

Confidence Intervals Display: Two-Group

Startup Guide

v0f

by

Milo Schield

www.StatLit.org/pdf/

[2013-Schild-Confidence-Intervals-Display-6up.pdf](#)

[2013-Schild-Confidence-Intervals-Display-1up.pdf](#)

Confidence Intervals

Confidence intervals are arguably the simplest and easiest way to show sampling error.

Generating confidence intervals on a common outcome for two groups allows us to see if the difference in means is statistically-significant.

Excel doesn't have a command to generate confidence intervals for one or two groups. It doesn't have a simple way of creating a graphic.

These slides show how to do it all using Excel and an Excel template.

Approach

1. *This presentation assumes that summary statistics on an outcome (average or proportion, sample size and standard deviation) are available for two subgroups.*
2. *Given these statistics, the Margin of Error and associated confidence intervals can be generated.*
3. *Non-overlapping confidence intervals indicate statistical-significance. But this may be hard to see.*
4. *Excel can be used to generate visual display of confidence intervals. This involves some unusual uses of Excel. This will be shown in the next slides.*

Excel Template

1. *An Excel template is available that converts summary statistics for two groups into two horizontal bars symbolizing the associated confidence intervals.*
2. *Whether or not the bars overlap or touch is easily seen – and can be copied into a document or slide.*
3. *Download a template from www.StatLit.org/Excel/Display-Confidence-Intervals-2Group-Excel-2003.xls*
4. *This template works with Excel 2003 and subsequent versions. It does not have any macros.*

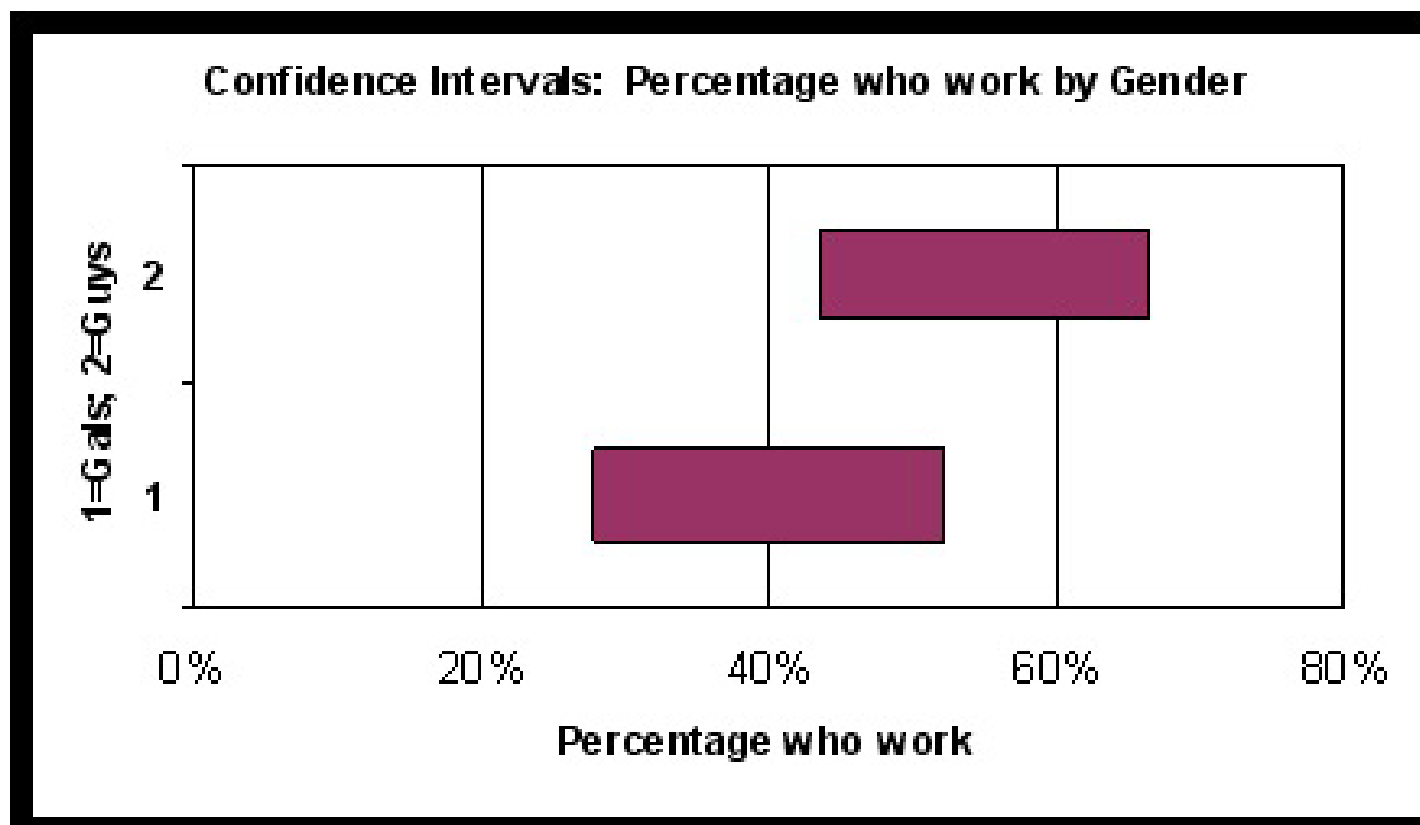
Input for Proportions

0.950	Confidence Level				Manual
Gals who Work		Guys who Work			
40.0%	p = proportion		55.0%	p	Manual
84	Sample Size		100	Count	Manual
49.0%	SD=Std. Deviation		49.7%	SD	
2.283	t = TINV(p, df)		2.276	t-critical	
12.2%	ME = t*StdDev/Sqrt(n)		11.4%	ME	
27.8%	CI-Lower = Ave - ME		43.6%	CI-Lower	
52.2%	CI-Upper = Ave + ME		66.4%	CI-Upper	

Output for Proportions

Confidence intervals DO overlap.

*The difference in means is NOT statistically significant.**



Input for Averages

0.950	Confidence Level					Manual
Male Height			Female Height			
69.0	Average		65.0	Average		Manual
4.0	SD=Std. Deviation		3.0	SD		Manual
16	Sample Size		16	Count		Manual
2.13	$t = \text{TINV}(p, df)$		2.13	t-critical		
2.1	$ME = t * \text{StdDev} / \text{Sqrt}(n)$		1.6	ME		
66.9	CI-Lower = Ave - ME		63.4	CI-Lower		
71.1	CI-Upper = Ave + ME		66.6	CI-Upper		

Output for Averages

*Confidence intervals DO NOT overlap.
The difference in means IS statistically significant.*

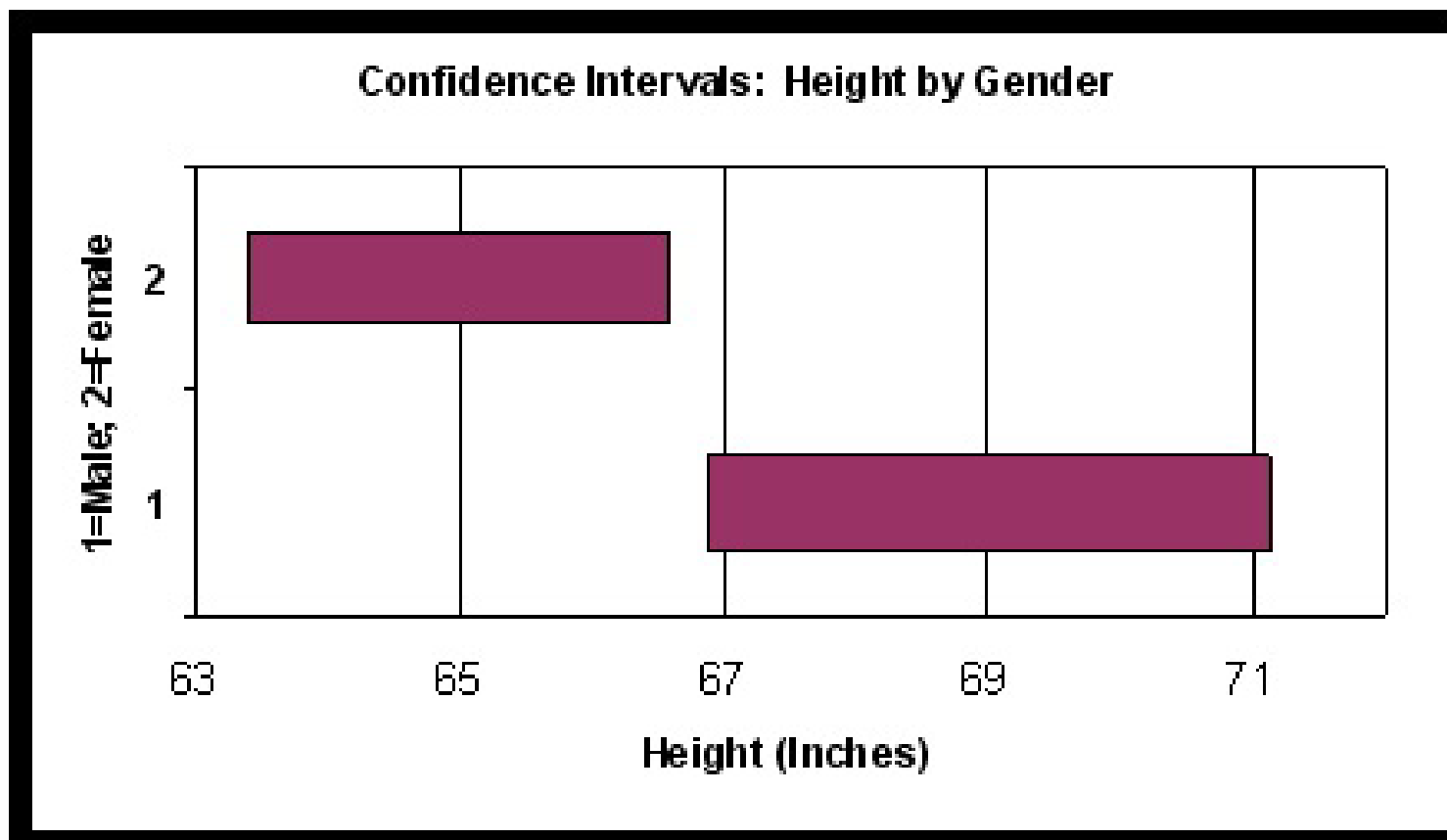
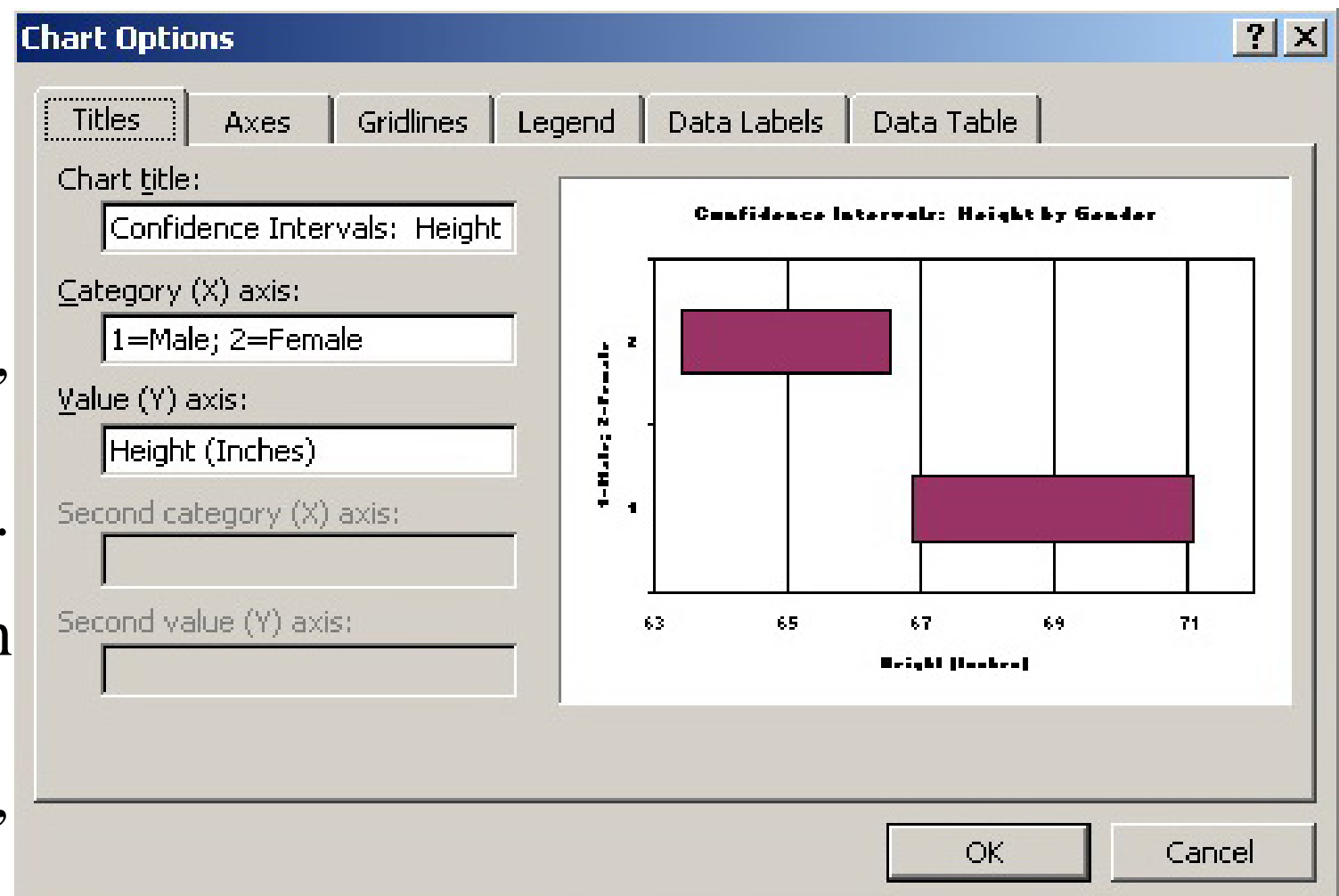


Chart Options

Under the Titles tab, enter the chart title, X-axis title, and the Y-axis title.

Note: graph is rotated.

Press “OK”



Conclusion

1. Excel can generate visual confidence intervals.
2. If the 95% bars do NOT overlap, the difference in means IS statistically significant. If the 95% bars do overlap, the difference in means is NOT statistically significant*.

* Note: This confidence-interval overlap test is very conservative. If the bars barely overlap, see a statistician for a more accurate test. The difference may still be statistically significant.