Correlation discussion

Science, Statistics

Describe different methods of establishing correlation among variables and provide an example of each. Discuss the advantages and disadvantages of each method and where each must be applied.

As one method, correlation and covariance matrices may be derived from numeric data columns in which there are two options: storing computation results in an auto-generated worksheet or exhibiting outcomes in a tabular form which may be filled in by color-coded values. This is limited, however, to storage in a single worksheet despite multiple numeric data columns required. One example:

Fisher’s z-Transformation (zr) is another method which enables a skewed sampling distribution to be transformed into a normal distribution scheme. In particular, this may be applied when the value of r (Pearson’s product-moment correlation coefficient) deviates from zero, in which case, the sampling distribution becomes skewed progressively and Fisher’s z-transformation may resolve to normalize this condition. Though the mean and variance do not follow a common transformation, functions pertaining to cumulative distribution and probability density can still be determined statistically via such method. The following graph demonstrates how ‘ zr’ varies with ‘ r’.

Evaluation of Pearson ‘ r’, on the other hand, may indicate correlation between two variables based on tests to figure whether the ‘ r’ varies from -1 to +1, with 0 in reference to absence of relationship and 1 for perfect relationship. Test reports with this method incorporate critical one-tailed and two-tailed ‘ r’, Fisher z-transformation, t-statistic, and population correlation figures. For instance,

Calculating Spearman’s rank-order correlation non-parametric coefficient ‘ ρ’, likewise, formulates a nearly similar output as does measuring the Pearson’s ‘ r’. It takes two numeric variables to carry out the method through which each variable is converted to ranks. From this stage, one may either proceed to compute for the Pearson correlation coefficient or correct and calculate the difference between the ranks.

Reference

“ Correlation Methods and Statistics.” Gigawiz Ltd. Co. Retrieved from http://www. gigawiz. com/correlations. html on January 26, 2012.