

# How can I plot confidence intervals in Excel with examples?

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## RECOMMENDED CITATION

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Confidence intervals are statistical tools used to estimate the range of values within which the true population parameter is likely to fall. In Excel, confidence intervals can be plotted to visually represent this estimation process. To plot confidence intervals in Excel, one can use the "Error Bars" feature under the "Layout" tab in the "Chart Tools" section. This allows for the selection of the desired confidence level and calculation of the upper and lower bounds of the confidence interval. As an example, if a survey was conducted to estimate the average income of a population, the confidence intervals can be plotted on a bar chart to show the range of potential values for the average income based on the collected data. This can provide valuable insights and aid in decision making by showing the level of uncertainty in the estimated parameter.

## Plot Confidence Intervals in Excel (With Examples)

**A confidence interval represents a range of values that is likely to contain some with a certain level of confidence.**

**This tutorial explains how to plot confidence intervals on bar charts in Excel.**

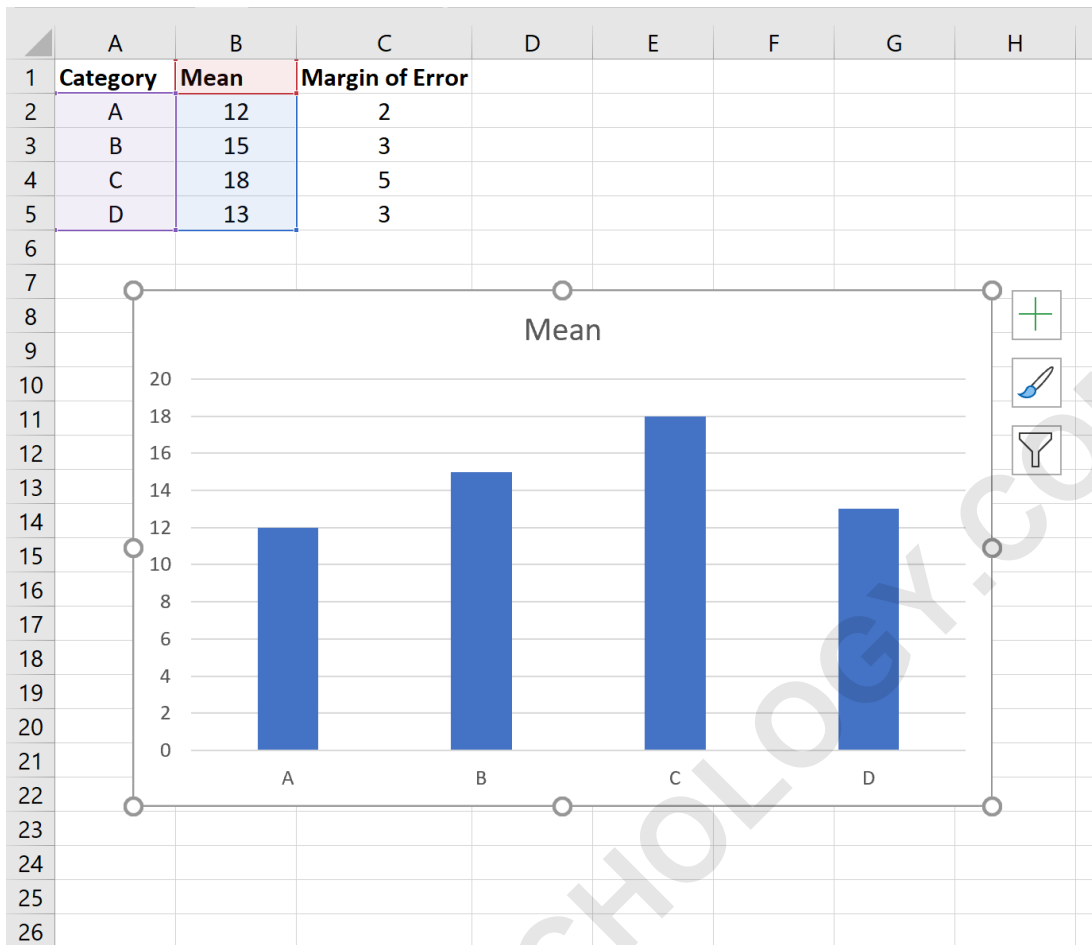
### Example 1: Plot Confidence Intervals on Bar Graph

**Suppose we have the following data in Excel that shows the mean of four different categories along with the corresponding margin of error for the 95% confidence intervals:**

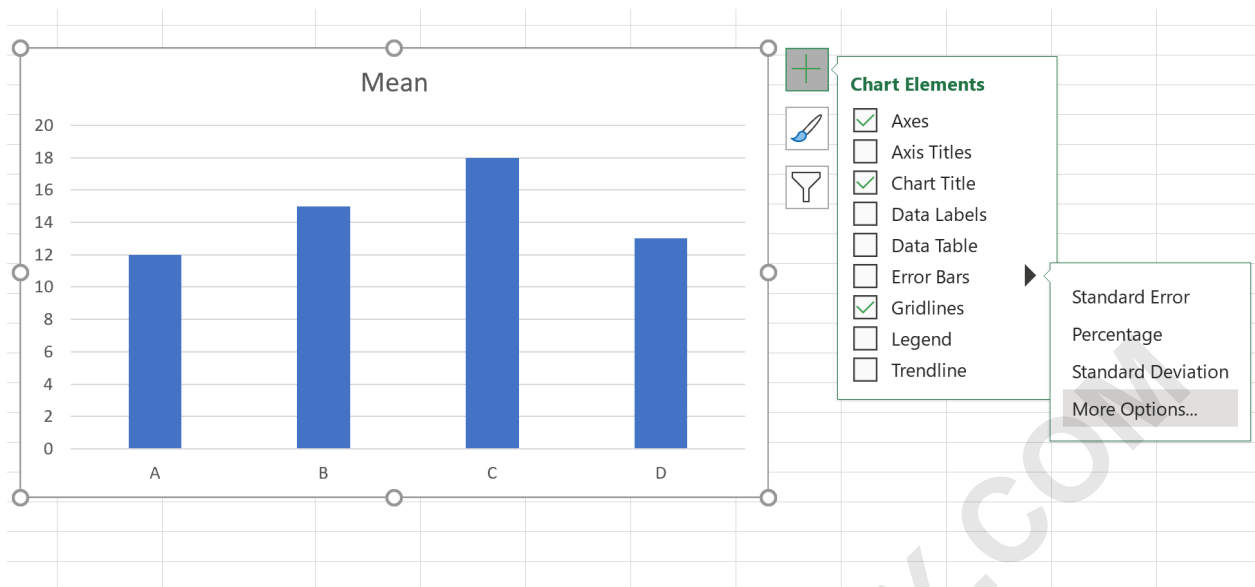
	A	B	C	D	E	F
1	<b>Category</b>	<b>Mean</b>	<b>Margin of Error</b>			
2	A	12	2			
3	B	15	3			
4	C	18	5			
5	D	13	3			
6						
7						
8						
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To create a bar chart to visualize the category means, highlight cells in the range A1:B5 and then click the Insert tab along the top ribbon. Then click Insert Column or Bar Chart within the Charts group.

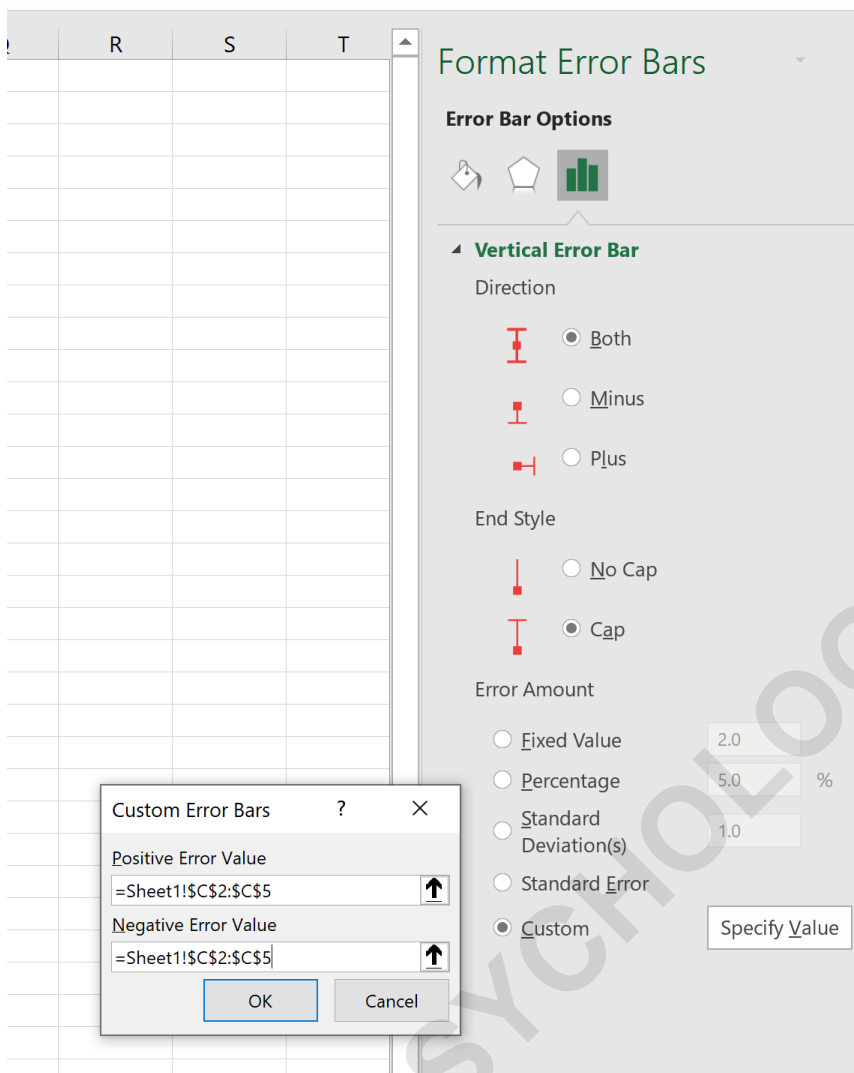
This will produce the following bar chart:



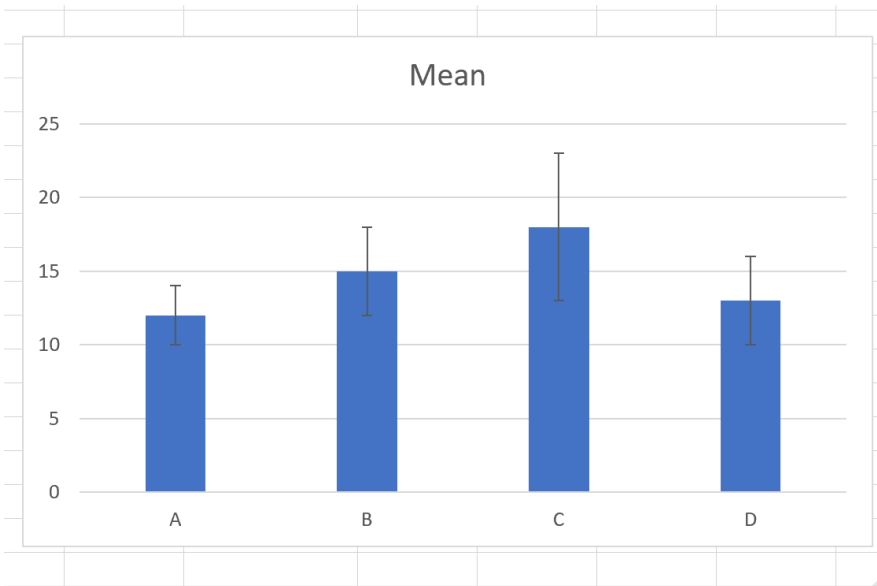
**To add confidence interval bands, click the plus sign (+) in the top right corner of the bar chart, then click Error Bars, then More Options:**



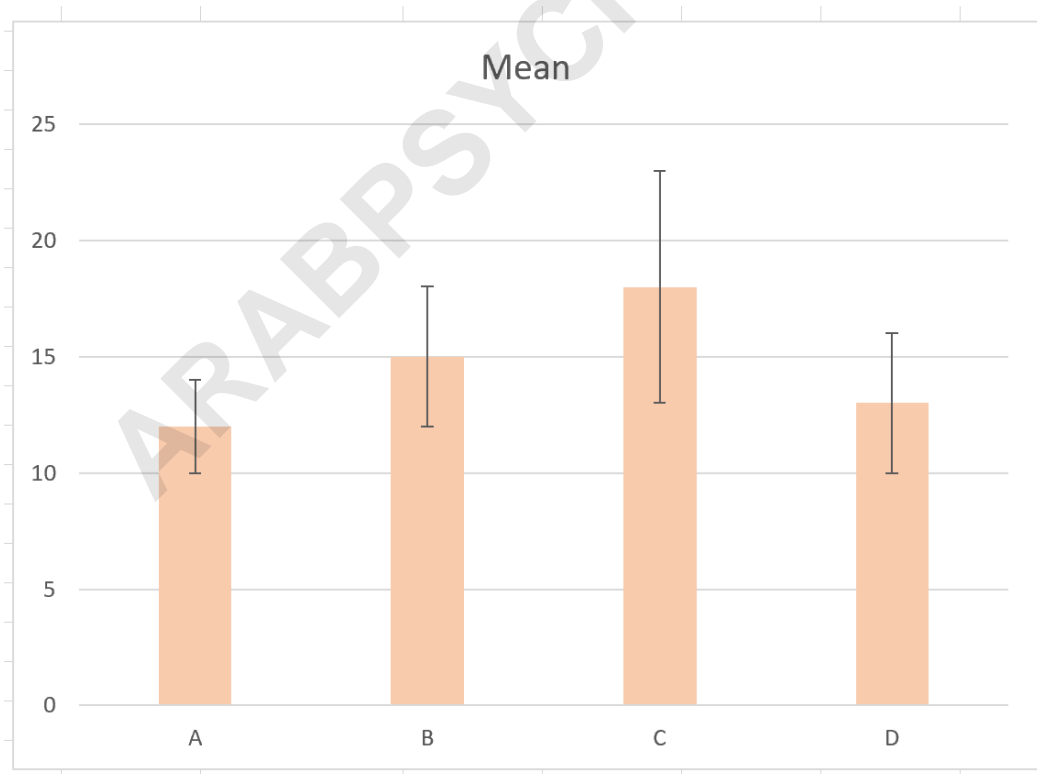
**In the window that appears to the right, click the Custom button at the bottom. In the new window that appears, choose =Sheet1!\$C\$2:\$C\$5 for both the positive error value and negative error value. Then click OK.**



**This will produce the following confidence interval bands in the bar chart:**



**Feel free to change the color of the bars as well to make the confidence interval bands easier to see:**



The top of the bar represents the mean value for each category and the error bars show the range of the confidence interval for each mean.

The mean value for category A is 12 and the 95% confidence interval for this mean ranges from 10 to 14. The mean value for category B is 15 and the 95% confidence interval for this mean ranges from 12 to 18. The mean value for category C is 18 and the 95% confidence interval for this mean ranges from 13 to 23. The mean value for category D is 13 and the 95% confidence interval for this mean ranges from 10 to 16.