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Practice: Calculating Sample Size for a CI for a Mean

In this practice, you use the Sample Size for Confidence Intervals calculator to explore the relationships between the confidence level, the margin of error, the standard deviation, and the margin of error. To open this calculator, go to **Help**, **Sample Data**, and then **Calculators**. We'll use the calculator for the mean.

1. How large a sample would you need for a 95% CI for a population mean with an assumed standard deviation of 10 and a desired margin of error of 5?

   You would need 16 observations.

2. What if you wanted a 99% interval with the same standard deviation and margin of error? How large a sample do you need?

   You would need 27 observations. You need more data to achieve a higher level of confidence, other things being equal.

3. Now let's go back to the initial state: a 95% CI with a standard deviation of 10 and desired margin of error of 5. What happens if you assume a standard deviation of 5 instead of 10? How large a sample do you need?

   You would need only 4 observations.

4. For the initial settings, what is the required sample size if the standard deviation is 20 instead of 10?

   You would need 62 observations.

5. For the initial settings, what if the required margin of error is 10 instead of 5?

   You would need 4 observations.

6. Consider each of these values: the confidence level, the standard deviation, and the margin of error. What is the relationship between each value and the sample size (assuming the other values are fixed).

   For a higher confidence level, you need more data to achieve the specified margin of error. For a larger standard deviation, you need more data for the same margin of error. If you increase the required margin of error, you need less data.

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