- Measures of central tendency is a summary statistic that Measure of central tendency is a summary statistic that measure of central tendency represents central point or typical value of a dataset (2) This measures indicates where most of the value in the
- This measures indicates where also known as central location of distribution.
- (3) You can think of it as a tendency of data to cluster around a middle value.

uses of measure of central tendency.

- (1) A measure of central tendency can be used as a standard for judging the relative positions of other items in the same set of data. Cwhether a number falls above or below the average and how for it is from average)
- (2) A measure of central tendency can be used to compare the relative sizes of two different sets of data (for example: compo the overage of two sets of data).
- (3) We get a picture for the variability (spread) of the data by looking at the dispersion (grouping of individual abservations around the average). This helps us to determine the consistency among the observations.

The mean is anthmetic average. The value where the set of data balances also called as "point of balance" when each data value is stacked on a dataline.

Let's have a data set with values { x1, x2, x3... xn}

where $\bar{z} = sample mean$

n = sample size

 $\mu = \sum_{i=1}^{N} x_i$

where $\mu = population$ mean N = population sample size.

"the mean is the most common measure of central tendence but has a downside as it is easily affected by outliers."

- -> Median
- into half. It is the middle value in distribution when values are arranged according to the size.
- two equal groups so that half the observations have smaller than the median, and half the values larger than the medium.
- 13) The median is measure of choice when a numerical variable has some few unusually low or high values in the data set.

 If this occurs then mean will be pooled away from the center and not be representative in majority of cases.

we need to arrange elements in ascending order. The method of finding median varies whether your data has addor even no. of elements.

- \rightarrow If the number of obs(n) is odd: the median is value of the position (n+1)
- If no. of observation (n) is even

 1. Find value of position (2)
 - 2. Find Value of position (ntl)
 - 3. Find any of two values to get median

Mode

(1) The mode is the value that occurs the largest number of the response category of the r The mode is the value the response category of variable times in a data set or the response category of variable that is most frequently choosen by respondents.

- In bar chart or histogram, mode is the tallest ban
- (3) When a distribution has one mode, we say it as uni-model when a distribution has one mode, we say it as uni-model. If there when a distribution has one it as bi-modal. If there are several modes we say it as multi-modal.
- If no values repeats data has no mode.
- Measures of central tendency with level of measurement.
- (1) Nominal: Measures of central tendency are applied to the frequencies found in different categories of a nominal variable.

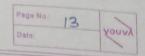
In nominal data mode is only measure of central tendency that can be used.

- (2) Ordinal: Either median or mode is the measure of central tendency that can be used. Here, median is pretern measure of central tendency.
- Interval or Ratio: The mean, median and mode may be used as measures of central tendency.

- For normal distribution, mean is the most preferred meaning of central tendency.

- For skewed distribution, median is preferred over mean and mode.

The mode is only measure of central tendency that an be used for all levels of measurements.



Given a set of marks of students in a class. Find mean, Eq: median and mode.

Mean =
$$\frac{5}{2}$$
 $\frac{2i}{12}$ = $\frac{464}{15}$ = $\frac{30.93}{15}$
Marks in asc order = \$10.15, 18.23.05.00

Median =
$$\frac{(n+1)^{th}}{2}$$
 element = $\frac{(15+1)^{th}}{2}$ element = $\frac{(16)^{th}}{2}$ element

Soln:

Mode is element with highest frequency

STREET, ST.	Flements	Frequency
1- 3- 3 -1	10	1
The Long	15	1
	18	1
	23	1
10000	25	1
a street	29	1
	32	2
	37	1
troa ei ii ie	40	4
mint	41	1
	42	1
	Highest freau	encu is of 40

Highest frequency is

Let's take the above example and change some values and observe

mean
$$(\bar{\chi}) = \frac{5}{5} \times i = \frac{531}{15} = \frac{35.4}{15}$$

h=15 (odd)

median =
$$\frac{(n+1)^{th}}{2}$$
 = $\frac{(15+1)^{th}}{2}$ = $\frac{16^{th}}{2}$ = 8^{th} element

= 32

- we can see significant change in the mean whereas the median has no changes.
- This is because the calculation of mean incorporate au value in data. If you change any value mean change unlike mean, median values does not depend on values in data set.
- the effect of median is smaller. of course, with type of changes median the can change.
- one major disadvantage of mean is that it is particularly susceptible to extreme values or outliers in data.