Practice: Exploring Data with a Tree Map and Mosaic Plot

In this practice, you use mosaic plots and tree maps to explore the **Scrapped Parts** data. Remember that these are data about scrapped parts collected for 811 batches with at least one scrapped part over a three-month period. For each batch, data were collected about the number of pieces scrapped, the total value of the scrapped parts, the product line, and the product family.

Note that value ordering has been applied as a column property for **Product Family**, so the values of **Product Family** will be displayed in increasing order of size in all graphs and analyses.

In the first lesson, you learned how to create mosaic plots and contingency tables using **Fit Y by X** from the **Analyze** platform. You revisit this platform in this practice.

1. Open the file **Scrapped Parts.jmp** from the course folder.

2. Use **Analyze**, **Fit Y by X** to create a mosaic plot and a contingency table for **Product Line** (**Y**, **Response**) and **Product Family** (**X**, **Factor**), using **Total Value** as the **Freq** variable.

3. What is the biggest opportunity for improvement, in terms of the value of scrapped parts?

   Large parts account for 54% of the total value of scrapped parts, and the product line B2 accounts for approximately 53% of this.

4. Re-create the previous analysis, but this time use **Pieces** as the **Freq** variable. What do you conclude from this analysis?

   The biggest opportunity is *Small* parts, which represents 65% of all scrapped parts. Of *Small* parts, nearly all of the parts are from product lines A2 and A3.

5. Use **Graph Builder** to create a tree map for these data. Use **Product Family** and **Product Line** in the **X** zone, **Pieces** in the **Color** zone, and **Total Value** in the **Size** zone.

6. What do you learn from this analysis?

   Product Line B2 within the *Large* product family stands out.

7. In the previous analysis, move **Total Value** to the **Color** zone and **Pieces** to the **Size** zone. **Hint**: Right-click **Pieces** in the **Color** zone and select **Swap** and then **Total Value**.

8. What do you notice?

By far, A2 and A3 in the *Small* product family stand out. E6 in the *Extra Large* product family is the most valuable, but there are very few scrapped parts in this group.

9. Consider these four analyses. From a problem-solving perspective, which analysis is most effective in prioritizing improvement opportunities?

From an *exploratory data analysis* perspective, the answer is, it depends. For you, as the analyst, which analysis most clearly communicates the message in the data? If you find it difficult to interpret the tree map, then the mosaic plots might be better. You might learn from multiple analyses, and there a might be a better analysis than the ones you have explored here.

From a *data presentation* perspective, this is a much more involved question. You learn some guidelines for creating effective visualizations later in this module.

Hide Solution

Statistical Thinking for Industrial Problem Solving

Close