



Methodology Statement

Firehouse/Optimus
Likely Voters Survey
March 19-21, 2019

The Firehouse/Optimus survey was conducted from March 19-21, 2019 and interviewed a total of 1,778 likely 2020 general election voters in the battleground states of Michigan, Pennsylvania, and Wisconsin. Interviews were conducted using a combination of live interviews via landline (40.4%) and cell phones (19.9%) and peer-to-peer text messaging (39.8%). Telephone interviews were conducted by Dynata and text messages were sent by Opn Sesame.

The sample frame covers likely 2020 general election voters with reported landline or cellphone numbers from each state's voter file. Likely voters were identified as those who voted in either the 2016 or 2018 general elections plus additional voters who are expected to vote in the 2020 election as determined by Optimus turnout modeling. The probability sample was selected using registration-based sampling (RBS) stratified by age group, gender, and party for each early primary state.

The full sample included 530 likely voters in Michigan, 632 likely voters in Pennsylvania, and 616 likely voters in Wisconsin. While the margins of error vary slightly across questions due to item non-response and the base rate, the margins of errors based on Q1 are reported as $\pm 4.1\%$ in Michigan, $\pm 3.8\%$ in Pennsylvania, and $\pm 3.8\%$ in Wisconsin. We calculate the margin of error as:

$$1.96 * \sqrt{\frac{\hat{p}(1 - \hat{p})}{n}}$$

where n is sample size and \hat{p} is the response proportion.

Post-stratification weighting was used to correct for non-response across age group, gender, and party cohorts to allow the sample composition to match the sample frame composition. Further details are shown below.

Survey items can be found reported as topline and as cross-tabulations on our [GitHub repository](#).



Mode Breakdown by State

	MICHIGAN	PENNSYLVANIA	WISCONSIN	TOTAL
LIVE	226	257	235	718
LANDLINE	(43%)	(41%)	(38%)	(40%)
LIVE CELL	117	119	118	353
	(22%)	(19%)	(19%)	(20%)
PEER-TO-PEER	187	256	264	707
	(35%)	(41%)	(43%)	(40%)
TOTAL N =	530	632	616	1778

Note: Column percentages may not add to 100% due to rounding.

Weighted Data

MICHIGAN	RAW N	UNBALANCED (%)	BALANCED (%)	POPULATION (%)
AGE GROUP				
18-35	111	20.9	19.4	19.4
35-55	177	33.4	30.8	30.8
55+	224	42.3	47.7	47.7
OTHER/MISSING	18	3.4	2.1	2.1
GENDER				
MALE	263	49.6	45.5	45.5
FEMALE	267	50.4	54.5	54.5
OTHER	0	0	0	0

PENNSYLVANIA	RAW N	UNBALANCED (%)	BALANCED (%)	POPULATION (%)
AGE GROUP				
18-35	164	25.9	21.0	20.8
35-55	192	30.4	30.0	30.0
55+	265	41.9	47.0	47.0
OTHER/MISSING	11	1.7	2.0	2.1
GENDER				
MALE	309	48.9	45.9	45.9
FEMALE	320	50.6	53.7	52.9
OTHER	3	0.5	0.4	1.2



WISCONSIN AGE GROUP	RAW N	UNBALANCED (%)	BALANCED (%)	POPULATION (%)
18-35	49	8.0	7.0	6.4
35-55	172	27.9	25.5	25.2
55+	243	39.4	45.9	45.4
OTHER/MISSING	152	21.7	21.7	22.9
GENDER				
MALE	295	47.9	47.0	46.8
FEMALE	316	51.3	52.3	51.8
OTHER	5	0.8	0.7	1.4

Note: Column percentages may not add to 100% due to rounding.