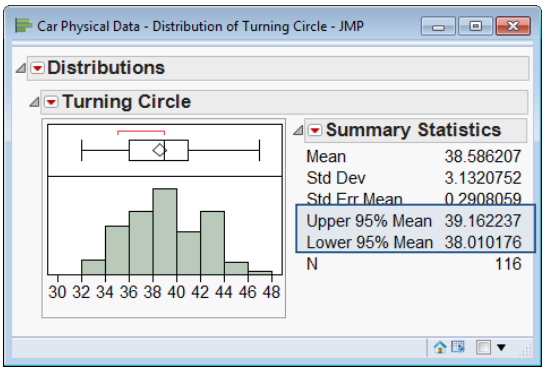
One Sample t-Test and CI

Use to estimate the population mean from a sample (confidence interval for the mean) or perform a hypothesis test for a mean (one sample t-Test).

Confidence Interval for the Mean

Example: Car Physical Data.jmp (Help > Sample Data)



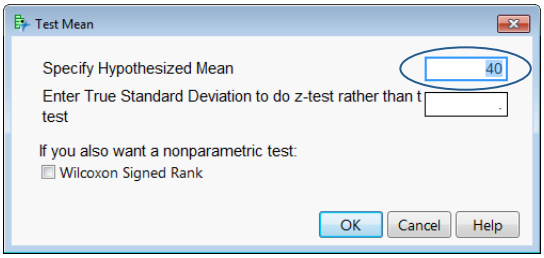
1. From an open JMP® data table, select **Analyze > Distribution**.
2. Select one or more continuous variables from **Select Columns**, click **Y, Columns** (continuous variables have blue triangles), and click **OK**.

   The **Upper 95% Mean** and **Lower 95% Mean** give the 95% confidence interval for the true mean (39.163 and 38.01).

Tips:

- To change the display from vertical to horizontal (as shown), click on the **top red triangle** and select **Stack**.
- To change the confidence level, request a one-sided confidence limit or specify sigma, click on the **red triangle** for the variable, select **Confidence Interval**, and select the confidence level or click **Other**.

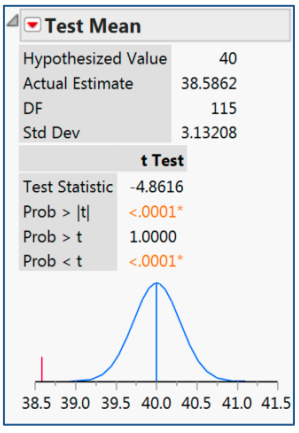
One Sample t-Test for the Mean



1. From the Distributions report window (shown above), click on the **red triangle** for the variable and select **Test Mean**.
2. Enter the hypothesized value under **Specify Hypothesized Mean**, and click **OK**.

   JMP will generate:

   - The **t-Ratio** (next to **Test Statistic**).
   - **P-values** for the two-tailed and one-tailed tests.
   - A graph to aid in interpreting the p-values, showing the hypothesized mean (center of the curve) and the sample mean (red line).



Interpretation of p-values for this example (using a significance level of 0.05):

1. **Prob > |t| is less than 0.05 - reject the null hypothesis** that the true mean is 40. This is the two-tailed test. Conclude that the true mean is not 40.
2. **Prob > t is greater than 0.05 - fail to reject the null hypothesis** that the true mean is <= 40. This is a one-tailed test. There is insufficient evidence to reject the null hypothesis.
3. **Prob < t is less than 0.05 - reject the null hypothesis** that the true mean is >= 40. Conclude that the true mean is less than 40.

Notes: To explore how the p-value changes as a function of the difference between the hypothesized mean and the sample mean, click on the **red triangle** next to **Test Mean=value** and select **PValue animation**. See the ***Basic Analysis*** book (under **Help > Books**) for more details. If working with summary statistics instead of raw data, use a calculator under **Help > Sample Data > Calculators** (under Teaching Resources).