Lab Assignment 9: Contingency Tables and Odds Ratios

Constructing Contingency Tables
Open the file CarPoll.JMP from the subdirectory JMP-IN Data.

1. How many observations and variables are in this dataset?

2. What two types of variables are present in the dataset?
   Since there is only one continuous variable in this dataset, fitting a regression model to this data would not be too beneficial. So we can construct contingency tables to see if relationships exist between the variables found in the dataset.

3. First let’s look at the distribution of age. Summarize this variable as if you were describing it for your research project - give all of the important attributes of the variable. What does the Normal Quantile plot tell us about age?

4. Let’s now consider the other variables in the dataset. Choose Analyze → Fit Y by X, with Marital Status as X and Type as Y.
   - Describe the Mosaic Plot.
   - Based on the contingency table, calculate the Odds Ratio and the Relative Risk for Marital Status and Car Type (we will ignore the values for work related car types). These values are going to help us answer the question - Does Marital Status help predict preferences for car type? Once you have calculated these values we need to interpret them in relation to the dataset.

   In Review: The Odds Ratio is the ratio of the odds.
   If OR = 1, then X and Y are independent and there is no association between the two.
   If OR > 1, the subjects in row one are more likely to make the response in column one than are subjects in row two.

   In Review: The Relative Risk is ratio of the probabilities.
   If RR = 1, then X and Y are independent and there is no association between the two.
   If RR > 1, the subjects in row one are more likely to make the first response than are subjects in row two.
   - Does Marital Status help predict preferences for car type?

5. Try this again but use Sex and Country - choose X as sex and country and Y (do not use the values for the European cars). Does Gender help predict preferences for Country?

6. Now try looking at some contingency tables for the Class Data (found on course homepage under Lab Assignment 5).
   - Does onlychild help predict whether a family owns a pet? Explain.
   - Does gender help predict an individual’s movie preference? Explain.

Remember to Close all JMP-IN windows.