

Measures of Association

The **measures of association** refer to a wide variety of coefficients that measure the statistical strength of the relationship on the variables of interest; these measures of strength, or association, can be described in several ways, depending on the analysis.

There are certain statistical distinctions that a researcher should know in order to better understand the measures of statistical association.

- First, the researcher should know that measures of association are not the same as measures of statistical significance. The measures of significance have a null hypothesis that states that there is no significant difference between the strength of an observed relationship and the strength of an expected relationship by means of simple random sampling. Therefore, there is a possibility of having a relationship that depicts strong measures of association but is not statistically significant, and a relationship that depicts weak measures of association but is very significant.
- The coefficient that measures statistical association, which can vary depending on the analysis, that has a value of zero signifies no relationship exists. In correlation analyses, if the coefficient (r) has a value of one, it signifies a perfect relationship on the variables of interest. In regression analyses, if the standardized beta weight (β) has a value of one, it also signifies a perfect relationship on the variables of interest. In regards to linear relationships, the measures of association are those which deal with strictly monotonic, ordered monotonic, predictive monotonic, and weak monotonic relationships. The researcher should note that if the relationships in measures of association are perfect due to strict monotonicity, then it should be perfect by other conditions as well. However, in measures of association, one cannot have perfect ordered and perfect predictive monotonicity at the same time. The researcher should note that the linear definitions of perfect relationships in measures of association are inappropriate for curvilinear relationships or discontinuous relationships.
- The measures of association define the strength of the linear relationship in terms of the degree of monotonicity. This degree of monotonicity used by the measures of association is based on the counting of various types of pairs in a relationship. There are basically four types of pairs in the measures of association. These are concordant pairs (i.e. the pairs that agree with each other), discordant pairs (i.e. the pairs that do not agree with each other), the tied pair on one variable, and the tied pair on the other variable. The researcher should note that as the concordant pair increases, all the linear definitions of perfect relationships in measures of association increases the coefficient of association towards +1.

There are certain assumptions that are made on the measures of association:

- The measures of association assume [categorical \(nominal or ordinal\) and continuous types](#)

[of level data](#). The measures of association assume a symmetrical or asymmetrical type of causal direction.

- The measures of association that define an ideal relationship in terms of the strict monotonicity will attain the value of one only if the two variables have evolved from the same marginal distribution. The measures of association also ignore those rows and columns which have null values.

Resources

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