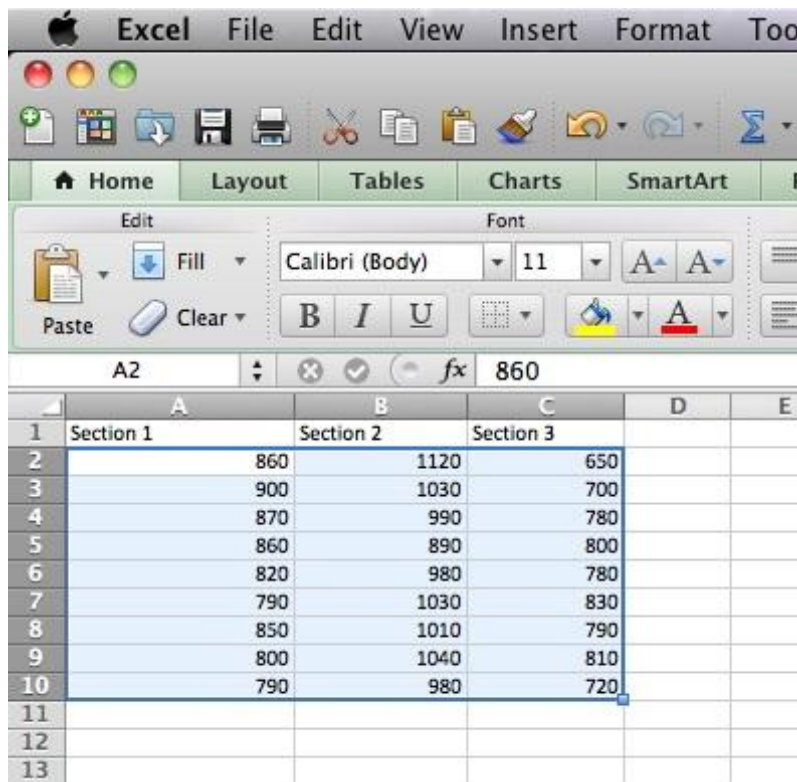


Excel on Macs: ANOVA



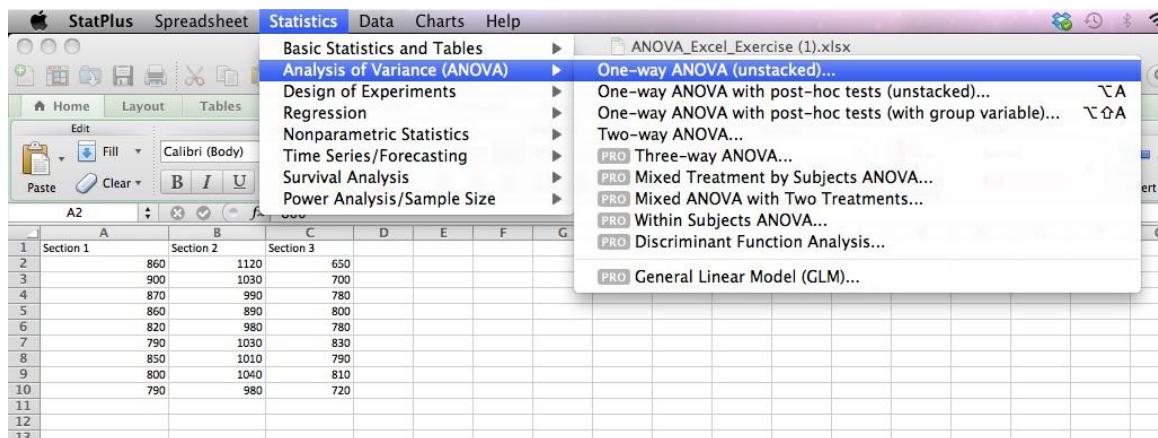
The screenshot shows the Microsoft Excel application on a Mac. The menu bar at the top includes Apple, Excel, File, Edit, View, Insert, Format, and Tools. The ribbon below the menu bar has tabs for Home, Layout, Tables, Charts, and SmartArt. The Home tab is active, showing the Edit and Font groups. The Font group includes options for font face (Calibri (Body)), size (11), bold (B), italic (I), underline (U), and text color. The formula bar shows the active cell A2 with the value 860. The worksheet contains a table with three columns: Section 1, Section 2, and Section 3. The data is as follows:

	Section 1	Section 2	Section 3
1			
2	860	1120	650
3	900	1030	700
4	870	990	780
5	860	890	800
6	820	980	780
7	790	1030	830
8	850	1010	790
9	800	1040	810
10	790	980	720
11			
12			
13			

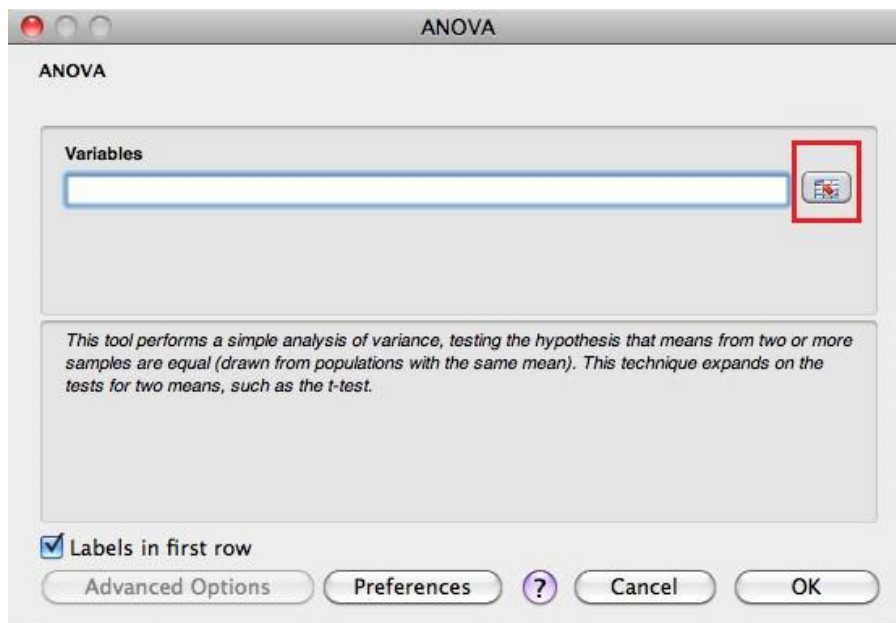
In this video, we'll use the functions in Excel and StatPlus to create an Analysis of Variance (ANOVA) output from a dataset. In this case, the data set are test scores, listed in this column here. In this problem, we're comparing the average weekly yield from three different apple orchards.



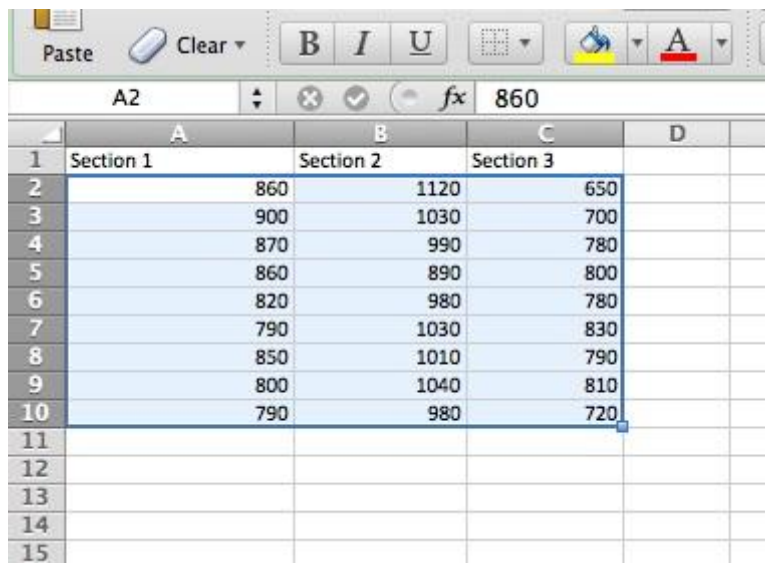
It is important to have opened both Microsoft Excel AND StatPlus.



After having opened the data in Microsoft Excel, the next step is to go to the StatPlus Application, select “Statistics”, “Analysis of Variance (ANOVA)”, and “One-way ANOVA (unstacked)...” which should open the following window:

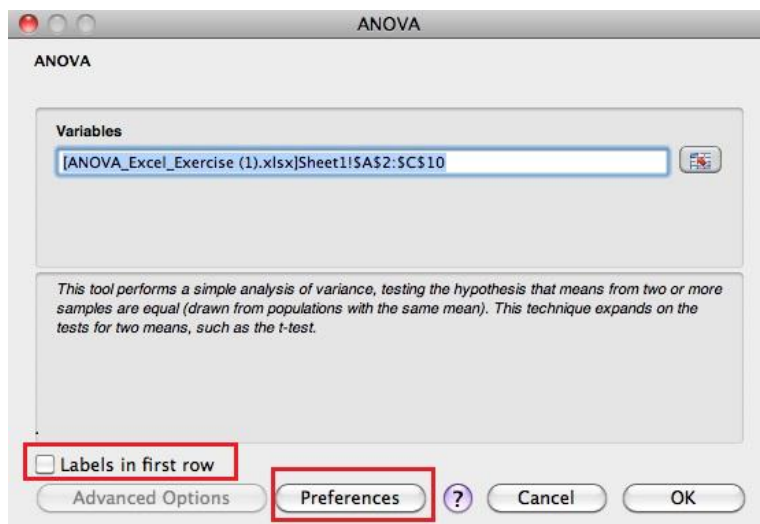


In this window, it is important to select the data. To do this, you should click on the button to the right of the variables empty box.



	A	B	C	D
1	Section 1	Section 2	Section 3	
2	860	1120	650	
3	900	1030	700	
4	870	990	780	
5	860	890	800	
6	820	980	780	
7	790	1030	830	
8	850	1010	790	
9	800	1040	810	
10	790	980	720	
11				
12				
13				
14				
15				

After selecting the button to the right of the Variables box, go to the Excel spreadsheet with the data and select the entire dataset except for the names of each group.



ANOVA

Variables

[ANOVA_Excel_Exercise (1).xlsx]Sheet1!\$A\$2:\$C\$10

This tool performs a simple analysis of variance, testing the hypothesis that means from two or more samples are equal (drawn from populations with the same mean). This technique expands on the tests for two means, such as the t-test.

☐ Labels in first row

Advanced Options Preferences ? Cancel OK

Return to the “ANOVA” window where it is important to unselect “Labels in first row” as well as Preferences.

Output

Standard font: Size:

Display format: Decimal places [2–15]

Display format: Hide trailing zeros ☐

Display format: Use scientific notation (1.23E4) ☒

Statistics

Alpha value (for confidence interval)

Missing values handling

In Preferences, it is important to set the display format for decimal places to 2, to use scientific notation, and to set the alpha value for confidence intervals to five percent. Then press “OK”.

ANOVA

Variables

This tool performs a simple analysis of variance, testing the hypothesis that means from two or more samples are equal (drawn from populations with the same mean). This technique expands on the tests for two means, such as the t-test.

☐ Labels in first row

Now that the data has been selected and the specifications have been determined, it is time to run the ANOVA analysis. After having pressed “OK”, wait for the results to appear on a new Excel spreadsheet before adjusting any of the spreadsheets.

	A	B	C	D	E	F	G	H
1	Trial version. Only first 10 cases are used.							
2	Analysis of Variance (One-Way)							
3								
4	Summary							
5	Groups	Sample size	Sum	Mean	Variance			
6	Variable #1	9	7.54E+3	8.38E+2	1.54E+3			
7	Variable #2	9	9.07E+3	1.01E+3	3.79E+3			
8	Variable #3	9	6.86E+3	7.62E+2	3.49E+3			
9								
10	ANOVA							
11	Source of Variation	SS	df	MS	F	p-level	F crit	
12	Between Groups	2.85E+5	2	1.42E+5	4.83E+1	3.82E-9	3.40E+0	
13	Within Groups	7.07E+4	24	2.94E+3				
14								
15	Total	3.55E+5	26					
16								

The results for the ANOVA analysis should look like something similar to the spreadsheet shown above.