One-Way ANOVA

Use to test for a statistical differences in comparing three or more population means.

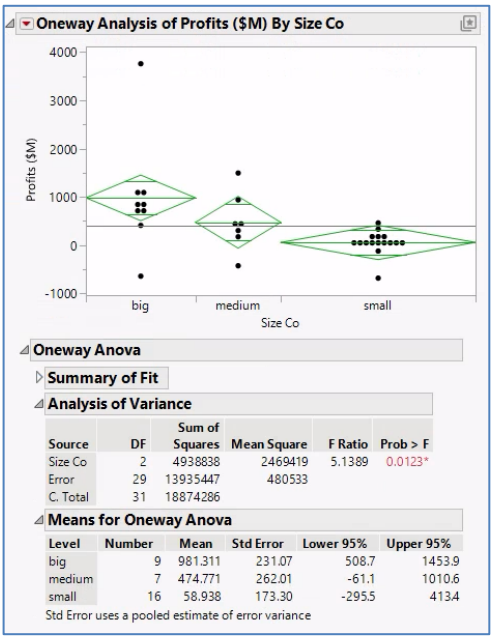
One-Way Analysis of Variance

1. From an open JMP® data table, select **Analyze > Fit Y by X**.
2. Click on a continuous variable from **Select Columns**, and Click **Y, Response** (continuous variables have blue triangles).
3. Click on a categorical variable and click **X, Factor** (categorical variables have red or green bars). Click **OK**.
   The Oneway Analysis output window will display.
4. Click on the **red triangle**, and select **Means/Anova**.

Some of the additions to the report include:

- Mean diamonds (95% Confidence Intervals) added to the graph.
- The Summary of Fit.
- The Analysis of Variance (Anova) table.
- Means for Oneway Anova, containing summary statistics and confidence intervals for each mean (based on the pooled estimate of the standard error).

Companies.jmp (Help > Sample Data Folder)



- The null hypothesis is that there are no differences between the population means (i.e., all means are equal).
- **Prob > F** is the p-value for the whole model test. Since the Prob > F is less than 0.05, reject the null hypothesis of equal means. Conclude that there are differences between at least two of the means.
- To determine which means are different, a post hoc multiple comparison technique can be used.

Notes: The default confidence level is 95% (i.e., significant level of 0.05.) Select **Set α Level** under **the red triangle** to change.
Analysis can also be made assuming unequal variances. Select **Unequal Variances** under the **red triangle** to perform analysis.

Multiple Comparison Procedures

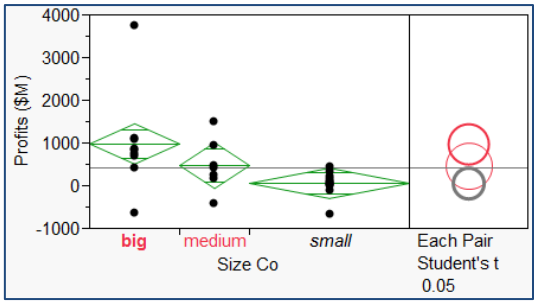
From the Oneway Analysis output window (shown above), click on the **red triangle**, select **Compare Means**, and select one of the five methods.

Each Pair, Student's t has been selected. This produces comparison circles (shown), along with statistical output (not shown).

Click on a circle for a mean to test for paired differences.

- The **selected mean** will have a **bold, red circle and variable label**.
- Means that **are not significantly different** from the selected mean will have **unbolded, red circles and variable labels**.
- Means that **are significantly different** from the selected mean will have **gray circles** and **gray italicized variable labels**.

In this example, the mean for **big** is significantly different from the mean for **small**, but is not significantly different from the mean for **medium**.



Visit **Basic Analysis > Oneway Analysis** in **JMP Help** to learn more.