Methodology

February 2017 Political Survey

Prepared by Princeton Survey Research Associates International
for the Pew Research Center

February 2017

SUMMARY

The February 2017 Political Survey, sponsored by the Pew Research Center, obtained telephone interviews with a nationally representative sample of 1,503 adults, age 18 or older, living in the United States. Interviews were conducted via landline (n_{LL}=377) and cell phone (n_C=1,126; including 680 without a landline phone). The survey was conducted by Princeton Survey Research Associates International (PSRAI). The interviews were administered in English and Spanish by Princeton Data Source from February 7 to 12, 2017. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is ±2.9 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 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 one 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 February 7 to 12, 2017. 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. Interviewing was spread as evenly as possible across the days in field. When necessary, each telephone number was called at least one time during the day in an attempt to complete an interview.

For the landline sample, interviewers asked to speak with the youngest 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. Prior to dialing, the landline sample was scrubbed of numbers that have been ported to wireless service by comparing the sample file to the most recently available Intermodal Ported Telephone Number Identification Service database.

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 respondents were offered a post-paid cash reimbursement 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. 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.

The 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=0.

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

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 Hispanic origin was split out based on nativity; U.S. born and non-U.S. born. The White, non-Hispanic subgroup was also balanced on age, education and region.

The basic weighting parameters came from the U.S. Census Bureau's 2015 American Community Survey (ACS) data.[2] The population density parameter was derived from Census 2010 data. The telephone usage parameter came from an analysis of the January-June 2016 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.

3 Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, January-June, 2016. National Center for Health Statistics. Dec 2016.

Table 1: Sample Demographics

	Parameter	Unweighted	Weighted
Gender			
Male	48.3%	51.6%	49.1%
Female	51.7%	48.4%	50.9%
Age			
18-24	12.7%	8.6%	12.2%
25-34	17.6%	15.4%	17.5%
35-44	16.6%	13.8%	16.2%
45-54	17.5%	16.7%	18.2%
55-64	16.6%	20.4%	17.1%
65+	19.0%	25.2%	18.8%
Education			
HS Graduate or Less	40.3%	26.7%	39.4%
Some College/Assoc Degree	31.3%	24.3%	31.3%
College Graduate	28.4%	49.0%	29.2%
Race/Ethnicity			
White/not Hispanic	64.6%	68.1%	64.3%
Black/not Hispanic	11.7%	10.2%	11.9%
Hisp - US born	8.0%	7.2%	8.0%
Hisp - born outside	7.5%	6.3%	7.6%
Other/not Hispanic	8.2%	8.2%	8.2%
Region			
Northeast	17.9%	18.3%	18.6%
Midwest	21.1%	21.6%	21.2%
South	37.4%	36.4%	37.3%
West	23.6%	23.8%	22.9%
County Pop. Density			
1 - Lowest	19.9%	19.5%	19.7%
2	20.0%	19.6%	20.3%
3	20.1%	21.2%	20.0%
4	20.0%	20.3%	19.9%
5 - Highest	20.0%	19.4%	20.2%
Household Phone Use			
LLO	5.6%	2.9%	4.6%
Dual	42.3%	51.9%	43.2%
CPO	52.1%	45.2%	52.2%

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 systematic non-response. The total sample design effect for this survey is 1.33.

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 ±2.9 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 2.9 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 ±4.1 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 reports 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. Response rates are computed according to American Association for Public Opinion Research standards.[4] Thus the response rate for the landline samples was 8 percent. The response rate for the cellular samples was 7 percent.

[4] The American Association for Public Opinion Research. 2016. Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 9th edition. AAPOR.

Table 2. Sample Disposition

Landline	Cell	
1,007	369	Non-residential/Business (4.500)
981	0	Ported numbers identified before dialing (4.420)
12	----	Cell in landline frame (4.420)
2,000	369	OF = Out of Frame
16,269	7,551	Not working (4.300)
524	28	Computer/fax/modem (4.200)
16,793	7,579	NWC = Not working/computer
1,029	757	NA/Busy all attempts (3.120, 3.130)
0	6,131	VM not set up/caller out of range (3.100)
16	13	On DNC list - not dialed (3.90)
1,045	6,901	$UHUO_{NC}$ = Non-contact, unknown if household/unknown other
1,348	7,142	Voice mail (3.140)
15	21	Other non-contact (deaf/disabled/deceased) (3.211)
1,363	7,163	UO_{NC} = Non-contact, unknown eligibility
2,428	6,487	Refusals (3.211)
62	613	Callbacks (INCLUDE Spanish CBs) (3.211)
2,490	7,100	UO_R = Refusal, unknown if eligible
11	89	O = Other (language) (3.211)
----	418	Child's cell phone (4.700)
----	418	SO = Screen out
90	255	R = Refusal, known eligible (breakoffs and qualified CBs) (2.100)
377	1,126	I = Completed interviews (1.0)
24,169	31,000	T = Total numbers sampled
18.7%	67.0%	e1 = $(I+R+SO+O+UO_R+UO_{NC})/(I+R+SO+O+UO_R+UO_{NC}+OF+NWC)$ - Est. frame eligibility of non-contacts
100.0%	76.8%	e2 = $(I+R)/(I+R+SO)$ - Est. screening eligibility of unscreened contacts
65.6%	43.3%	CON = $[I + R + (e2*[O + UO_R])]/[I + R + (e2*[O + UO_R + UO_{NC}]) + (e1*e2*UHUO_{NC})]$
12.7%	16.3%	COOP = $I/[I + R + (e2*[O + UO_R])]$
8.3%	**7.1%**	**AAPOR RR3=$I/[I+R+[e2*(UO_R+UO_{NC}+O)]+[e1*e2*UHUO_{NC}]]$ = CON*COOP**