Paired t-Test and CI

Use to test if the means of two paired (dependent or correlated) samples are statistically different. Note: The paired measurements must be stored in separate columns.

Paired t-Test Using Matched Pairs

1. From an open JMP® data table, select Analyze > Specialized Modeling > Matched Pairs.
2. Select two or more continuous variables from Select Columns, click Y, Paired Responses (continuous variables have blue triangles), and click OK.

By default, JMP will generate:

- A graph, containing:
  - The differences between the paired readings.
  - The mean difference (solid red line).
  - The 95% confidence interval for the mean difference (dashed lines).
  - A reference diamond that’s displayed on the graph when the range of differences is greater than half the range of the data.

- Summary statistics, including:
  - The sample means for each variable.
  - The mean difference.
  - The 95% confidence interval for the mean difference.
  - The correlation.
  - The t-ratio and p-values.

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

- **Upper 95%** and **Lower 95%** give the 95% CI for the true difference between the means.

  Since the **95% CI does not contain zero**, conclude that there is a significant difference.

- **Prob > |t|** is the p-value for the two-tailed test. The null hypothesis is that the mean difference is zero.

  Since the **Prob > |t|** is less than 0.05, reject the null hypothesis. Conclude that there is a significant difference between the means.

Notes: A paired t-test is equivalent to performing a **one sample t-test** on a column of differences using the **Distribution** platform, where the null hypothesis is that the mean difference is zero. See the page **One Sample t-Test and CI** or the book **Basic Analysis** (under Help > Books) for more details.