

## Understanding correlations

A correlation measures the dependence relationship between two or more continuous sets of data. For example, there is a direct linear correlation between the ice cream sales and temperature on a day.

Once a segment is provided, BIRT Analytics calculates the distinct correlation coefficients (using Pearson's correlation coefficient) between all the possible combinations of pairs of sets of data.

You must use continuous variables because this correlation coefficient needs this kind of data to run all its calculations.

### Understanding the correlation matrix

A correlation matrix tabulates the results of the correlation coefficient between pairs of variables provided. This matrix is an upper diagonal matrix, where each cell shows the correlation coefficient for a certain combination of column and row. Each row and column represents the distinct continuous sets of data compared. The value of the Pearson's correlation coefficient goes from -1 to 1.

Results near to 1 means that the two sets of data compared are linear dependent directly. In other words, if one of them grows so does the other.

In case those results are close to -1, this means that both sets have a decreasing linear dependency, also known as anticorrelation. So when one of them grows, the other decreases lineally.

Finally, as values are approaching zero there is less evidence of a linear relationship, so those data sets are uncorrelated.

### How to create a correlation matrix

1. In Analytics-Advanced, choose Correlation.
2. Drag and drop the segment to analyze in the Domain. Automatically.
3. In the left panel of Domain columns, expand the database and the appropriate tables.
4. Drag the appropriate columns from the left panel and drop them in the right panel. The columns specify the continuous variables which will be paired to make correlation calculations.
5. Choose Train. A correlation matrix is shown in the Results tab. It's possible to choose distinct gradient of colors to make easier to understand them.