In this practice, you use box plots, scatterplots, and run charts to explore the White Polymer VSS Team Data.

Although we ask you to analyze particular variables in this practice, you conduct a more thorough analysis in future practice exercises. For these exercises, the five extreme values for **Yield** have been excluded. We encourage you to explore the data, with the extreme values included, on your own.

1. Open the file **VSSTeamData.jmp** from the course data folder.

2. Use **Graph Builder** to create a scatterplot for **Yield** and **CI**. What do you observe?

   Solution:

   The relationship between **CI** and **Yield** is positive overall. The maximum value for both **CI** and **Yield** is 100, so many observations fall in the top corner of the scatterplot. Higher **Yield** values generally correspond with higher **CI** values.

3. There is a relationship between the KPI, **Yield**, and the two key output variables **MFI** and **CI**. Why does it make sense to focus on understanding and improving these two variables, rather than directly focusing on **Yield**?

   Solution:

   MFI and **CI** are measurable quality characteristics of the polymer that are directly related to **Yield**. **MFI** is too variable relative to the specs and is off target. There is also too much variability in **CI**: the lower spec for **CI** isn't consistently met. If you can understand and improve **MFI** and **CI**, you will improve **Yield**.

4. For the remainder of this practice, you explore the relationships between the **MFI** and the input variables. Use **Graph Builder** to create comparative box plots for **MFI** and **Quarry**. What do you learn?

   Solution:

   The distributions for **MFI** for the different quarries are similar.

5. Use **Graph Builder** to create run charts for both **MFI** and **M%**. What do you observe?

   Solution:

These variables seem to be related. Both **MFI** and **M%** increase, starting around batch 4070. Many values of **MFI** are above the upper spec of 198 after this batch.

6. Use **Graph Builder** to create a scatterplot for **MFI** and **M%**. What do you observe?

Solution:

MFI and **M%** have a positive and linear relationship.

7. Use **Scatterplot Matrix** from the **Graph** menu to create a scatterplot matrix for **MFI** and all of the continuous input variables, from **SA** through **Ambient Temp**. (Do not include **Yield** and **CI**.) Which two variables appear to be related to **MFI**? Describe these relationships.

Solution:

M% and **Xf** appear to be related to **MFI**. The relationship between **M%** and **MFI** is positive linear, and there seems to be a negative relationship between **Xf** and **MFI**.

Hide Solution