Print

Demo: Assessing Correlations

Correlation is a measure of the linear association between two variables. In this video, we show how to assess correlations for the Cleaning data using three platforms: Graph Builder, Fit Y by X, and Multivariate.

We start with the Graph Builder, which is the first option under the Graph menu.

We will display a density ellipse and calculate the correlation for Removal and OD.

We'll drag Removal to the Y zone, and then drag OD to the X zone. To change the graph element to a density ellipse, we'll click on the ellipse icon. By default, JMP draws a shaded 90% density ellipse. This is the region where we expect approximately 90% of the data values to fall. We can see that the relationship is positive and that it is relatively strong.

To calculate the correlation, we check the correlation box. The correlation between Removal and OD is 0.917.

What is the correlation between Removal and ID? We'll drag ID next to OD on the X axis to display density ellipses and correlations for both variables.

The correlation between Removal and ID, 0.797, is also positive, but it is not as strong.

For a more formal analysis of the relationships between Removal and OD and Removal and ID, we use Fit Y by X, which is under the Analyze menu.

We'll select Removal as the Y, Response and both OD and ID as the X, Factors, and click OK.

JMP creates bivariate scatterplots for both pairs of variables.

Density ellipse is an option under the Bivariate Fit red triangle. To simultaneously request this option for both pairs of variables, we can broadcast this command. To do this, we click and hold the Ctrl key, then select Density Ellipse, 0.90 from either Bivariate Fit red triangle.

JMP displays the correlations, along with other statistics, under the Bivariate Normal Ellipse outlines.

Finally, to display correlations between many pairs of variables, we use the Multivariate platform. Under the Analyze menu, we'll select Multivariate Methods and then Multivariate.

Let's use Removal through Width as Y, Columns, and click OK. JMP displays a correlation matrix and a scatterplot matrix. We'll select density ellipses from the Scatterplot Matrix red triangle.

In the scatterplot matrix we can easily see that the variables OD and ID are both positively correlated with Removal, and that OD and ID are positively correlated with one another.

We can also see that Width is not strongly correlated with any of the other variables.

These correlations are reported in the color-coded Correlations matrix. Stronger positive correlations are blue, weaker correlations are gray, and stronger negative correlations are red.

Close