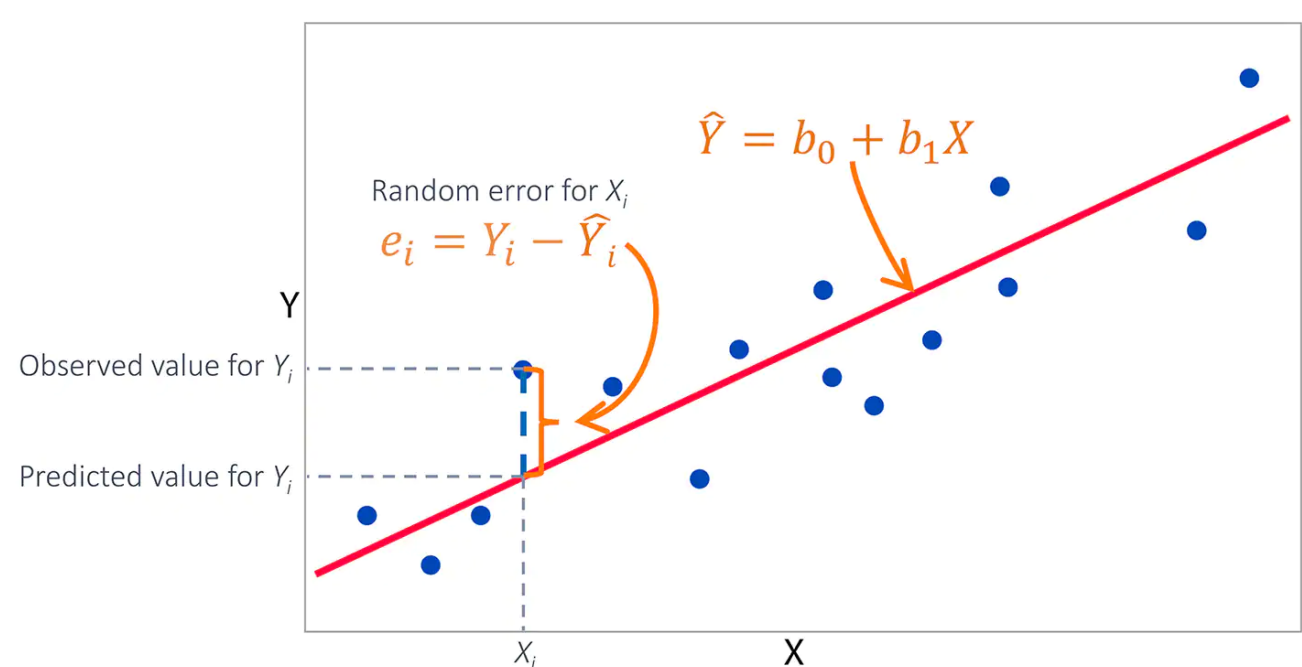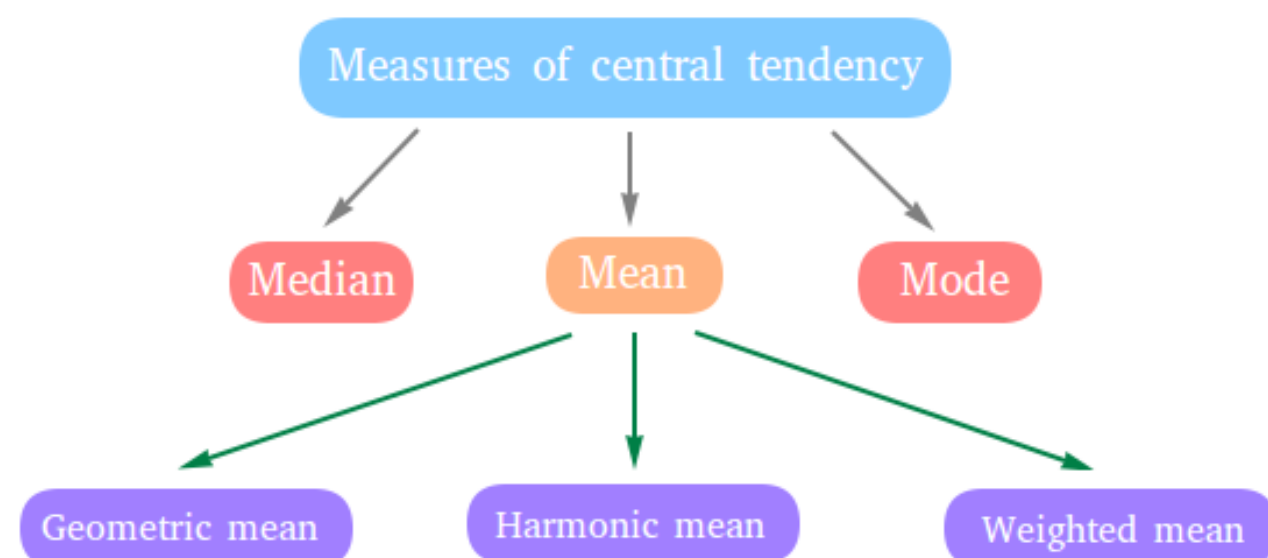STATISTICS IS THE DISCIPLINE THAT CONCERNS THE COLLECTION, ORGANIZATION, ANALYSIS, INTERPRETATION, AND PRESENTATION OF DATA. APPLYING STATISTICS TO A SCIENTIFIC, INDUSTRIAL, OR SOCIAL PROBLEM IS CONVENTIONAL, TO BEGIN WITH, A STATISTICAL POPULATION OR A STATISTICAL MODEL TO BE STUDIED.

## Central tendency

In statistics, a central tendency is a central or typical value for a probability distribution. It may also be called a center or location of the distribution. Colloquially, measures of central tendency are often called averages. The term central tendency dates from the late 1920s.
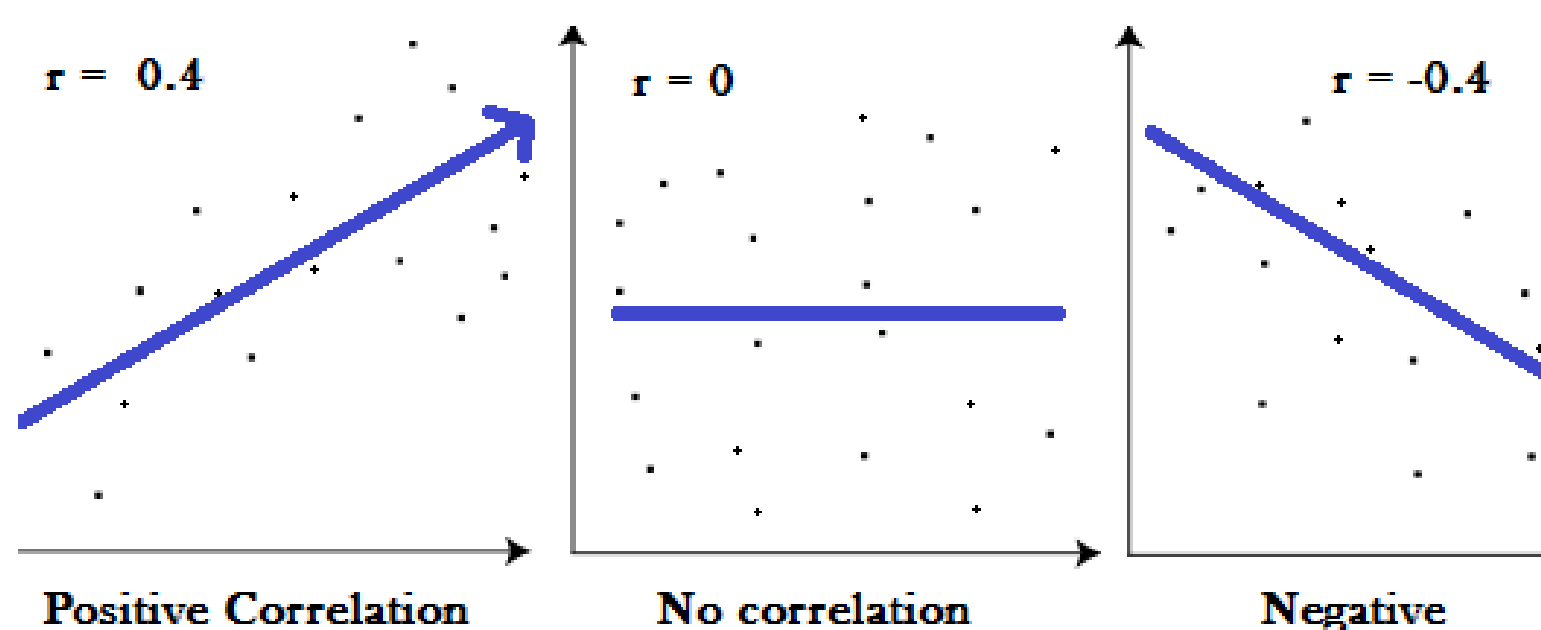


## Least Square Method



$$\hat{Y} = b_0 + b_1 X$$

$$e_i = Y_i - \hat{Y}_i$$

Random error for $X_i$

Observed value for $Y_i$

Predicted value for $Y_i$

The least-square method is the process of finding the best-fitting curve or line of best fit for a set of data points by reducing the sum of the squares of the offsets of the points from the curve.

## Correlation

Correlation is a statistical measure that expresses the extent to which two variables are linearly related (meaning they change together at a constant rate). It's a common tool for describing simple relationships without making a statement about cause and effect.



$r = 0.4$    $r = 0$    $r = -0.4$

Positive Correlation    No correlation    Negative

## Regression



Regression is a statistical method used in finance, investing, and other disciplines that attempts to determine the strength and character of the relationship between one dependent variable (usually denoted by Y) and a series of other variables (known as independent variables)

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