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Practice: Creating I and MR Charts for the White Polymer Case Study

Open the file **CrisisTeamData.jmp**. For this exercise, we focus on three variables: **CI**, **SA**, and **Xf**. The variable **CI** is an important output variable, and **SA** and **Xf** are input variables.

1. Use **Analyze** and then **Distribution** to create histograms and summary statistics for the three variables. Select **Normal Quantile Plot** from the red triangle for each variable.

    a. Describe the distributions of **SA** and **Xf**.

    b. Describe the distribution of **CI**.

    a. The distributions for both **SA** and **Xf** are approximately normal

    b. The distribution of **CI** is highly left skewed, with an upper bound of 100.

2. Now use the Control Chart Builder to create individuals and moving range charts for the three variables and run the tests for special causes. To do this, right-click on the individuals chart and select **Warnings**, **Tests**, and then **All tests**.

    a. Is the individuals chart for **Xf** stable?

    b. Is the individuals chart for **SA** stable?

    c. Describe the individuals chart for **CI**. Why is it not appropriate to use the tests for special causes for **CI?**

    a. Yes, **Xf** is stable. None of the tests for special causes are violated.

    b. No, **SA** is not stable. Tests 6 and 2 signaled a special cause, starting at observation 36. These tests indicate that there was a potential shift in the process.

    c. **CI** is highly skewed, with an upper bound of 100. The control limits and tests for special causes assume that the distribution of the plotted statistic is approximately normal. So it is not appropriate to use the tests for special causes.

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