Reason-Rupe April 2014 Poll
Methodology

Prepared by Princeton Survey Research Associates International
for Reason Foundation

SUMMARY

The Reason-Rupe March/April 2014 Poll obtained telephone interviews with a nationally representative sample of 1,003 adults living in the continental United States. Telephone interviews were conducted by landline (500) and cell phone (503, including 274 without a landline phone). The survey was conducted by Princeton Survey Research Associates International (PSRAI). Interviews were done in English by Princeton Data Source, LLC from March 26 to 30, 2014. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is ± 3.6 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.

Contact Procedures

Interviews were conducted from March 26 to 30, 2014. As many as seven attempts were made to contact every sampled landline telephone number. For cellular telephone numbers, as many as five attempts were made. 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] This weighting also adjusts for the overlapping landline and cell sample frames and the relative sizes of each frame and each sample.

[1] i.e., whether respondents have only a landline telephone, only a cell phone, or both kinds of telephone.

This first-stage weight for the i[th] case can be expressed as:

$$WT_i = \left[\left(\frac{S_{LL}}{F_{LL}} \times \frac{1}{AD_i} \times LL_i\right) + \left(\frac{S_{CP}}{F_{CP}} \times CP_i\right) - \left(\frac{S_{LL}}{F_{LL}} \times \frac{1}{AD_i} \times LL_i \times \frac{S_{CP}}{F_{CP}} \times CP_i\right)\right]^{-1}$$

Where S_{LL} = the size of the landline sample

F_{LL} = the size of the landline sample frame

S_{CP} = the size of the cell sample

F_{CP} = the size of the cell sample frame

AD_i = number of adults in household i

LL_i=1 if respondent has a landline phone, otherwise LL_i=0.

CP_i=1 if respondent has a cell phone, otherwise CP_i=0.

The second stage of weighting balanced 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 basic weighting parameters came from the US Census Bureau's 2012 American Community Survey data.[2] The population density parameter was derived from Census 2010 data. The telephone usage parameter came from an analysis of the January-June 2013 National Health Interview Survey.[3]

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.

[2] ACS analysis was based on all adults excluding those living in institutional group quarters (GCs).

[3] Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, January-June, 2013. National Center for Health Statistics. Dec 2013.

Table 1: Sample Demographics

	Parameter	Unweighted	Weighted
Gender			
Male	48.2%	52.1%	49.1%
Female	51.8%	47.9%	50.9%
Age			
18-24	13.1%	10.0%	12.6%
25-34	17.4%	12.3%	16.4%
35-44	17.1%	11.6%	17.1%
45-54	18.5%	16.5%	18.6%
55-64	16.2%	19.9%	16.8%
65+	17.7%	29.8%	18.5%
Education			
HS Graduate or Less	41.4%	33.3%	41.1%
Some College/Assoc Degree	31.6%	28.0%	30.6%
College Graduate	27.0%	38.7%	28.3%
Race/Ethnicity			
White/not Hispanic	66.4%	74.0%	68.0%
Black/not Hispanic	11.6%	12.7%	12.1%
Hisp	14.8%	7.1%	12.6%
Other/not Hispanic	7.2%	6.3%	7.3%
Region			
Northeast	18.3%	17.9%	18.3%
Midwest	21.6%	23.0%	22.0%
South	37.4%	38.9%	37.5%
West	22.7%	20.1%	22.2%
County Pop. Density	2010		
1 - Lowest	19.9%	21.7%	20.3%
2	20.0%	20.7%	19.8%
3	20.1%	21.1%	20.1%
4	20.0%	19.3%	19.9%
5 - Highest	20.0%	17.0%	19.9%
Household Phone Use	Dec '13		
LLO	6.6%	3.7%	6.2%
Dual	52.5%	69.0%	54.1%
CPO	40.9%	27.3%	39.7%

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 1.37.

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

$$deff = \frac{n\sum_{i=1}^{n} w_i^2}{\left(\sum_{i=1}^{n} w_i\right)^2} \qquad \textit{formula 1}$$

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 ($\sqrt{deff}$). Thus, the formula for computing the 95% confidence interval around a percentage is:

$$\hat{p} \pm \left(\sqrt{deff} \times 1.96\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}\right) \qquad \textit{formula 2}$$

where $\hat{p}$ 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 ±3.6 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 3.6 percentage points away from their true values in the population. The margin of error for estimates based on form 1 or form 2 respondents is ±5.2 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. The response rate estimates the fraction of all eligible sample that was ultimately interviewed. At PSRAI it is calculated by taking the product of three component rates:[4]

- Contact rate – the proportion of working numbers where a request for interview was made[5]
- Cooperation rate – the proportion of contacted numbers where a consent for interview was at least initially obtained, versus those refused
- Completion rate – the proportion of initially cooperating and eligible interviews that were completed

Thus the response rate for the land line samples was 7 percent. The response rate for the cellular samples was 9 percent.

[4] PSRAI's disposition codes and reporting are consistent with the American Association for Public Opinion Research standards.

[5] PSRAI assumes that 75 percent of cases that result in a constant disposition of "No answer" or "Busy" are actually not working numbers.

Table 2:Sample Disposition

Landline	Cell	
29,990	19,994	Total Numbers Dialed
1,018	273	Non-residential
964	68	Computer/Fax
9	----	Cell phone
17,502	7,296	Other not working
1,921	337	Additional projected not working
8,576	12,020	Working numbers
28.6%	60.1%	Working Rate
640	112	No Answer / Busy
3,900	4,878	Voice Mail
21	15	Other Non-Contact
4,015	7,015	Contacted numbers
46.8%	58.4%	Contact Rate
319	1,408	Callback
3,044	4,448	Refusal
652	1,159	Cooperating numbers
16.2%	16.5%	Cooperation Rate
135	333	Language Barrier
----	302	Child's cell phone
517	524	Eligible numbers
79.3%	45.2%	Eligibility Rate
17	21	Break-off
500	503	Completes
96.7%	96.0%	Completion Rate
7.4%	9.3%	Response Rate