Trending upward during the 2002-2005 period, the BRFSS estimate of one landline households is 91.1% in 2002 and 94.5% in 2005. The Harris Poll estimates are 75.7% (2002), 76.2% (2003), 75.5% (2004), and 79.3% (2005).

### 4.3 Re-Estimates of Key Weighted Figures

Tables 1-2 present key estimates from the BRFSS and Harris Poll under adjustments that incorporate varying phone line weights. Under the title of each of the weights, we list the percent of households that are assumed to be reporting one landline in the weighting adjustment. As Table 1 illustrates, there are no large differences in estimates across weighting adjustments for the 2005 South Carolina BRFSS. The percent of respondents who reported that they exercised in the last 30 days is 73.70% using the Original Weight and 73.81% using Weight Adjustment 2. When examining the percent of respondents with no children in the household, the largest difference occurs when comparing the estimate using the Original Weight (57.69%) and the estimate using Weight Adjustment 3 (57.51%). The range in the efficiency loss due to weighting is .57 (Original Weight, Weight Adjustment 1) to .62 (Weight Adjustment 3).

The most extreme weighting adjustments were applied for the August 2005 Harris Poll. However, as shown in Table 2, the estimates change only slightly across the four

weighting adjustments. The percent of persons who identify themselves as Republican is 29.2% using the original weight and 29.3% using the most extreme modified weight, Weight Adjustment 3. An “Excellent” Presidential approval rating was given by 12.9% of respondents using the original weight and 13.2% of respondents using Weight Adjustment 3. We highlight a difference in the loss in efficiency for the proposed weights. The loss is .84 using the original weight but only .73 under Weight Adjustment 3. Thus, while the estimates do not change much across the weighting adjustments, the original weight is being applied with a loss of efficiency that is greater than the proposed adjustments that have the potential to correct for misreporting.

## 5. Discussion and Future Research

The increasing trend in the percent of households reporting one landline that is observed across the RDD surveys in Figure 2 is consistent with FCC data on multiple landline households tracked over the past five years. While the trend toward fewer households with more than one landline is similar across the surveys, there is some variability in the percent of households reporting one eligible landline. BRFSS estimates during the period from 2002-2005 are consistently higher than the gold standard estimates. It is possible that respondent difficulty in interpreting “residential numbers” in the BRFSS phone lines item leads to underreporting of telephone lines that are used at least part of the time for voice conversation. Harris Poll estimates are substantially lower than any of the other RDD surveys. This may be due to overreporting of cell phones which are not explicitly excluded in the Harris phone lines item and respondent problems in understanding the complex, ambiguous wording of the phone lines question and response categories.

The main finding from Tables 1 and 2 is that altering the weighting adjustment to address potential misreporting in two major national RDD surveys has little impact on key weighted survey estimates. However, there are a number of limitations that need to be addressed in future research. A major limitation in this analysis is that additional work is needed to understand the mechanism underlying misreporting of phone line information. It seems plausible that specific subgroups are more likely to misreport this information. Thus, the random misreporting assumption may be in error. If so, the results presented here could change substantially, especially if the variables that affect misreporting also correlate with key survey measures of interest.

In this analysis, we assumed that the extended series of items were “gold standard” measures but these measures may be subject to error. There also are methodological differences across the RDD surveys analyzed here which

should be considered when comparing data from the surveys.

Finally, as the NHES and NSAF illustrate, there may be a trend toward including additional questions to capture accurate phone line information given the complexity of today’s telephone technology environment but this comes at a cost. There needs to be further work to provide empirical evidence that obtaining high-quality phone line estimates has an impact on weighted survey estimates from RDD surveys.

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## References

- Kish, L. (1965). *Survey Sampling*. New York: Wiley.
- Kish, L. (1990). “Weighting: Why, When, and How?” *Proceedings of the Section on Survey Research Methods, American Statistical Association*, pp. 121-130.
- Lee, E.S. and Forthofer, R.N. (2006). *Analyzing Complex Survey Data (Second Edition)*. Thousand Oaks, CA: Sage.
- Massey, J.T. and Botman, S.L. (1988). “Weighting Adjustments for Random Digit Dialed Surveys,” in R.M. Groves, P.P. Biemer, L.E. Lyberg, J.T. Massey, W.L. Nicholls II, and J. Waksberg (eds.), *Telephone Survey Methodology*, New York: Wiley, pp. 143-160.
- Roth, S.B., Montaquila, J. and Brick, J.M. (2001). “Effects of Telephone Technologies and Call Screening Devices on Sampling, Weighting and Cooperation in a Random Digit Dialing (RDD) Survey.” *Proceedings of the Section on Survey Research Methods, American Statistical Association*.
- Triplett, T. and Abi-Habib, N. (2003). “Determining the Probability of Selection for a Telephone Household in a Random Digit Dial Sample Design is Becoming more Difficult.” *Proceedings of the Section on Survey Research Methods, American Statistical Association*, pp. 202-207.
- Tucker, C. and Brick, M. (2005). “CPS Estimates of Cell-Phone Only Population Size and Characteristics.” Paper presented at the Nielsen Cell Phone Sampling Summit II, February 2005.
- Tucker, C., Brick, J.M., Meekins, B., and Morganstein, D. (2004). “Household Telephone Service and Usage Patterns in the U.S. in 2004.” *Proceedings of the Section on Survey Research Methods, American Statistical Association*.

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**Figure 1. Wording of Phone Lines Item(s) for RDD Surveys: 2002-2005**

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**BRFSS (2002-05):**

- Do you have more than one telephone number in your household? Do not include cell phones or numbers that are only used by a computer or fax machine.
- (IF MORE THAN ONE NUMBER) How many of these numbers are residential numbers?

**Harris Poll (2002-05):**

- How many separate telephone lines with different telephone numbers do you have in the home you are in now which can receive phone calls? Do not count those which are only used for faxes or modems.
  - Only one
  - Two
  - Three or more
  - Not sure (VOLUNTEERED)
  - Decline to answer (VOLUNTEERED)

**Sample of Gold Standard/Higher Quality Phone Line Questions -**

**National Survey of America's Families (2002):**

M14. Besides [TEL NUMBER], do you have other telephone numbers in your household, not including cell phones?

- Yes → GO TO M15
- No → GO TO NEXT SECTION
- DK → GO TO M18

M15. Including your computer and fax phone numbers, how many of these additional phone numbers are for home use?

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*If M15=0, go to next section. If M15=1, go to M16. If M15>1, go to M17.*

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M16. Is this additional phone number used for a computer or fax machine?

- Yes → GO TO M20
- No → GO TO NEXT SECTION

M17. Of these [NUMBER] additional home use phone numbers, how many are used for a computer or fax machine?

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*If M17=0, go to next section. If M17=1, go to M20. If M17>1, go to M19.*

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M18. Do you have any additional phone numbers for computer or fax machines?

- Yes → GO TO M20
- No → GO TO NEXT SECTION

M19. How many of these [NUMBER] phone numbers used for computers or faxes are ever answered for talking?

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*If M19=0, go to next section. If M19=1, go to M21. If M19>1, go to M22.*

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M20. Is it ever answered for talking?

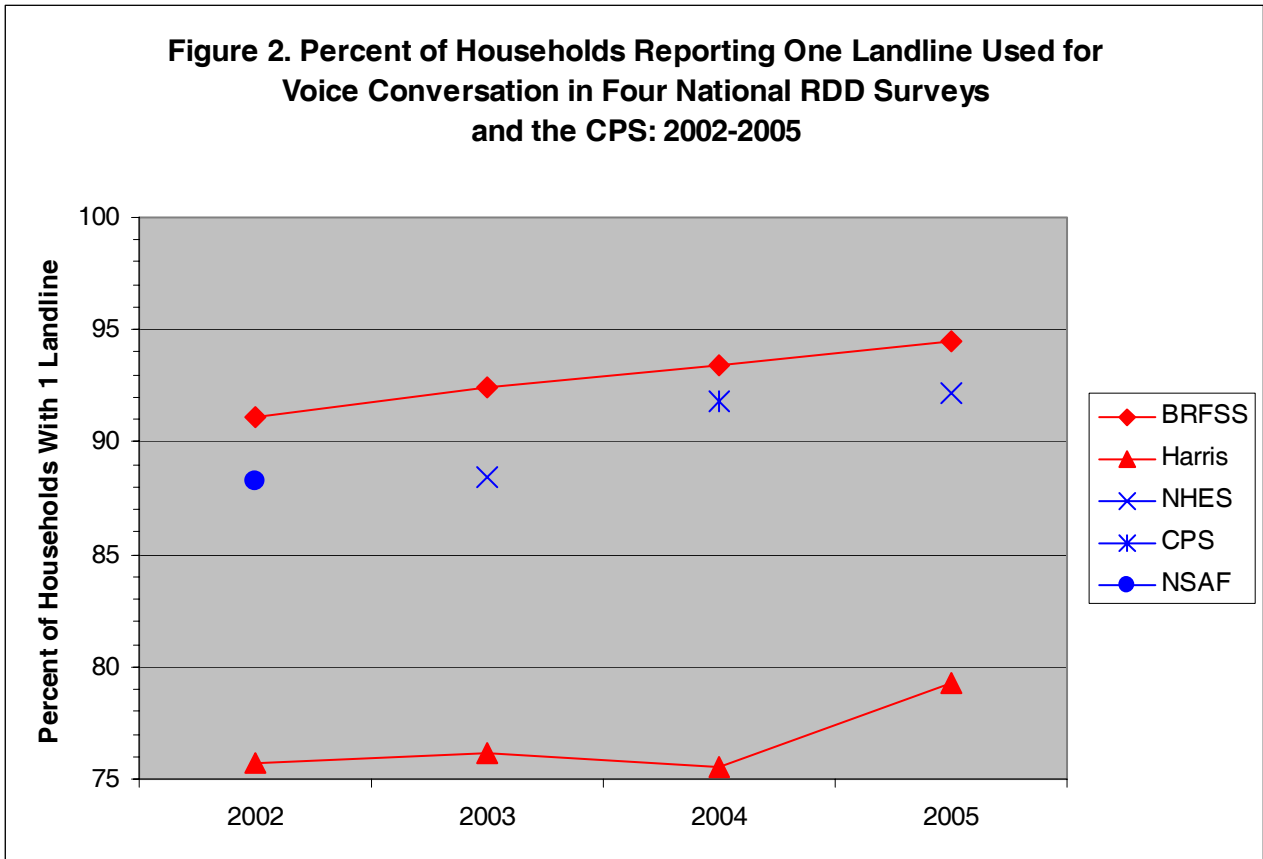
- Yes → GO TO M21
- No → GO TO NEXT SECTION

M21. Is this phone number used for a computer or fax line answered for:

- Personal calls → GO TO NEXT SECTION
- Business calls → GO TO NEXT SECTION
- Both? → GO TO NEXT SECTION

M22. Of these [NUMBER OF PHONE NUMBERS THAT ARE ANSWERED], how many are answered for non-business related calls?

**Figure 2. Percent of Households Reporting One Landline Used for Voice Conversation in Four National RDD Surveys and the CPS: 2002-2005**



**Table 1.** Percent of Persons Reporting Health Behaviors and Demographic Characteristics for the 2005 South Carolina BRFSS Under Four Proposed Weighting Adjustments (n=8,440)

	Original Weight (95.4%*)	Weight Adj 1 (93.5%)	Weight Adj 2 (91.6%)	Weight Adj 3 (81.3%)
Flu shot in past 12 months	25.15 (0.56)	25.16 (0.56)	25.16 (0.56)	25.13 (0.57)
Have health care coverage	80.76 (0.61)	80.81 (0.61)	80.69 (0.62)	80.74 (0.62)
Exercise in last 30 days	73.70 (0.59)	73.76 (0.59)	73.81 (0.60)	73.80 (0.60)
Smoked at least 100 cigarettes	46.73 (0.68)	46.68 (0.68)	46.71 (0.68)	46.53 (0.69)
Employed	53.02 (0.68)	53.10 (0.68)	53.06 (0.68)	53.07 (0.68)
College graduate+	27.11 (0.57)	27.21 (0.57)	27.15 (0.57)	27.07 (0.57)
No children	57.69 (0.69)	57.66 (0.69)	57.68 (0.69)	57.51 (0.70)
<i>Loss due to weighting</i>	0.57	0.57	0.59	0.62

\*Percent reporting 1 landline for voice conversation

NOTE: Estimates are percents unless indicated otherwise. Standard errors are in parentheses. Estimates and standard errors reflect complex sample design features.

**Table 2.** Percent of Persons Reporting Political Attitudes for the August 2005 Harris Poll Under Four Proposed Weighting Adjustments

	Original Weight (79.3%*)	Weight Adj 1 (85.4%)	Weight Adj 2 (89.6%)	Weight Adj 3 (94.8%)
Party identification – Republican (n=841)	29.2 (1.9)	29.3 (1.9)	29.4 (1.9)	29.3 (1.9)
Yes, country going in right direction (n=1,127)	37.7 (2.0)	37.7 (2.0)	37.4 (1.9)	37.3 (1.9)
Yes, Iraq invasion has helped to protect US (n=1,099)	38.6 (2.0)	38.4 (2.0)	38.5 (1.9)	38.2 (1.9)
Presidential approval – Excellent (n=1,121)	12.9 (1.2)	12.9 (1.2)	13.3 (1.3)	13.2 (1.2)
<i>Loss due to weighting</i>	0.84	0.79	0.76	0.73

\*Percent reporting 1 landline for voice conversation

NOTE: Estimates are percents unless indicated otherwise. Standard errors are in parentheses. Estimates and standard errors reflect complex sample design features.