In this practice, you explore the relationship between variables using the White Polymer case study.

You are on a team charged with improving polymer **Yield** (this is the KPI). Two primary output characteristics of the polymer, that are directly related to **Yield**, are **Melt Flow Index** (**MFI**) and **Color Index** (**CI**).

- **MFI** must be between 192 and 198 (these are the specification limits), with a target of 195.
- **CI** must exceed a lower specification of 80.

Historical data from previous efforts to improve yield have been compiled. In this practice, you use these data to explore the relationship between **Yield** and these two characteristics, **MFI** and **CI**.

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

2. Use the **Analyze**, **Distribution** platform to create histograms for **Yield**, **MFI**, and **CI**. Select the **Histograms Only** box before running the analysis.

3. Describe the shape of the distribution for **Yield**.

   Solution:

   The histogram for **Yield** is left-skewed. Many of the values are centered around 95%, but there is a long tail. Many batches have extremely low yields.

4. The specification limits for **MFI** are 192 to 198. Look at the histogram for **MFI**. Are the specifications for **MFI** being met?

   Solution:

   The specifications for **MFI** are not consistently being met. Many of the **MFI** values are outside of the specification range (192-198).

5. In the histogram for **MFI**, select the bars where **MFI** is roughly between 192 and 198. What do you observe in the histogram for **Yield**?

   Solution:

   Batches with **MFI** values between approximately 192 and 198 generally have high yields.

6. The lower specification for **CI** is 80%. Is this specification being consistently met?

   Solution:

   No, the lower specification for **CI** is not consistently being met. Many **CI** values are below 80%.

7. In the histogram for **CI**, select the bars where **CI** is high. What do you observe in the histogram for **Yield**?

   Solution:

   It is difficult to see a relationship between **Yield** and **CI**. Some observations with high **CI** values have high yields, but some also have low yields.

Hide Solution

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Text Version

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