This guide illustrates how to compute nonparametric measures of association (Spearman’s Rho, Kendall’s Tau, and Hoeffding’s D).

Nonparametric Correlations

1. From an open JMP data table, select Analyze > Multivariate Methods > Multivariate.
2. Select two or more discrete numeric (nominal or ordinal) or continuous variables from Select Columns, click Y, Columns, then click OK.

JMP produces a table of pairwise correlations and a scatterplot matrix.

3. From the top red triangle, select Nonparametric Correlation, then the measure of interest (shown below, left).

The following results are provided (below, right):

- The calculated correlation coefficient for the pair of variables.
- The p-value, showing the significance of the correlation.
- A bar chart showing the correlation coefficients.

Spearman’s Rho ($\rho$) is similar to Pearson’s correlation, but is based on ranks rather than the original values. Like the Pearson correlation, values range from -1 to +1, with larger absolute values indicating a stronger relationship.

Kendall’s Tau ($\tau$) is based on the number of concordant and discordant pairs of rank-ordered data. It also ranges from -1 to +1.

Hoeffding’s D ranges from -0.5 to 1. It measures the difference between the joint ranks of paired data and the product of their marginal ranks, and can capture nonlinear relationships.

Notes: Additional options are available under the top red triangle (shown above, left). Nonparametric Density and other options are also available under the red triangle for the scatterplot matrix. For additional information and statistical details, see the book Multivariate Methods (under Help > Books) or search for “nonparametric correlation” in JMP Help.