BIOSTATISTICS...

MEASURES OF DISPERSSION IV SEMESTER MSc ZOOLOGY MIDHILA MOHAN ASSISTANT PROFESSOR ON CONTRACT

MEASURES OF DISPERSSION

Measures of dispersion.

The various measure of central value gives us one single figure that represents the entire data or serve to locate the centre of the distribution .

But they do not reveal how the items are spread out or scattered on each side of the centre .

DEFINITION:

BJECTIVES:

The measurement of scattereness of the mass of figures in a series about an average is called measures of variation

To determine remability of an average

- $\checkmark~$ To compare 2 or more series with regard to their variability.
- ✓ To facilitate the use of other statistical tools such as testing.
 ✓

IMPORTANCE :

- > To judge the reliability of measure of central tendency.
- \succ To obtain correct picture of distribution or dispersion of values in the series
- > To make a comparative study of variability of two or more series or samples
- To identify causes of variability in samples in order to exercise corrective measures
- > To utilize dispersion values for further statistical analysis

CHARACTERISTICS OF GOOD MEASURE OF DISPERSION

- Measure of dispersion should be precisely and clearly defined.
- Measure of dispersion should be based on all observations of the data
- It should be easily understood as a measure of variability in the data
- It should not be unduly influenced by the extreme values.
- It should be easy to calculate.
- It should be capable of being treated algebraically.

TYPES OF MEASURES OF DISPERSION It is divided In two 1 Distance deviation measures Range Quartile deviation 2 Average deviation measures Mean deviation Standard deviation Variance >**DISTANCE DEVIATION MEASURE:** It is used distance of spread between two values in the data set. The distance becomes a measure of dispersion. The larger is the distance between two values, the greater is The larger is the distance between two values, the greater is the variability.

Range , percentiles and quartile deviation are methods for study of measures of dispersion by distance.

AVERAGE DEVIATION MEASURE:

These are the average of deviation determined from the measure of central tendency.

They are used most commonly for measuring variability or dispersion.

Mean deviation, standard deviation, coefficient of variation and variance are such methods of dispersion

RANGE

Range is a simplest and trudest method of variance .

It is defined as the differences between highest and lowest values of distribution.

It is given by formula

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Range = X<sub>maximum</sub> – X<sub>minimum</sub>
or
Range = L- S
where L= largest item
S= Smallest item.
COEFFICIENT OF RANGE
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Relative measure corresponding to range is called coefficient of range.

L= largest value S= smallest value

Following data shows marks obtained by 12 student of a particular Class in a examination on biostatistics. calculate the range and its coefficient

40	67	89
85	99	94
73	100	98
58	55	87



CR = L - SL +S $= \frac{100 - 40}{100 + 40}$ $= \frac{60}{140}$ = 0.4285 = 0.43

MERITS OF RANGE

Easy to calculate

 it is useful in frequency distribution when only two extreme observation considered.

- It is extensively used in statistical quality control.
- Its unit are same as the unit of variable being measured.
- ^Follwing table shows weight in kg of student in a higher secondary class. calculate the range and its coefficient.

Weight kg	frequency
35-40	8
40-45	10
45-50	12
50-55	18
55-60	8
60-65	4

Range = 65- 35 30 kg CR = 65- 35/ 65+35 = 30/100 = .03 DEMERITS ❖ It is very much effected by fluctuation of sampling.

It is not based on entire data.

It is very sensitive to size of sample.