

# 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

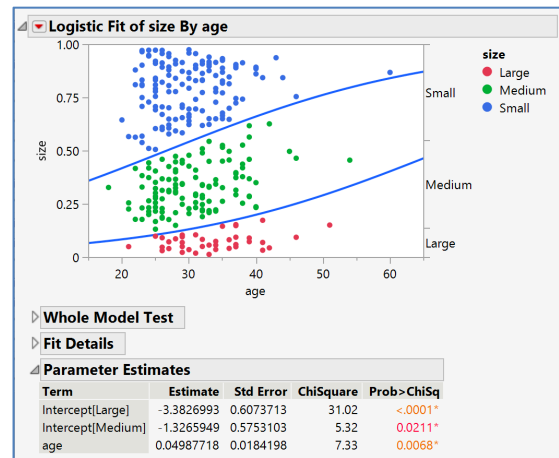
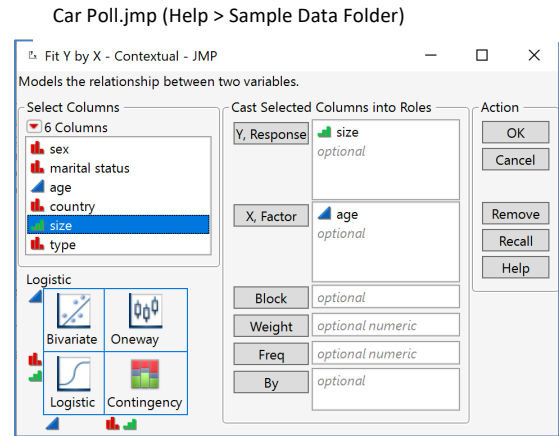
1. From an open JMP® data table, select **Analyze > Fit Y by X**.
2. Click on a categorical variable from **Select Columns**, and click **Y, Response** (nominal variables have red bars, ordinal variables have green bars).
3. Click on a continuous variable, and click **X, Factor** (continuous variables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

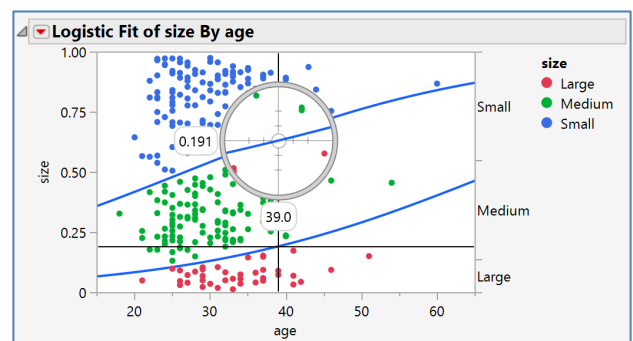
### Tips:

- 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** () 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**.

Visit **Basic Analysis > Logistic Analysis** in **JMP Help** to learn more.