Simple Logistic Regression

Use to model the relationship a continuous explanatory variable has with a categorical outcome variable. Useful for estimating the probability of the occurrence of an event for different values of the explanatory variable.

Logistic Regression Using Fit Y by X

1. From an open JMP® data table, select Analyze > Fit Y by X.
2. Click on a categorical variable from Select Columns, and click Y, Response (nominal variables have red bars, ordinal variables have green bars).
3. Click on a continuous variable, and click X, Factor (continuous variables have blue triangles). Click OK.

By default, JMP will provide the following results:

- The logistic plot, with curves of cumulative predicted (fitted) probabilities.
- The whole model test for model significance.
- Parameter estimates for the fitted model.

Tips:

- When the response is nominal, a nominal logistic model will be fit. When the response is ordinal, as in this example, an ordinal logistic model will be fit.
- To color points and add a legend, right-click in the graph and select Row Legend. Select a variable under Mark by Column, and select Markers to change the marker, and click OK.
- To save the probability formula or request other options, click on the top red triangle and select the option.
- To find the fitted probability for a given value of X, select the cross-hair tool (h) from the toolbar. Click on the graph dragging the cross-hair to the desired point on the curve.

Interpretation (for this example, X = buying age and Y = car size):

- The bottom curve represents the predicted probability that for a given age, someone will buy a large car.
- The second curve represents the probability that someone will buy a large or medium car.
- The distance between the two curves represents the probability that someone will buy a medium car.
- The distance between 1.00 and the top curve represents the probability that someone will buy a small car.
- The cross-hairs show that the predicted probability that someone aged 39 years will purchase a large car is 0.191.

Notes: Simple nominal and ordinal logistic regression can also be performed from Analyze > Fit Model. For more details see the book Basic Analysis (under Help > Books) or search for “simple logistic regression” in JMP Help.