

Practice: Calculating Sample Size for a CI for a Proportion

In this lesson, you've learned how to compute the sample size for a CI for a mean. You can also calculate the sample size for a CI for a proportion. Although categorical data isn't the focus of this course, it's important to understand that for every inferential method we've discussed involving continuous data, there are analogous methods for categorical data (that is, proportions).

Open the Sample Size for Confidence Intervals calculator in JMP from the **Help** menu, **Sample Data**, and then **Calculators**. We'll use the calculator for the proportion.

Three input values are required: the confidence level, the planning value, and the desired margin of error. The planning value represents your best guess of the expected proportion. For election polls, this is generally set at a worst case of 50% (or 0.5). In this practice, you revisit the election poll situation.

1. What sample size is required to produce a 95% confidence interval with a margin of error of $\pm 3\%$?

The required sample size is 1068 likely voters. (**Hint:** Enter 0.03 as the margin of error.)

2. Change the margin of error to $\pm 2\%$. What is the required sample size?

The required sample size is 2401.

3. Finally, change the margin of error to $\pm 1\%$. What is this sample size?

The sample size is 9604.

4. Margins of error for election polls are often reported as $\pm 2\%$ or $\pm 3\%$. You almost never see results reported as $\pm 1\%$. Why?

To obtain a precision of $\pm 1\%$, the sample size required is extremely large, nearly 10,000 likely voters. To increase the precision from $\pm 2\%$ to $\pm 1\%$, you'd have to poll four times more likely voters. This is prohibitive for many reasons (time, cost, and so on).

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