

## Practice: Visualizing Regression with Anscombe's Quartet

Open the file **Anscombe.jmp** from the following path in JMP: **Help, Sample Data Library**.

This data set has four pairs of variables.

1. Click on the green triangle next to **The Quartet** in the top left corner of the data table. This script runs four bivariate analyses. For each pair of variables, a regression line is shown, but the points are hidden. Notice that the statistical results for each pair are all nearly identical.
2. Look at these analyses one at a time, starting with the residual plots. Under the red triangle next to **Linear Fit**, select **Plot Residuals**. Repeat this for each pair.
  - a. Which pair of variables shows curvature in the residuals, indicating curvature in the relationship between the two variables?
  - b. Which pair of variables shows points that are randomly scattered, with no obvious pattern? The residual plot indicates that a linear model makes sense.
  - c. Which pair of variables shows all of the residuals falling at the same predicted value, with one extreme predicted value?
  - d. Which pair of variables shows the residuals sloping (tilting) down, with one extreme point, indicating a possible influential point?
3. Now, for each pair, click the red triangle next to **Bivariate** and select **Show Points**. You can clearly see these patterns in the bivariate plots.

What does this example illustrate? What do you learn from this exercise?

There are many possible answers.

- It is important to always plot your data.

- Residual plots show patterns in the data that are not explained by the model.
- Numerical statistical output, without graphics, can be misleading.

Hide Solution

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