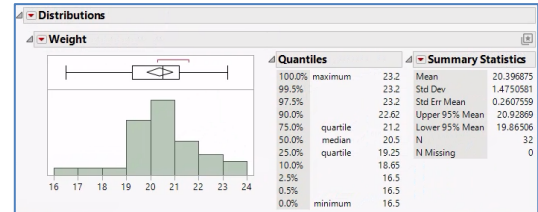# Tolerance Interval

Use to produce an interval estimated to contain a specified proportion of a population.

Tolerance Interval for Proportion (Normal Distribution)

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**.

3. From the Distributions report window, select **Tolerance Interval** under the **red triangle** next to the variable name.

4. Select the **confidence level** and **specify proportion** of the population you desire the interval to cover. Choose Two-sided or one-sided interval. Here we chose **95% confidence**, **90% proportion to cover**, and **two-sided**.

5. Choose to **Assume Normal Distribution** if you believe that is an appropriate model to use to describe the distribution of the variable for the population. Click **OK**.
   Note: A goodness-of-fit test (not shown) indicates that a normal distribution is appropriate.

   Coating.jmp (Help > Sample Data Folder > Quality Control)

   JMP will add a table displaying the lower and upper bound of the Tolerance Interval based upon assumption of a normal distribution.

Interpretation:
It is estimated, with 95% confidence, that 90% of pins produced by this process that these data can be considered a sample from will have a Weight between 17.3 and 23.5.

Tolerance Intervals

Proportion	Lower TI	Upper TI	1-Alpha
0.900	17.26538	23.52837	0.950

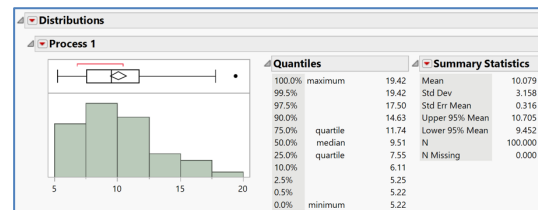## Tolerance Interval for Proportion (Non-Normal Distribution)

1. Follow steps 1-3 above.

2. In the Tolerance Interval Dialog box, choose **Nonparametric method**. Click **OK**.
   Note: A goodness-of-fit test (not shown) indicates that a normal distribution is not an appropriate model to use.

   Process Measurements.jmp (Help > Sample Data Folder)

   JMP will add a table displaying the lower and upper bound of the Tolerance Interval for any continuous distribution.
   Note: The actual confidence level achieved may be larger than the value specified. Here it's 97.6% confidence.

Interpretation:
It is estimated, with 97.6% confidence, that 90% of this process that these data can be considered a sample from have values between 5.23 and 17.2.

Nonparametric Tolerance Intervals

Proportion	Lower TI	Upper TI	1-Alpha	Actual Confidence
0.900	5.233526	17.203	0.950	0.9763

Visit **Basic Analysis > Distributions > Options for Continuous Variables > Tolerance Intervals** in **JMP Help** to learn more.