



IPSOS POLL DATA

Prepared by Ipsos Public Affairs

IPSOS PUBLIC AFFAIRS: Space-Mars 10-05-2016

These are findings from an Ipsos poll conducted September 30- October 03, 2016. For the survey, a sample of roughly 1,005 adults age 18+ from the continental U.S., Alaska and Hawaii was interviewed online in English.

The sample for this study was randomly drawn from Ipsos's online panel (see link below for more info on "Access Panels and Recruitment"), partner online panel sources, and "river" sampling (see link below for more info on the Ipsos "Ampario Overview" sample method) and does not rely on a population frame in the traditional sense. Ipsos uses fixed sample targets, unique to each study, in drawing sample. After a sample has been obtained from the Ipsos panel, Ipsos calibrates respondent characteristics to be representative of the U.S. Population using standard procedures such as raking-ratio adjustments. The source of these population targets is U.S. Census 2015 American Community Survey data. The sample drawn for this study reflects fixed sample targets on demographics. Post-hoc weights were made to the population characteristics on gender, age, region, race/ethnicity and income.

Statistical margins of error are not applicable to online polls. All sample surveys and polls may be subject to other sources of error, including, but not limited to coverage error and measurement error. Where figures do not sum to 100, this is due to the effects of rounding. The precision of Ipsos online polls is measured using a credibility interval. In this case, the poll has a credibility interval of plus or minus 3.5 percentage points for all respondents (see link below for more info on Ipsos online polling "Credibility Intervals"). Ipsos calculates a design effect (DEFF) for each study based on the variation of the weights, following the formula of Kish (1965). This study had a credibility interval adjusted for design effect of the following (n=1,005, DEFF=1.5, adjusted Confidence Interval=5).

For more information about Ipsos online polling methodology, please go here <http://goo.gl/yJBkuf>

		All Americans	Millennials	Xers	Boomers	HS or less	Some college	College grad	Post grad
As you may know, SpaceX recently outlined plans to send humans to Mars in the next 10 years. How likely would you be to volunteer to go on a mission to Mars?	Very likely	12%	19%	13%	5%	11%	7%	11%	20%
	Somewhat likely	14%	21%	17%	5%	12%	12%	13%	19%
	Not very likely	19%	23%	22%	14%	17%	21%	23%	15%
	Not at all likely	55%	37%	49%	76%	61%	60%	53%	46%

		All Americans	Millennials	Xers	Boomers	HS or less	Some college	College grad	Post grad
Elon Musk, the founder of SpaceX conceded that "the risk of fatality will be high" on early missions to Mars. Knowing that, how likely would you be to volunteer to go on a mission to Mars?	Very likely	9%	15%	9%	4%	8%	7%	8%	16%
	Somewhat likely	12%	19%	14%	4%	8%	9%	12%	17%
	Not very likely	17%	18%	21%	12%	17%	16%	18%	16%
	Not at all likely	62%	48%	56%	81%	67%	68%	62%	50%



IPSOS POLL DATA

Prepared by Ipsos Public Affairs

How to Calculate Bayesian Credibility Intervals

The calculation of credibility intervals assumes that Y has a binomial distribution conditioned on the parameter θ , i.e., $Y|\theta \sim \text{Bin}(n, \theta)$, where n is the size of our sample. In this setting, Y counts the number of “yes”, or “1”, observed in the sample, so that the sample mean ($\bar{y}$) is a natural estimate of the true population proportion θ . This model is often called the likelihood function, and it is a standard concept in both the Bayesian and the Classical framework. The Bayesian ¹ statistics combines both the prior distribution and the likelihood function to create a posterior distribution. The posterior distribution represents our opinion about which are the plausible values for θ adjusted after observing the sample data. In reality, the posterior distribution is one’s knowledge base updated using the latest survey information. For the prior and likelihood functions specified here, the posterior distribution is also a beta distribution ($\pi(\theta/y) \sim \beta(y+a, n-y+b)$), but with updated hyper-parameters.

Our credibility interval for θ is based on this posterior distribution. As mentioned above, these intervals represent our belief about which are the most plausible values for θ given our updated knowledge base. There are different ways to calculate these intervals based on $\pi(\theta/y)$. Since we want only one measure of precision for all variables in the survey, analogous to what is done within the Classical framework, we will compute the largest possible credibility interval for any observed sample. The worst case occurs when we assume that $a=1$ and $b=1$ and $y=n/2$. Using a simple approximation of the posterior by the normal distribution, the 95% credibility interval is given by, approximately:

$$\bar{y} \pm \frac{1}{\sqrt{n}}$$

For this poll, the Bayesian Credibility Interval was adjusted using standard weighting design effect $1+L=1.3$ to account for complex weighting²

Examples of credibility intervals for different base sizes are below. Ipsos does not publish data for base sizes (sample sizes) below 100.

Sample size	Credibility intervals
2,000	2.5
1,500	2.9
1,000	3.5
750	4.1
500	5.0
350	6.0
200	7.9
100	11.2