Sample Size Definition

In statistics, a sample refers to the observations drawn from a population. Sample size is used in market research and defines the number of subjects that should be included within a sample. Having the right sample size is crucial in finding a statistically significant result. The larger the sample size, the more reliable the results; however, larger sample size means more time and money. So, how do you determine the right sample size for your market research?

Learn How to Determine Sample Size

Consequential research requires an understanding of the statistics that drive the range of sample size decisions you need to make. A simple equation will help you put the migraine pills away and sample confidently knowing that there is a high probability that your survey is statistically accurate with the correct sample size.

Sample Size Variables Based on Target Population

Before you can calculate a sample size, you need to determine a few things about the target population and the sample you need:

1. **Population Size** — How many total people fit your demographic? For instance, if you want to know about mothers living in the US, your population size would be the total number of mothers living in the US. Not all populations sizes need to be this large. Even if your population size is small, just know who fits into your demographics. Don’t worry if you are unsure about this exact number. It is common for the population to be unknown or approximated between two educated guesses.
2. **Margin of Error (Confidence Interval)**— No sample will be perfect, so you must decide how much error to allow. The confidence interval determines how much higher or lower than the population mean you are willing to let your sample mean fall. If you’ve ever seen a political poll on the news, you’ve seen a confidence interval. For example, it will look something like this: “68% of voters said yes to Proposition Z, with a margin of error of +/- 5%.”
3. **Confidence Level** — How confident do you want to be that the actual mean falls within your confidence interval? The most common confidence intervals are 90% confident, 95% confident, and 99% confident.
4. **Standard of Deviation** — How much variance do you expect in your responses? Since we haven’t actually administered our survey yet, the safe decision is to use .5 – this is the most forgiving number and ensures that your sample will be large enough.

Calculating Sample Size

Your confidence level corresponds to a Z-score. This is a constant value needed for this equation. Here are the z-scores for the most common confidence levels:

* 90% – Z Score = 1.645
* 95% – Z Score = 1.96
* 99% – Z Score = 2.576

If you choose a different confidence level, use this [Z-score table](http://www.sjsu.edu/faculty/gerstman/StatPrimer/z-two-tails.pdf)\* to find your score.

Next, plug in your Z-score, Standard of Deviation, and confidence interval into the sample size calculator or into this equation:\*\*

Sample Size Formula

*Necessary Sample Size = (Z-score)2 \* StdDev\*(1-StdDev) / (margin of error)2*

Here is an example of how the math works assuming you chose a 95% confidence level, .5 standard deviation, and a margin of error (confidence interval) of +/- 5%.

((1.96)2 x .5(.5)) / (.05)2  
(3.8416 x .25) / .0025  
.9604 / .0025  
384.16

385 respondents are needed

**Taro Yamane Formula**:

If you are also a good observer, you will observe that his name is often 'abused' by numerous scholars. I mean i have read numerous research journals and articles where he is being referenced as 'Yaro Yamane'. Now let me shock you a bit. Its actually Taro not Yaro. So if you referenced him as Yaro Yamane in your previous research, then you referenced the wrong man. If you are currently conducting a research study please take note. Below are cover pages of some of his books to fully convince you.

**How to Calculate Sample Size Using Taro Yamane's Formula:**

For the purpose of this tutorial, let us use a simple survey-an organization in Uyo, Nigeria with a population of 82 Staff(Both managerial, and Junior staff).

**3.4   Sample Size and Sampling Techniques**  
As a result of the inability of the researcher to effectively study the whole staff strength (population) of the organisation, a representative number was chosen as the sample size population. Sixty eight (68) staff was used as the sample size. The sample size was calculated using the Taro Yamane scientific formula which is given as:

n =             N  
1 + N (e) 2

Where:  
**N** is the Population (82 was the Population for the Study)  
**1**  is the constant  
**e** is the degree of error expected  
**n**  is the sample size?

      n =                                     82      
1 + 82 (0.05)2

 82  
1 + 82 (0.0025)

       82  
  1 + 0.205

82  
      1 .205

   n = 68