Methodology

July/August 2010 Religion and Public Life Survey

Prepared by Princeton Survey Research Associates International  
for the Pew Forum on Religion & Public Life

August 2010

**SUMMARY**

The July/August 2010 Religion and Public Life Survey, sponsored by the Pew forum on Religion & Public Life, obtained telephone interviews with a nationally representative sample of 3,003 adults living in the continental United States. Telephone interviews were conducted by landline (2,002) and cell phone (1,001 including 431 without a landline phone). The survey was conducted by Princeton Survey Research International (PSRAI). Interviews were done in English and Spanish by Princeton Data Source from July 21 to August 5, 2010. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is ±2.1 percentage points.

Details on the design, execution and analysis of the survey are discussed below.

# 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 equal probabilities 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.

#### Questionnaire Development and Testing

The questionnaire was developed by the Pew Forum on Religion & Public Life. In order to improve the quality of the data, the questionnaire was pretested with a small number of respondents using RDD telephone numbers. The monitored pretest interviews were conducted using experienced interviewers who could best judge the quality of the answers given and the degree to which respondents understood the questions. Some final changes were made to the questionnaire based on the monitored pretest interviews.

#### Contact Procedures

Interviews were conducted from July 21 to August 5, 2010. As many as 7 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.

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.

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. Cellular sample respondents were offered a post-paid cash incentive for their participation.

# Weighting and analysis

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

The first stage weight is the product of two adjustments made to the data – a Probability of Selection Adjustment (PSA) and a Phone Use Adjustment (PUA).

The PSA corrects for the fact that respondents in the landline sample have different probabilities of being sampled depending on how many adults live in the household. Since we only sample one person per household, adults who live with no other adults have a greater chance of being sampled than adults who live in multiple-adult households.

To compute the PSA, first define *n*1 as the number of respondents in the landline sample who live in single-adults households and *n*2 as the number of respondents in the landline sample that live in multi-adult households. The PSA equals:

The PUA corrects for the overlapping landline and cellular sample frames. To compute the PUA, first define *p*1 as the number of respondents with only one type of phone – landline or cell - and define *p*2 as the number of respondents with both types of phones, the PUA equals:

The second stage of weighting balances sample demographics to population parameters. The sample is balanced - by form - to match national population parameters for sex, age, education, race, Hispanic origin, region (U.S. Census definitions), population density, and telephone usage. The White, non-Hispanic subgroup is also balanced on age, education and region. The basic weighting parameters came from a special analysis of the Census Bureau’s 2009 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 cell phone usage parameter came from an analysis of the July-December 2009 National Health Interview Survey.[[1]](#footnote-1)

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 compares weighted and unweighted sample distributions to population parameters.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 1: Sample Demographics** | |  |  |
|  | Parameter | Unweighted | Weighted |
| Gender |  |  |  |
| Male | 48.5% | 44.5% | 48.1% |
| Female | 51.5% | 55.5% | 51.9% |
|  |  |  |  |
| Age |  |  |  |
| 18-24 | 12.6% | 9.6% | 12.6% |
| 25-34 | 17.8% | 12.3% | 16.9% |
| 35-44 | 18.2% | 13.8% | 17.0% |
| 45-54 | 19.6% | 18.9% | 19.7% |
| 55-64 | 15.1% | 20.0% | 15.1% |
| 65+ | 16.6% | 23.5% | 16.8% |
|  |  |  |  |
| Education |  |  |  |
| Less than HS Graduate | 14.1% | 8.1% | 12.3% |
| HS Graduate | 34.7% | 28.4% | 33.8% |
| Some College | 24.1% | 26.0% | 24.5% |
| College Graduate | 27.1% | 37.0% | 28.9% |
|  |  |  |  |
| Race/Ethnicity |  |  |  |
| White/not Hispanic | 68.8% | 73.6% | 69.0% |
| Black/not Hispanic | 11.5% | 11.3% | 11.6% |
| Hispanic | 13.7% | 8.3% | 12.4% |
| Other/not Hispanic | 6.0% | 5.8% | 6.0% |
|  |  |  |  |
| Region |  |  |  |
| Northeast | 18.5% | 17.9% | 18.9% |
| Midwest | 22.0% | 24.4% | 22.7% |
| South | 36.8% | 39.4% | 37.3% |
| West | 22.7% | 18.3% | 21.1% |
|  |  |  |  |
| County Pop. Density |  |  |  |
| 1 - Lowest | 20.1% | 23.1% | 20.6% |
| 2 | 20.0% | 22.0% | 20.4% |
| 3 | 20.1% | 21.2% | 20.1% |
| 4 | 20.2% | 19.2% | 20.4% |
| 5 - Highest | 19.6% | 14.5% | 18.6% |
|  |  |  |  |
| Household Phone Use | May |  |  |
| LLO | 11.0% | 10.9% | 11.2% |
| Dual - few, some cell | 48.2% | 57.5% | 47.2% |
| Dual - most cell | 17.4% | 16.5% | 16.0% |
| CPO | 25.4% | 14.4% | 24.9% |

# 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. The total sample design effect for this survey is 1.32.

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%. For example, the margin of error for the entire sample is ±2.1 percentage points. This means that in 95 out every 100 samples drawn using the same methodology, estimated proportions based on the entire sample will be no more than 2.1 percentage points away from their true values in the population. The margin of error for results based on form 1 or form 2 respondents is ±2.9 percentage points. 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.

# Response Rate

Table 2 report the disposition of all sampled telephone numbers ever dialed from the original telephone number samples. Response rates are computed according to AAPOR definition 3. Thus the response rate for the land line samples was 15 percent. The response rate for the cellular samples was 12 percent.

|  |  |  |
| --- | --- | --- |
| **Table 2: Sample Disposition** | | |
| Landline | Cell |  |
| 2002 | 1001 | I=Complete |
| 6974 | 4924 | R=Refusal and break off |
| 2846 | 1939 | NC=Non-contact |
| 351 | 298 | O=Other |
| 24997 | 6784 | OF=Business/computer/not working/child's cell phone |
| 4141 | 364 | UH/UO=Unknown household/Unknown other |
|  |  |  |
| 0.33 | 0.55 | AAPOR's e=(I+R+NC+O)/(I+R+NC+O+OF) |
|  |  |  |
| 14.8% | 12.0% | AAPOR RR3=I/[I+R+NC+O+(e\*UH/UO)] |

1. Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, July-December, 2009. National Center for Health Statistics. May 2010. [↑](#footnote-ref-1)