Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases.

A correlation coefficient is a statistical measure of the degree to which changes to the value of one variable predict change to the value of another. When the fluctuation of one variable reliably predicts a similar fluctuation in another variable, there's often a tendency to think that means that the change in one causes the change in the other. However, correlation does not imply causation. There may be, for example, an unknown factor that influences both variables similarly.

Here's one example: A number of studies report a positive correlation between the amount of television children watch and the likelihood that they will become bullies. Media coverage often cites such studies to suggest that watching a lot of television causes children to become bullies. However, the studies only report a correlation, not causation. It is likely that some other factor – such as a lack of parental supervision – may be the influential factor.

Correlations are useful because they can indicate a predictive relationship that can be exploited in practice. For example, an electrical utility may produce less power on a mild day based on the correlation between electricity demand and weather. In this example, there is a causal relationship, because extreme weather causes people to use more electricity for heating or cooling. However, in general, the presence of a correlation is not sufficient to infer the presence of a causal relationship (i.e., correlation does not imply causation).

# Correlation

→ Correlation analysis deals with the association between two or more variables.

→ It determines the degree of relationship between two variables.

→ Examples :- relationship between study habits and academic achievement; or Intelligence and achievement; or Anxiety and Academic Achievement.

## Coefficient of correlation :-

(1) When the degree of relationship between two sets of measures or variables is to be expressed in quantitative forms, we usually take the help of an index that is known as coefficient of correlation.

2.) It is a single number that tells us to what extent two variables or ~~things~~ are related and to what extent variations in one variable go with variations in the other.

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3.) The range of co-efficient of correlation varies from Perfect Positive Correlation to Perfect Negative Correlation.

4.) It can be expressed in the numerical scale of measurement as + Correlation or from +1 to −1 Correlation.