

Rate:

It comprises the following elements:
numerator, denominator, time specification and multiplier

It is expressed per 1000; 10,000; 100,000
e.g. IMR, Crude Birth rate, Death rate

Numerator:

Number of times an event occurred. (e.g. birth, sickness, death ...)

Denominator:

It is a base line population from which an event occurred (e.g. whole population of a city/district/state/country, population at risk, population under surveillance)

Ratio:

It expresses a relation between two random quantities. The numerator is not a component of denominator.

e.g. Maternal mortality ratio

$$\text{MMR} = \frac{\text{No of maternal deaths}}{\text{Total no of live births}}$$

Proportion:

Numerator is always included in denominator. It expresses a part of total.

e.g. percentage

Central tendency

Mean: This measure implies arithmetic average or arithmetic mean which is obtained by summing up all the observations and dividing the total by the number of observations.

It is one of the most commonly used central values in statistical methods.

Median: When all observations of a variable are arranged in either ascending or descending order, the **middle observation** is known as median.

It implies the mid value of series.

Mode:

This is the **most frequently** occurring observation in a series, i.e. the most common

Standard Deviation (SD): Standard deviation is a measure of dispersion and is used most commonly in statistical analysis.

1. It summarizes the deviations of a large distribution from mean.
2. Indicates whether the variation of individual observation is by chance or real due to some special reasons.
3. SD helps to find out Standard Error (SE) which determines whether the difference between means of two samples is by chance or real.
4. It also helps in finding the suitable size of sample.

Odds ratio: measures strength of association
between exposure and outcome

Calculated in case control studies.

Relative risk: measures incidence of disease
among exposed persons to the
risk factor(s)

Calculated in cohort studies.

Tests of significance:

Chi square test,

Fisher`s exact test,

Z test

t test (student`s)

ANOVA test

Correlation coefficient

Regression analysis – linear, logistic

Survival analysis

Statistical software:

Epi Info – from CDC, Atlanta – Free

Open Epi – Free

SPSS

STATA

SAS

Stats Direct

JMP

Systat

Sigmaplot

Minitab