

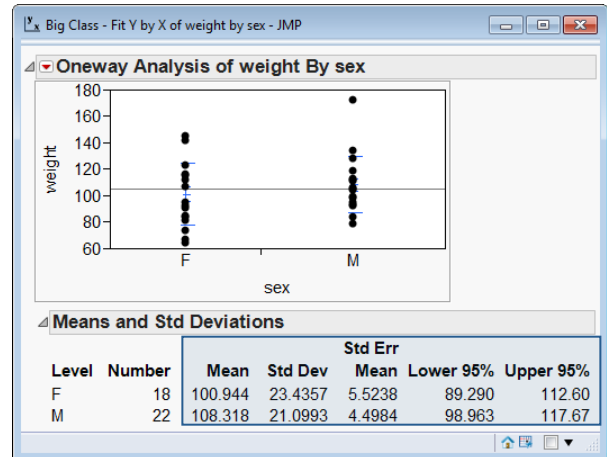
Two Sample t-Test and CIs

Estimate two population means (confidence intervals) or perform a hypothesis test for the difference between two independent means (two sample t-test) using the Fit Y by X platform. Note: If more than two means (more than two levels of the categorical X variable), refer to the page **One-Way ANOVA**.

Confidence Intervals

1. 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 two-level categorical variable and click **X, Factor** (categorical variables have red or green bars).
4. Click **OK**. The Oneway Analysis output window will display.
5. Click on the **red triangle**, and select **Means and Std Dev** to produce summary statistics and individual confidence intervals for each mean (Lower 95% and Upper 95%).

Example: Big Class.jmp (Help > Sample Data)

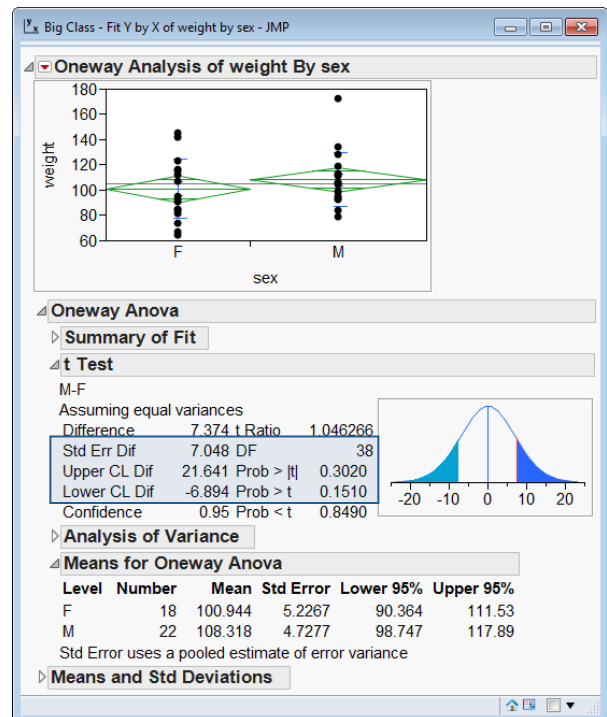


Two Sample t-Test

From the Oneway Analysis output window (shown above), click on the **red triangle** and select **Means/Anova/Pooled t**.

JMP® will plot **means diamonds (95% confidence intervals for each mean)**, and will generate:

- The Summary of Fit (not shown).
- The t-test report, with a graph to aid in interpreting the results.
- The Analysis of Variance table.
- Means for Oneway Anova (not shown), which includes confidence intervals based on the pooled estimate of the standard error.



Interpretation of the results (using a significance level of 0.05 - click the **red triangle, Set α Level** to change significance level):

1. **Upper CL Dif** and **Lower CL Dif** give the 95% CI for the true difference. Since the **95% CI contains zero, conclude that there is not a significant difference** between the means.
2. **Prob > |t|** is the p-value for the two-tailed test. The null hypothesis is that means are equal (the mean difference is zero). Since the **Prob > |t| is greater than 0.05, cannot reject the null hypothesis** (i.e., we cannot conclude that there is a significant difference).

Notes: **Means/Anova/Pooled t** is the test under the assumption of equal variances. For a test without the assumption of equal variances, select **t Test** instead. See the **Basic Analysis** book (under **Help > Books**) for more details.