

# **Reason-Rupe September 2012 Poll Methodology**

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for Reason Foundation

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## **SUMMARY**

The Reason-Rupe poll obtained telephone interviews with a representative sample of 696 adults living in California. Telephone interviews were conducted by landline (467) and cell phone (229, including 106 without a landline). The survey was conducted by Princeton Survey Research International. The interviews were done in English and Spanish by Princeton Data Source, LLC from October 11-15, 2012. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is  $\pm 4.4$  percentage points. The margin of error for likely voters is 5.1%

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 California 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 October 11-15, 2012. As many as five 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 California 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.<sup>1</sup> This weighting also adjusts for the overlapping landline and cell sample frames and the relative sizes of each frame and each sample.

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<sup>1</sup> i.e., whether respondents have only a landline telephone, only a cell phone, or both kinds of telephone.

This first-stage weight for the  $i^{\text{th}}$  case can be expressed as:

$$WT_i = \frac{1}{\left(\frac{S_{LL}}{S_{CP}} \times \frac{1}{AD_i}\right)} \text{ if respondent has no cell phone}$$

$$WT_i = \frac{1}{\left(\frac{S_{LL}}{S_{CP}} \times \frac{1}{AD_i}\right) + R} \text{ if respondent has both kinds of phone}$$

$$WT_i = \frac{1}{R} \text{ if respondent has no land line phone}$$

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

$S_{CP}$  = size of the cell phone sample

$AD_i$  = 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  $S_{LL} = 467$  and  $S_{CP} = 229$ . Additionally, we will estimate of the ratio of the size of landline sample frame to the cell phone sample frame  $R = 0.88$ .

The second stage of weighting balanced sample demographics to population parameters. The sample is balanced to match California population parameters for sex, age, education, race, Hispanic origin and nativity, region, population density, number of adults in household, telephone usage and employment status. 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 California. The population density parameter was derived from 2010 Census data at the county level. The telephone usage parameter came from an analysis of recent PSRAI Omnibus survey data.

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**

	<u>Parameter</u>	<u>Unweighted</u>	<u>Weighted</u>
<u>Gender</u>			
Male	49.7	47.0	48.9
Female	50.3	53.0	51.1
<u>Age</u>			
18-24	13.8	11.1	14.3
25-34	19.5	11.2	18.1
35-44	18.1	17.0	19.0
45-54	18.5	14.9	17.8
55-64	14.5	20.0	14.9
65+	15.6	25.7	15.9
<u>Education (changed)</u>			
Less than HS Graduate	18.0	6.1	13.9
HS Graduate	24.3	21.0	25.0
Some College/Assoc Degree	28.8	31.3	29.9
College Graduate	28.9	41.6	31.3
<u>Race/Ethnicity</u>			
White/not Hispanic	45.4	57.7	46.7
Black/not Hispanic	5.6	9.0	6.1
Hispanic-US born	15.1	12.1	14.8
Hispanic-foreign born	18.9	10.1	17.0
Other/not Hispanic	14.9	11.1	15.5
<u>Region</u>			
LA county	26	25.0	27.2
Bay Area	16	15.9	16.7
Rest of state	58	59.1	56.2
<u>County Pop. Density</u>			
1 - Lowest	13.9	17.0	14.4
2	17.3	17.7	16.5
3	14.8	14.5	14.4
4	13.3	14.2	13.9
5 - Highest	40.7	36.6	40.7
<u>Household Phone Use</u>			
LLO	10.5	7.2	9.7
Dual	61.9	77.6	64.5
CPO	27.6	15.2	25.8

*continued...*

**Table 1: Sample Demographics (continued)**

	Parameter	Unweighted	Weighted
<u># of adults in HH</u>			
	One	13.9	14.2
	Two	46.8	47.4
	Three +	39.3	38.4
<u>Employment Status</u>			
	Employed - public	8.4	8.9
	Employed - private	41.2	39.8
	Self-employed	7.6	8.0
	Not employed	42.8	43.2

### 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 1.43.

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

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

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:

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

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  $\pm 4.4$  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 4.4 percentage points away from their true values in the population. 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:<sup>2</sup>

- Contact rate – the proportion of working numbers where a request for interview was made<sup>3</sup>
- 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 6 percent. The response rate for the cellular samples was 11 percent.

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<sup>2</sup> PSRAI's disposition codes and reporting are consistent with the American Association for Public Opinion Research standards.

<sup>3</sup> 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	
22098	7900	<b>T</b> Total Numbers Dialed
835	162	<b>OF</b> Non-residential
1054	32	<b>OF</b> Computer/Fax
2	0	<b>OF</b> Cell phone
9728	2596	<b>OF</b> Other not working
1941	62	<b>UH</b> Additional projected not working
8538	5049	Working numbers
38.6%	63.9%	Working Rate
647	21	<b>UH</b> No Answer / Busy
3749	1263	<b>UO<sub>NC</sub></b> Voice Mail
12	10	<b>UO<sub>NC</sub></b> Other Non-Contact
4130	3755	Contacted numbers
48.4%	74.4%	Contact Rate
433	1012	<b>UO<sub>R</sub></b> Callback
3106	2148	<b>UO<sub>R</sub></b> Refusal
591	595	Cooperating numbers
14.3%	15.8%	Cooperation Rate
78	82	<b>IN1</b> Language Barrier/ Not CA resident
0	275	<b>IN2</b> Child's cell phone
513	238	Eligible numbers
86.8%	40.0%	Eligibility Rate
46	9	<b>R</b> Break-off
467	229	<b>I</b> Completes
91.0%	96.2%	Completion Rate
6.3%	11.3%	Response Rate

**LIKELY VOTERS**

Likely voters were identified as respondents who said they are registered to vote and had already voted, or registered voters who said they definitely or probably would vote in the November election.