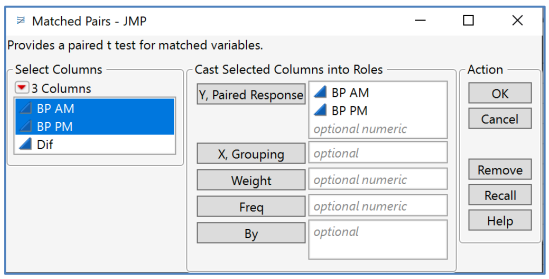
Paired t-Test and CI

Use to test if the populations 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

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



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

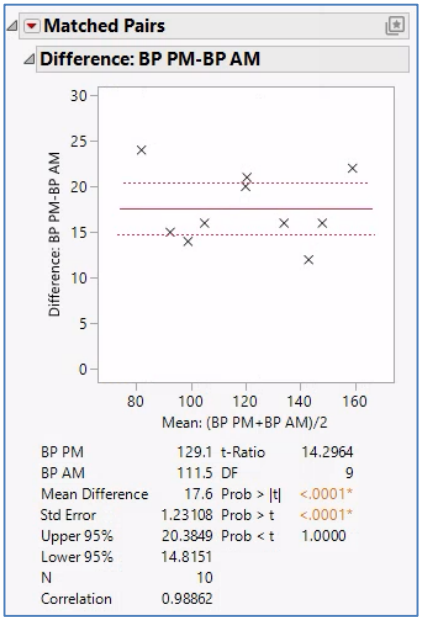
   By default, JMP will generate:

   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).
     Note: A reference diamond is included on the graph when the range of differences is greater than half the range of the data.

   Statistics, including:

   - The sample means for each variable.
   - The difference between the sample means.
   - A 95% confidence interval for the difference in the population means.
   - The t-test statistic and p-values.



Results

- **Upper 95%** and **Lower 95%** give the 95% CI for the difference between the two population means.
  Here we estimate that difference to be (14.8 , 20.4). Since the 95% CI does not contains zero**,** conclude that there is enough statistical evidence to conclude a significant difference between the means.
- **Prob > |t|** is the p-value for the two-tailed test. The null hypothesis is that the difference in the means 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. This is the same conclusion reached from examining the Confidence Interval. This CI, however, provides the additional important information of an estimate of how different the means are.
  Note: The default confidence level is 95% (i.e., significant level of 0.05.) Select **Set α Level** under **the red triangle** to change.

Note: A **paired t-tes**t 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** for instructions to perform that analysis.

Visit **Predictive and Specialized Modeling > Matched Pairs Analysis** in **JMP Help** to learn more.