

# SPRING 2019 TENNESSEE STATEWIDE POLL

Submitted to: CSDI at Vanderbilt University

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## 1. SUMMARY

The Center for the Study of Democratic Institutions (CSDI) at Vanderbilt University regularly conducts public opinion polls of Tennessee registered voters to provide non-partisan, scientifically-based public opinion data. Each year, the Vanderbilt Poll conducts at least two statewide surveys, one prior to the start of the legislative season and one at its conclusion. These polls provide point-in-time data to find out what registered voters in Tennessee think about national, state, and local public policy issues.

The Tennessee Poll Spring 2019 obtained telephone interviews with a representative sample of 1,000 registered voters, age 18 or older, living in Tennessee. Telephone interviews were conducted by landline (500) and cell phone (500, including 394 without a landline phone). Interviews were done in English from May 9-23, 2019. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is  $\pm 3.8$  percentage points.

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

## 2. QUESTIONNAIRE DEVELOPMENT

The questionnaire was developed by the Principal Investigators at the Center for the Study of Democratic Institutions (CSDI) at Vanderbilt in consultation with the SSRS project team. Prior to the field period, SSRS programmed the study into CfMC 8.6 Computer Assisted Telephone Interviewing (CATI) software. Extensive checking of the program was conducted to ensure that skip patterns and sample splits followed the design of the questionnaire.

## 3. SAMPLE DESIGN

The target population for this poll was Tennessee registered voters age 18 or older. SSRS used a registration-based sampling (RBS) approach. RBS sample was procured from Aristotle, one of the major providers of voter list samples. Samples were provided according to SSRS specifications.

The sample frame was split into four strata based on age: [1] 18-29; [2] 30-44; [3] 45-64; [4] 65+. Samples were drawn within stratum regardless of whether they had a phone number appended. Records that had no phone number were sent to SSI to get cell phone and landline numbers appended. The following table shows how much sample was released in each stratum after the SSI phone append.

**Table 1: Sample Released**

Stratum	Landline	Cell
18-29	3,302	3,848
30-44	2,558	7,125
45-64	4,096	5,258
65+	2,825	1,092
Total	12,781	17,323

The sample size for this poll was n=1,000 interviews. Overall, 50% of respondents were reached via landline and 50% of respondents were reached via cellular telephone.

## 4. CONTACT PROCEDURES AND DATA PROCESSING

### 4.1 Contact Procedures

For respondent selection for landline sample, interviews were conducted with the youngest adult 18+ male/female at home based on a random rotation. 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. For both landline and cell samples, after an adult was on the phone, geographic eligibility and current voter registration status were determined prior to accepting the respondent into the survey.

### 4.2 Survey Administration

The field period for this study was May 9-23, 2019. All interviews were completed in English using the CATI system. The CATI system ensured that questions followed logical skip patterns and that complete dispositions of all call attempts were recorded.

CATI interviewers received written materials about the survey instrument and received formal training for this particular project. The written materials were provided prior to commencement of data collection and included an annotated questionnaire that contained information about the goals of the study, detailed explanations about why questions were being asked, the meaning and pronunciation of key terms, potential obstacles to overcome in getting good answers to questions, and respondent problems that could be anticipated ahead of time, as well as strategies for addressing the potential problems.

Interviewer training was conducted before the study was launched. Interviewers were given instructions to help them maximize response rates and ensure accurate data collection.

In order to maximize survey response, SSRS enacted the following procedures during the field period:

- As many as five (5) attempts were made to contact every sampled telephone number.
- Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. At least one daytime call was conducted if necessary.
- Interviewers explained the purpose of the study and its importance.
- Respondents were offered the option of scheduling a call-back at their convenience.
- Specially trained interviewers contacted numbers where the initial call resulted in respondents hanging up the phone.

### 4.3 Data Processing and Integration

Prior to running cross-tabulations, data were cleaned and checked using standard procedures. This program establishes editing parameters in order to locate any errors. Minimal back-coding was done for Question RACE to code open-end responses into prelisted categories where appropriate. No other coding was done for open-end responses.

## 5. 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 weighting ensures that the demographic profile of the sample matches the profile of the target population. The data was weighted to match Tennessee registered voter parameters.

The sample was weighted in two stages. The first-stage of the weighting was the application of a base weight to account for different selection probabilities across sample strata. In the second stage of weighting, sample demographics were matched to population parameters.

### 5.1 Base weight

The sample frame was divided into strata based on whether a landline or a cell phone number was appended to each sample record and the age on each sample record. Sample was allocated so that half of the interviews would be conducted on cell phones and half on landlines. Younger registered voters were sampled at higher rates in order to get more young respondents in the final sample.

The final base weight is the product of two adjustments. The first adjustment,  $WT1_{ij}$ , is computed as  $WT1_{ij} = P1_i/p1_i$  for each sample unit  $j$  drawn from stratum  $i$  where  $P1_i$  is the proportion of the phone appended sample frame in stratum  $i$  and  $p1_i$  is the proportion of interviews conducted in stratum  $i$ .<sup>1</sup> The second adjustment is computed as  $WT2_{ij} = P2_i/p2_i$  where  $P2_i$  is the proportion of the entire sample frame in

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<sup>1</sup> For WT1, there are eight strata total; the four age strata with landlines appended and the four age strata with cell appended.

stratum  $i$  and  $p2_i$  is the proportion of interviews conducted in stratum  $i$  with  $WT1$  applied.<sup>2</sup> The final base weight is the product of the two adjustments:

$$BW_i = WT1_i \times WT2_i$$

## 5.2 Post-Stratification

The second stage of weighting balanced sample demographics to population parameters. The sample was balanced to match Tennessee registered voter parameters for sex, age, race, education, and region. The basic weighting parameters came from a special analysis of the Current Population Survey, November 2016: Voting and Registration Supplement. The region parameter came from the U.S. Census Bureau’s 2011-2015 5-Year American Community Survey (ACS) data.

The following table lists the dimensions used in the raking.

**Table 2: Raking Dimensions**

Dimension	Value Label
Sex	Male
	Female
Age	18-29
	30-34
	35-44
	45-54
	55-64
	65+
Race/Ethnicity	White, not Hispanic
	Other
Education	High School Grad or less
	Some College / Associates Degree
	College Grad or higher
Region	East
	Nashville area
	Central
	Memphis/West

<sup>2</sup> WT2 is computed within the four age strata. Frame proportions are based on the entire sample frame.

Weighting was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure. 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 target population. Table 3 compares weighted and unweighted total sample distributions to population parameters.

**Table 3: Population Parameters and Weighted and Unweighted Total Sample Distributions**

Characteristic	Value Label	Parameter	Unweighted	Weighted
Sex	Male	46.3%	45.2%	46.2%
	Female	53.7%	54.8%	53.8%
Age	18-29	14.7%	7.3%	13.9%
	30-34	8.5%	4.7%	8.1%
	35-44	15.8%	13.6%	15.9%
	45-54	16.2%	13.1%	16.5%
	55-64	20.3%	24.3%	20.6%
	65+	24.5%	37.0%	25.0%
Education	HS grad or less	41.6%	22.0%	40.5%
	Some College/Assoc Degree	24.2%	30.7%	24.6%
	College Graduate	34.2%	47.3%	34.8%
Race/ethnicity	White/not Hispanic	80.0%	80.9%	79.9%
	Other	20.0%	19.1%	20.1%
Region	East	36.9%	37.0%	37.0%
	Nashville	23.5%	23.9%	23.3%
	Central	20.4%	20.8%	20.3%
	Memphis/West	19.2%	18.3%	19.5%

### 5.3 Effects of Sample Design on Statistical Analysis

Post-data collection statistical adjustments require analysis procedures that reflect departures from simple random sampling. SSRS 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 1.51.

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

$$deff = \frac{n \sum w^2}{(\sum w)^2}$$

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:

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

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  $\pm 3.8$  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 3.8 percentage points away from their true values in the population. Margins of error for subgroups will be larger. 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.

## 6. RESPONSE RATES

Table 3 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.<sup>3</sup>

- The response rate for RBS landline was 9.6 percent.
- The response rate for RBS cell was 5.3 percent.

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<sup>3</sup> The American Association for Public Opinion Research. 2016. Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 9th edition. AAPOR.



**Table 4: Sample Disposition**

RBS LL	RBS CELL	TOTAL	
66	198	264	Non-residential/Business
49	53	102	Over quota
			Listed person does not exist/deceased
0	9	9	Cell in landline frame / LL in Cell frame
1	3	4	Duplicate number
116	263	379	OF = Out of Frame
6,165	2,777	8,942	Not working
271	36	307	Computer/fax/modem
6,436	2,813	9,249	NWC = Not working/computer
843	2,154	2,997	NA/Busy all attempts
843	2,154	2,997	UHUO <sub>NC</sub> = Non-contact, unknown if household/unknown other
1,625	5,532	7,157	Voice mail
433	232	665	Privacy Manager
7	18	25	Other non-contact
2,065	5,782	7,847	UO <sub>NC</sub> = Non-contact, unknown eligibility
1,477	2,920	4,397	Refusals
1,183	2,507	3,690	Callbacks
2,660	5,427	8,087	UO <sub>R</sub> = Refusal, unknown if eligible
10	61	71	O = Other (language)
0	73	73	Child's cell phone
61	183	244	Other ineligible
61	256	317	SO = Screen out (ineligible)
87	67	154	R = Refusal, known eligible (breakoffs and qualified CBs)
500	500	1,000	I = Completed interviews
12,778	17,323	30,101	T = Total numbers sampled

*continued...*

**Table 4: Sample Disposition (continued)**

RBS LL	RBS CELL	TOTAL	
45.1%	79.7%	64.5%	$e1 = (I+R+SO+O+UO_R+UO_{NC})/(I+R+SO+O+UO_R+UO_{NC}+OF+NWC)$ - Est. frame eligibility of non-contacts
90.6%	68.9%	78.5%	$e2 = (I+R)/(I+R+SO)$ - Est. screening eligibility of unscreened contacts
57.6%	45.7%	49.6%	$CON = [I + R + (e2*[O + UO_R])]/[I + R + (e2*[O + UO_R + UO_{NC}] + (e1*e2*UHUO_{NC})]$
16.6%	11.5%	13.2%	$COOP = I/[I + R + (e2*[O + UO_R])]$
<b>9.6%</b>	<b>5.3%</b>	<b>6.6%</b>	<b><math>AAPOR\ RR3 = I/[I+R+[e2*(UO_R+UO_{NC}+O)]+[e1*e2*UHUO_{NC}]] = CON*COOP</math></b>

## 7. DELIVERABLES

SSRS delivered to Vanderbilt University:

- Final questionnaire instrument;
- Weighted dataset in SPSS;
- Weighted banners in PDF;
- Topline; and
- A detailed methodology report.

## ABOUT SSRS

SSRS is a full-service survey research firm managed by a core of dedicated professionals with advanced degrees in the social sciences. Service offerings include the Omnibus Survey, SSRS Opinion Panel and other Online Solutions, as well as custom research programs – all driven by a central commitment to methodological rigor. The SSRS team is renowned for its multimodal approach, as well as its sophisticated and proprietary sample designs. Typical projects for the company include complex strategic, tactical and public opinion initiatives in the U.S. and in more than 40 countries worldwide. SSRS is research, refined. Visit [www.ssrs.com](http://www.ssrs.com) for more information.