

WINE CONSUMPTION AND HEART DISEASE

4. Describing the Relationship between Heart Disease Mortality and Wine Consumption

The relationship between heart disease mortality and wine consumption displayed in Section 3.1 can be described as monotonic. Indeed, as wine consumption strictly increases, the mortality rate decreases. The strength of a monotonic relationship is measured by a rank correlation coefficient known as Spearman correlation coefficient.

On the other hand, the scatterplot of the log-transformed observations (Section 3.2) shows a linear relationship between heart disease mortality and wine consumption. Thus, in case of the log-transformed data, the Pearson correlation coefficient should be used to measure the strength of the linear relationship between the two variables.

4.1 Spearman Correlation Coefficient of the Data on Original Scales

4.2 Pearson Correlation Coefficient of the Log-Transformed Data

4.1 SPSS produces the following Spearman correlation coefficients:

SPEARMAN CORRELATION COEFFICIENTS		
	MORTAL	WINE
MORTAL	1.00	-0.6824
WINE	-0.6824	1.00

The value of the Spearman correlation coefficient of -0.6824 with a p-value of 0.002 reported by SPSS indicates that there is a strong tendency for mortality readings to decrease as wine consumption increases.

4.2 The Pearson correlation coefficients for the data obtained with SPSS are displayed in the following table:

PEARSON CORRELATION COEFFICIENTS		
	LN MORTAL	LN WINE
LN MORTAL	1.00	-0.8593
LN WINE	-0.8593	1.00

The above matrix shows that there is a high negative correlation between the transformed observations (on log scale).