



Methodology Statement

Firehouse/Optimus
Likely Voter Survey
September 7-9, 2019

The Firehouse/Optimus survey was conducted from September 7-9, 2019 and interviewed a total of 1,590 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 (39.9%) and cell phones (21.6%) and peer-to-peer text messaging (38.5%). 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 529 likely voters in Michigan, 527 likely voters in Pennsylvania, and 534 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 $\pm 4.0\%$ in Michigan, $\pm 4.2\%$ in Pennsylvania, and $\pm 4.0\%$ 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.

The sample was weighted to account for non-response across age group, gender, party, and education using population data from state voter files and the U.S. Census, Current Population Survey (CPS). 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	208	219	207	634
LANDLINE	(39.3%)	(41.6%)	(38.8%)	(39.9%)
LIVE CELL	118	107	119	344
	(22.3%)	(20.3%)	(22.3%)	(21.6%)
PEER-TO-PEER	203	201	208	612
	(38.4%)	(38.1%)	(39.0%)	(38.5%)
TOTAL N =	529	527	534	1590

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

Weighted Data (Broken out by Cohort Membership)

MICHIGAN	RAW N	UNBALANCED (%)	BALANCED (%)	POPULATION (%)
AGE GROUP				
18-35	110	20.8	19.2	19.4
35-55	193	36.5	30.9	30.8
55+	219	41.4	48.0	47.7
OTHER/MISSING	7	1.3	1.9	2.1
GENDER				
MALE	257	48.6	46.3	45.5
FEMALE	272	51.4	53.7	54.5
OTHER	0	0.0	0.0	0.0

PENNSYLVANIA	RAW N	UNBALANCED (%)	BALANCED (%)	POPULATION (%)
AGE GROUP				
18-35	132	25.0	20.7	20.8
35-55	183	34.7	30.0	30.0
55+	199	37.8	47.3	47.0
OTHER/MISSING	13	2.5	2.0	2.1
GENDER				
MALE	252	47.8	46.0	45.9
FEMALE	268	50.9	53.9	52.9
OTHER	7	1.3	0.1	1.2



WISCONSIN	RAW N	UNBALANCED (%)	BALANCED (%)	POPULATION (%)
AGE GROUP				
18-35	36	6.7	6.6	6.4
35-55	136	25.5	25.8	25.2
55+	199	37.3	46.0	45.4
OTHER/MISSING	163	30.5	21.7	22.9
GENDER				
MALE	267	50.0	47.6	46.8
FEMALE	262	49.1	51.5	51.8
OTHER	5	0.9	0.9	1.4

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