Methodology

March 2012 Omnibus Week 5

Prepared by Princeton Survey Research Associates International

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The PSRAI March 2012 Omnibus Week 5 obtained telephone interviews with a nationally representative sample of 1,000 adults living in the continental United States. Telephone interviews were conducted by landline (599) and cell phone (401, including 180 without a landline phone). The survey was conducted by Princeton Survey Research Associates International (PSRAI). Interviews were done in English by Universal Survey Center from March 29 – April 1, 2012. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is ± 3.7 percentage points.

# Design AND Data Collection Procedures

#### Sample Design

A combination of landline and cellular random digit dial (RDD) samples was used to represent all adults in the continental United States who have access to either a landline or cellular telephone. Both samples were provided by Survey Sampling International, LLC (SSI) according to PSRAI specifications.

Numbers for the landline sample were drawn with probabilities in proportion to their share of listed telephone households from active blocks (area code + exchange + two-digit block number) that contained three or more residential directory listings. The cellular sample was not list-assisted, but was drawn through a systematic sampling from dedicated wireless 100-blocks and shared service 100-blocks with no directory-listed landline numbers.

#### Contact Procedures

As many as three attempts were made to contact every sampled telephone number. Sample was released for interviewing in replicates, which are representative subsamples of the larger sample. Using replicates to control the release of sample ensures that complete call procedures are followed for the entire sample. Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. Each phone number received at least one daytime call when necessary.

For the landline sample, interviewers asked to speak with the youngest adult male or female currently at home based on a random rotation. If no male/female was available, interviewers asked to speak with the youngest adult of the other gender. This systematic respondent selection technique has been shown to produce samples that closely mirror the population in terms of age and gender when combined with cell interviewing.

For the cellular sample, interviews were conducted with the person who answered the phone. Interviewers verified that the person was an adult and in a safe place before administering the survey.

# Weighting and analysis

Weighting is generally used in survey analysis to compensate for sample designs and patterns of non-response that might bias results. The sample was weighted to match national adult general population parameters. A two-stage weighting procedure was used to weight this dual-frame sample.

The first stage of weighting corrected for different probabilities of selection associated with the number of adults in each household and each respondent’s telephone usage patterns.[[1]](#footnote-1) This weighting also adjusts for the overlapping landline and cell sample frames and the relative sizes of each frame and each sample.

This first-stage weight for the ith case can be expressed as:



Where SLL = size of the landline sample

SCP = size of the cell phone sample

ADi = Number of adults in the household

R = Estimated ratio of the land line sample frame to the cell phone sample frame

The equations can be simplified by plugging in the values for SLL = 600 and SCP = 400. Additionally, we will estimate of the ratio of the size of landline sample frame to the cell phone sample frame R = 0.66.

The second stage of weighting balanced sample demographics to population parameters. The sample is balanced to match national population parameters for sex, age, education, race, Hispanic origin, region (U.S. Census definitions), population density, number of adults in household, and telephone usage. The basic weighting parameters came from a special analysis of the Census Bureau’s 2011 Annual Social and Economic Supplement (ASEC) that included all households in the continental United States. The population density parameter was derived from Census 2000 data. The telephone usage parameter came from an analysis of the January-June 2011 National Health Interview Survey.[[2]](#footnote-2)

Weighting was accomplished using Sample Balancing, a special iterative sample weighting program that simultaneously balances the distributions of all variables using a statistical technique called the *Deming Algorithm*. Weights were trimmed to prevent individual interviews from having too much influence on the final results. The use of these weights in statistical analysis ensures that the demographic characteristics of the sample closely approximate the demographic characteristics of the national population.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 1: Sample Demographics** | |  |  |
| 2011 Parameter | |  |  |
| Gender |  |  |  |
| Male | 48.6 |  |  |
| Female | 51.4 |  |  |
|  |  |  |  |
| Age |  |  |  |
| 18-24 | 12.8 |  |  |
| 25-34 | 18.0 |  |  |
| 35-44 | 17.2 |  |  |
| 45-54 | 19.0 |  |  |
| 55-64 | 16.0 |  |  |
| 65+ | 17.0 |  |  |
|  |  |  |  |
| Education |  |  |  |
| Less than HS Graduate | 13.3 |  |  |
| HS Graduate | 34.4 |  |  |
| Some College | 24.5 |  |  |
| College Graduate | 27.8 |  |  |
|  |  |  |  |
| Race/Ethnicity |  |  |  |
| White/not Hispanic | 68.0 |  |  |
| Black/not Hispanic | 11.6 |  |  |
| Hispanic | 14.1 |  |  |
| Other/not Hispanic | 6.3 |  |  |
|  |  |  |  |
| Region |  |  |  |
| Northeast | 18.5 |  |  |
| Midwest | 21.8 |  |  |
| South | 37.0 |  |  |
| West | 22.7 |  |  |
|  |  |  |  |
| County Pop. Density |  |  |  |
| 1 - Lowest | 20.1 |  |  |
| 2 | 20.0 |  |  |
| 3 | 20.1 |  |  |
| 4 | 20.2 |  |  |
| 5 - Highest | 19.6 |  |  |
|  |  |  |  |
| Household Phone Use |  |  |  |
| LLO | 7.6 |  |  |
| Dual | 59.4 |  |  |
| CPO | 33.0 |  |  |
|  |  |  |  |
| # of adults in HH |  |  |  |
| One | 17.0 |  |  |
| Two | 52.9 |  |  |
| Three + | 30.1 |  |  |

# Effects of Sample Design on Statistical Inference

Post-data collection statistical adjustments require analysis procedures that reflect departures from simple random sampling. PSRAI calculates the effects of these design features so that an appropriate adjustment can be incorporated into tests of statistical significance when using these data. The so-called "design effect" or *deff* represents the loss in statistical efficiency that results from a disproportionate sample design and systematic non-response.

PSRAI calculates the composite design effect for a sample of size *n*, with each case having a weight, *wi* as:



*formula 1*

In a wide range of situations, the adjusted *standard error* of a statistic should be calculated by multiplying the usual formula by the square root of the design effect (√*deff* ). Thus, the formula for computing the 95% confidence interval around a percentage is:



*formula 2*

where  is the sample estimate and *n* is the unweighted number of sample cases in the group being considered.

The survey’s *margin of error* is the largest 95% confidence interval for any estimated proportion based on the total sample— the one around 50%. It is important to remember that sampling fluctuations are only one possible source of error in a survey estimate. Other sources, such as respondent selection bias, questionnaire wording and reporting inaccuracy, may contribute additional error of greater or lesser magnitude.

1. i.e., whether respondents have only a landline telephone, only a cell phone, or both kinds of telephone. [↑](#footnote-ref-1)
2. Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, January-June, 2011. National Center for Health Statistics. Dec. 2011. [↑](#footnote-ref-2)