

Introduction to Measures of Central Tendency

* Mean Median Mode

⇒ Mean:

Individual Series

$$\Rightarrow \bar{X} = \frac{\sum X}{N}$$

• Direct Method

\bar{X} = Arithmetic Mean

$\sum X$ = Summation of values of variable X

N = Number of observations

• Short Cut Method

$$\bar{X} = A + \frac{\sum d}{N}$$

⇒ A = Assumed Mean

$\sum d$ = Sum of deviations of variables from assumed mean

• Step Deviation Method

$$\bar{x} = A + \frac{\sum d'}{N} \times C$$

where, $\sum d'$ = Sum of step deviations

C = common factor

* Discrete Series

• Direct method

$$\bar{x} = \frac{\sum fx}{\sum f}$$

where, $\sum fx$ = Sum of products of Quality

(x) and frequencies (f)

$\sum f$ = Total of frequencies.

• Short cut method

$$\bar{x} = A + \frac{\sum fd}{\sum f}$$

where, $\sum fd$ = Sum of product of deviations (d) and respective frequencies

• Step deviation Method

$$\bar{x} = A + \frac{\sum fd'}{\sum f} \times C$$

$\sum fd'$ = Sum of product of step deviations (d') \rightarrow respective frequencies

C = Common factor.

* Continuous Series

• Direct method

$$\bar{x} = \frac{\sum fm}{\sum f}$$

m = Mid points.

$\sum fm$ = Sum of products of mid point (m) and frequencies (f)

Short cut method

$$\bar{x} = A + \frac{\sum fd}{\sum f}$$

$\sum fd$ = Sum of the product of deviation

(d) from mid points with the respective frequencies.