1

Confidence Intervals Display: Two-Group

Startup Guide

V0f

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www.StatLit.org/pdf/
2013-Schield-Confidence-Intervals-Display-6up.pdf
2013-Schield-Confidence-Intervals-Display-1up.pdf

2

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.

3

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.*

4

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.*

5

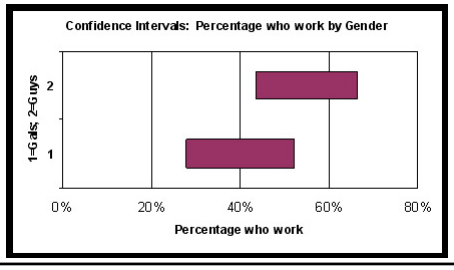
Input for Proportions

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	

6

Output for Proportions

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



7

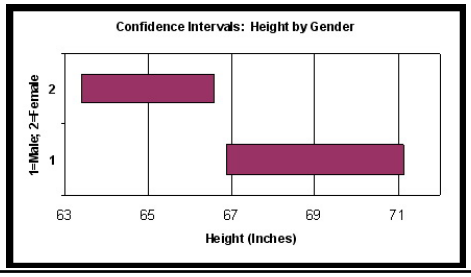
Input for Averages

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 = TINV(p, df)	2.13	t-critical	
2.1	ME = t*StdDev/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	

8

Output for Averages

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



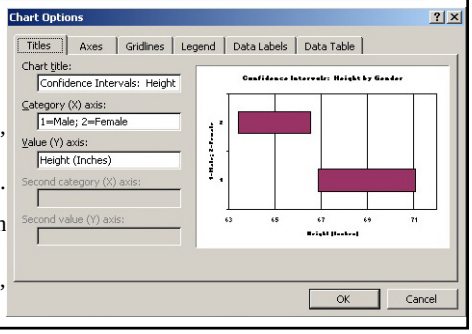
9

Chart Options

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

Note: graph is rotated.

Press "OK"



10

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.