

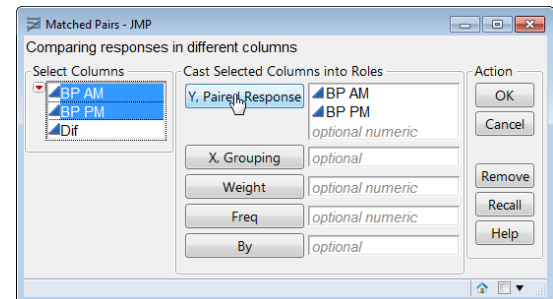
# Paired t-Test and CI

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

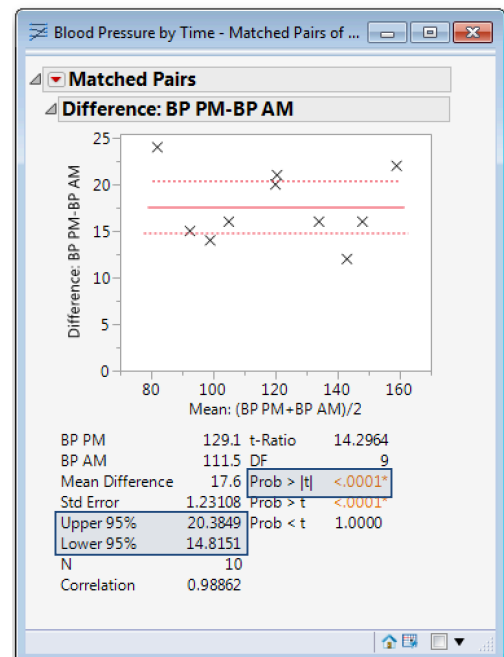
- From an open JMP® data table, select **Analyze > Specialized Modeling > Matched Pairs**.
- Select two or more continuous variables from **Select Columns**, click **Y, Paired Responses** (continuous variables have blue triangles), and click **OK**.

Blood Pressure by Time.jmp (Help > Sample Data Library)



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.



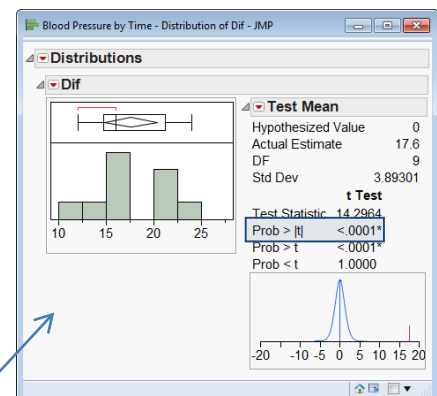
Interpretation (using a significance level of 0.05 - click the **red triangle**, **Set  $\alpha$  Level** to change significance level):

- 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.