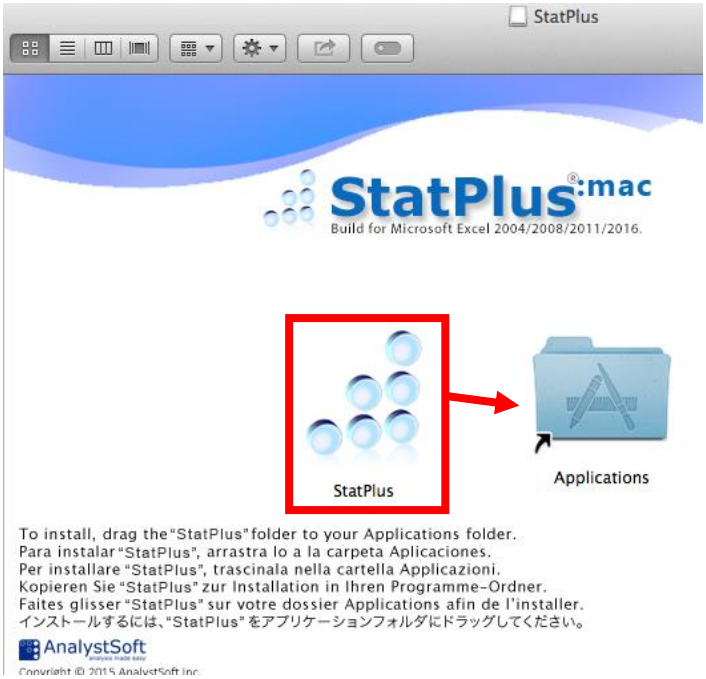
ANOVA tests with StatPlus

Excel 2011, Mac

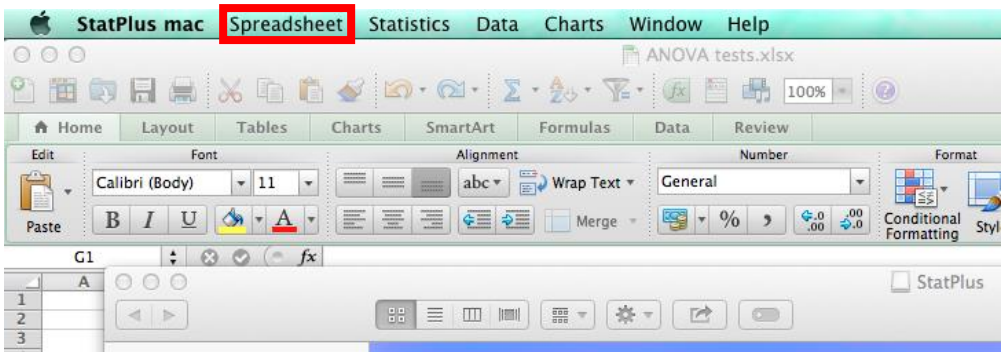
The Mac version of Excel doesn't come with the Analysis ToolPak add-in available on the PC version, nor does it come pre-packaged with any equivalent statistics kit. There is, however, a freely downloadable app called StatPlus that can work with your spreadsheets in Excel.

Go to http://www.analystsoft.com/en/products/statplusmacle/ to download StatPlus. Double click the .zip folder to unzip it, then double click the .dmg file to open StatPlus.

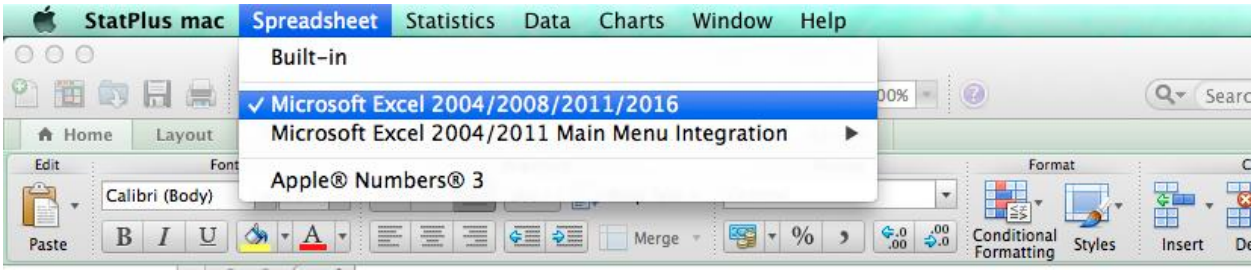
Open the data file that you would like to perform an ANOVA (which stands for ANalysis Of VAriance) on first so that Excel spreadsheet will be ready when you get StatPlus fired up. Then follow the instructions on the website and the screen and drag the StatPlus symbol onto the Applications folder!



Now that StatPlus is running, click "Spreadsheet" in the menu options:



From the “Spreadsheet” menu, select Microsoft Excel 2011 to let StatPlus know this is the program that contains the data you’d like to statistically test.



Before we begin our analysis, make sure your data is logically arranged in your spreadsheet. In the example below, each row of data represents the responses measured from four different treatments: A, B, C, and D. While this is perfectly logical, this is not the data format StatPlus ANOVAs prefer!

	G	H	I	J	K	L	M	N
		Data						
Treatment	A	6.5	7.8	5.3	5.7	6.7		7.1
	B	8.9	9.6	6.7	8.5	7.3		7.4
	C	11.5	7.3	10.7	9.2	10.3		9.9
	D	7.6	14.5	13.7	13.8	10.2		12.6

NOT BY ROWS

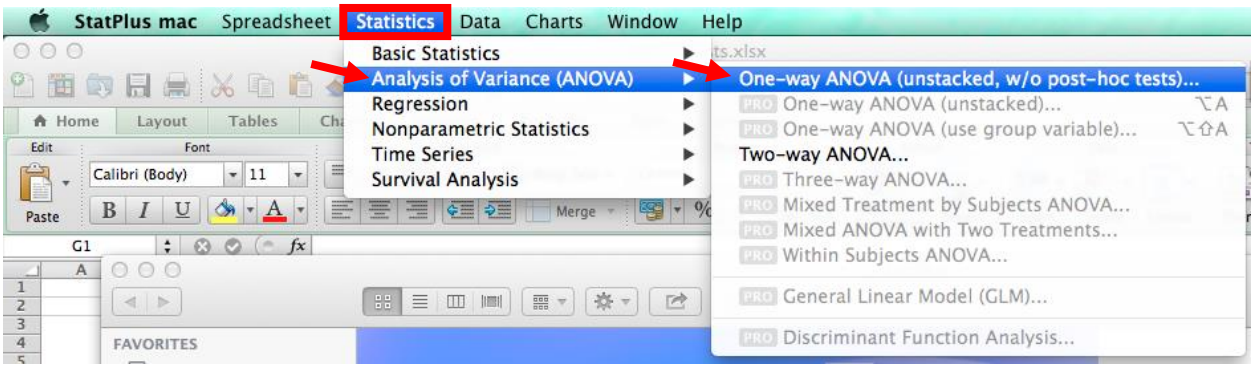
Instead, arrange your data so that **each treatment is a separate column** like the example below.

A1

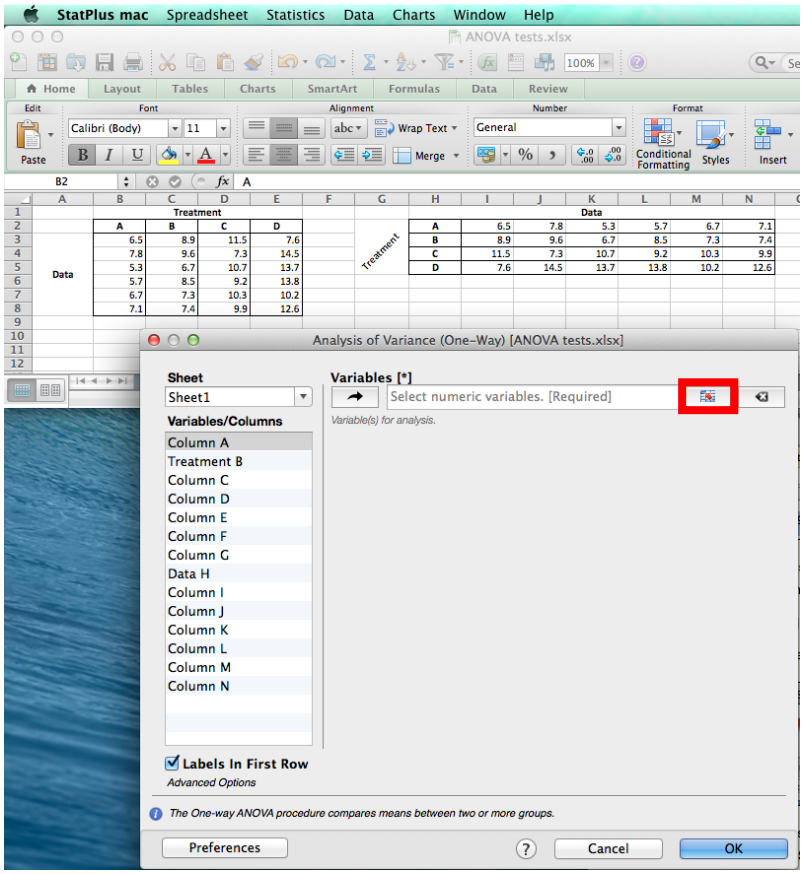
	A	B	C	D	E
1		Treatment			
2		A	B	C	D
3	Data	6.5	8.9	11.5	7.6
4		7.8	9.6	7.3	14.5
5		5.3	6.7	10.7	13.7
6		5.7	8.5	9.2	13.8
7		6.7	7.3	10.3	10.2
8		7.1	7.4	9.9	12.6

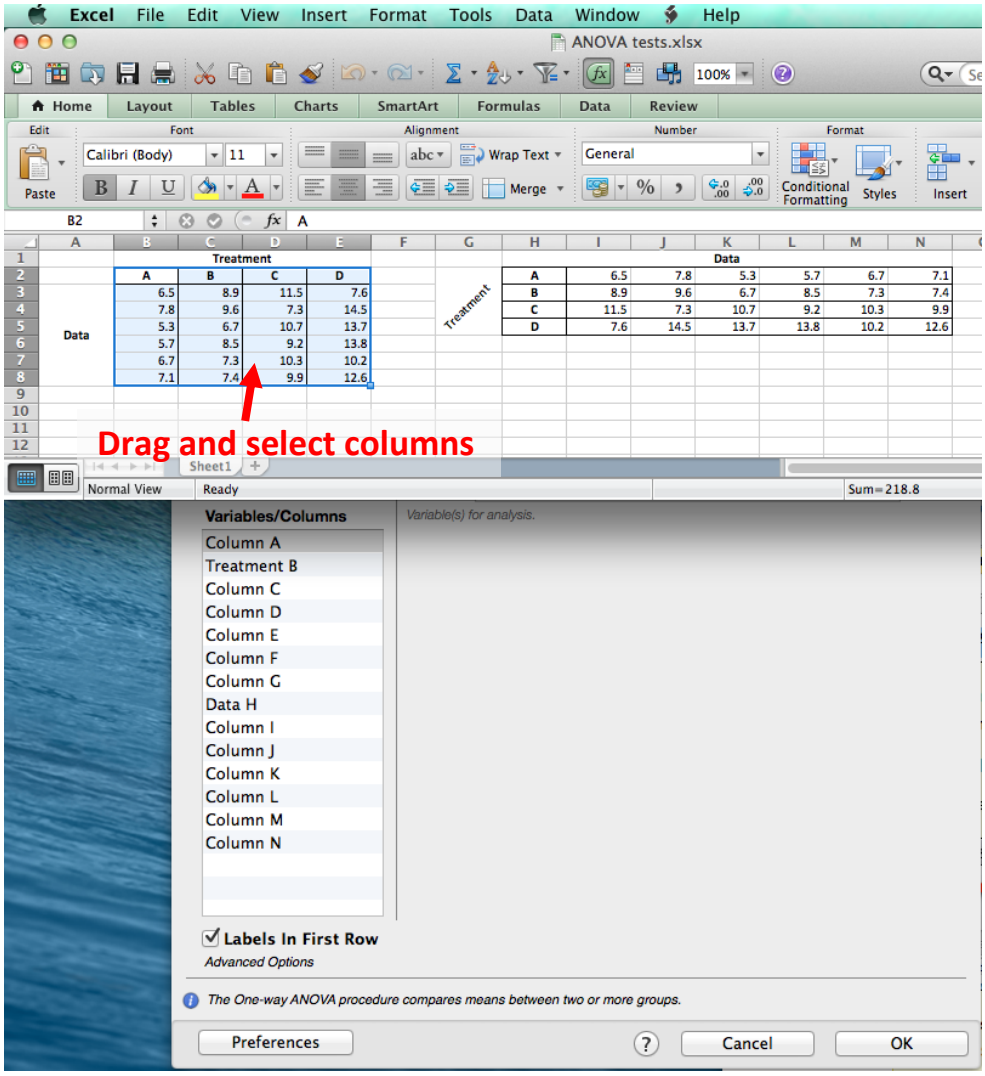
BY COLUMNS

To perform an ANOVA test, you need to click the “Statistics” menu. ANOVA is an option listed, and specifically we are performing a “One-way ANOVA” because we are only testing one experimentally manipulated variable.

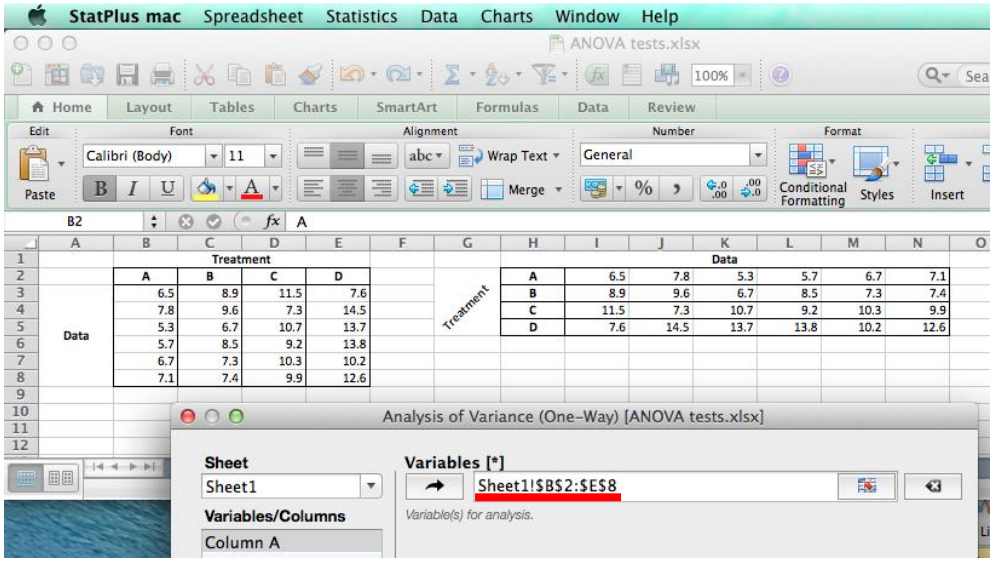


After clicking “One-way ANOVA,” a dialogue box will pop up that will allow you to select what data you are going to perform an ANOVA on. Click the button to the right of the box showing “Select numeric variables. [Required]” and then drag and select your data.

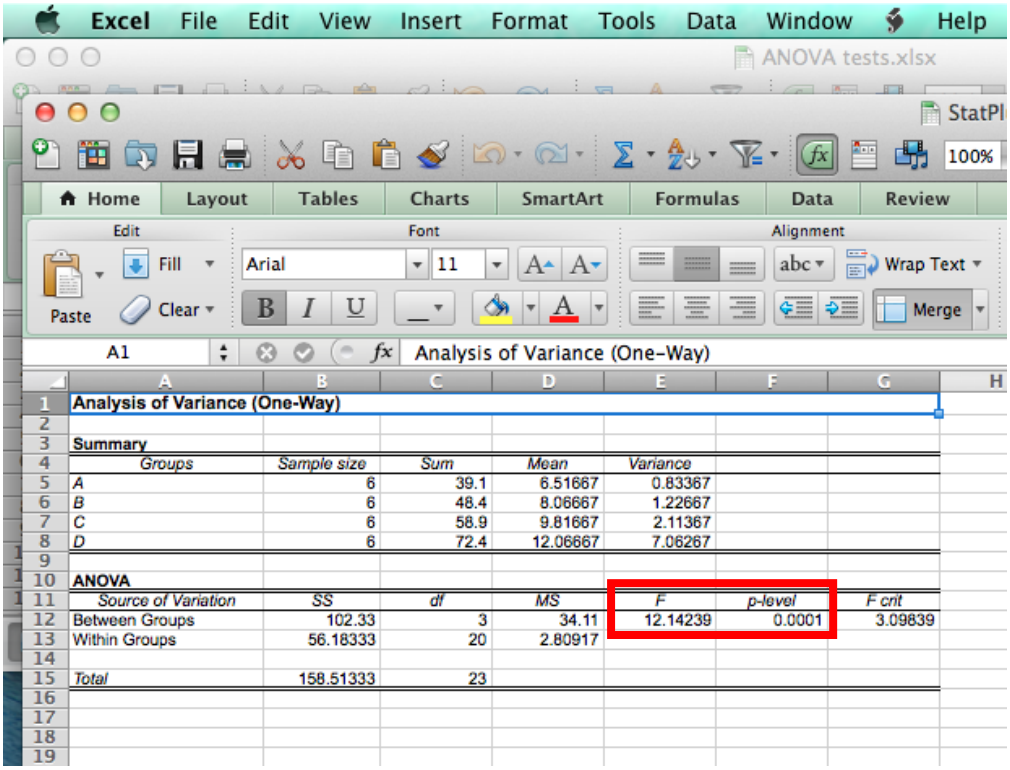




Now the correct data range should be showing in the Variables box.



Once you click “OK,” your ANOVA results will appear in a new Excel spreadsheet!



	A	B	C	D	E	F	G
1	**Analysis of Variance (One-Way)**						
2							
3	**Summary**						
4	*Groups*	*Sample size*	*Sum*	*Mean*	*Variance*		
5	*A*	6	39.1	6.51667	0.83367		
6	*B*	6	48.4	8.06667	1.22667		
7	*C*	6	58.9	9.81667	2.11367		
8	*D*	6	72.4	12.06667	7.06267		
9							
10	**ANOVA**						
11	*Source of Variation*	*SS*	*df*	*MS*	*F*	*p-level*	*F crit*
12	Between Groups	102.33	3	34.11	12.14239	0.0001	3.09839
13	Within Groups	56.18333	20	2.80917			
14							
15	*Total*	158.51333	23				
16							
17							
18							
19							

Because the labels were highlighted in addition to the data when you selected your Variables for the test, the labels appear under “Groups” in the ANOVA summary. If you do not select labels, they will simply be called 1, 2, 3, 4, etc. The most important numbers to take away from these results are the **F** statistic and the **p-level** (or p-value). These values tell you whether there is a significant difference between any of the treatment groups (but not *which* group is different).

Go forth and test your data! And email me if you have any lingering questions!