Course: MSW (SOCIAL WORK)

Semester: II

Course Details: Core Course-VI(CC-VI)

Course Title: Social Work Research And Statistics

Unit: Social Statistics

**ORIGIN OF STATISTICS**

The word “Statistics” seems to have been derived from the Latin word “STATUS” or Italian word “Statistia” or the German word “statistic” each of which means a ‘political gate’

* Sir Ronald A Fisher (1890-1962)

**Meaning of Statistics**

* The word ‘statistic’ is used to refer to
	+ Numerical facts such as the number of people living in particular area.
	+ The study of ways of collecting, analysing and interpreting the facts.

Definition of statistics

* “Statistics may be rightly called the scheme of averages”
* A.L. Bowley

**Scope of Statistics**

1. Statistics and Industry
2. Statistics and Commerce
3. Statistics and Agriculture
4. Statistics and Economics
5. Statistics and Education
6. Statistics and Planning
7. Statistics and Medicine
8. Statistics and Modern applications.

**Limitations of Statistics**

* Statistics is not suitable to the study of qualitative phenomenon.
* Statistics does not study individuals
* Statistics laws are not exact
* Statistics table may be misused
* Statistics is only one of the method of studying the problem

**MEASURES OF CENTRAL TENDENCY**

MEAN, MEDIAN, MODE

* The MEAN is the average of all the values in the data set.
* The MEDIAN indicates the halfuny point of an ordered data set.
* The MODE is the most frequently occurring value in the data set.

**The MEAN**

 In general, the mean of a data set can be calculated using : “sigma” means Sum of Σ.

Mean = $\frac{Σ data values}{number of data values}$

Sample data.

 $\overline{x }$ = $\frac{x\_{1}+x\_{2}+……..+x\_{n}}{n}$

 $\overline{x }$ = $\frac{Σ\_{x}}{n}$

Population data

µ = $\frac{x\_{1}+x\_{2}+……..+x\_{n}}{n}$

 µ = $\frac{Σ\_{x}}{n}$

**THE MEDIAN**

 The median can be calculated by finding the position of the 50th percentile

50th percentile

Position number of $P\_{50}$= $\frac{n+1}{100}$(50)

**The MODE**

The mode is the most frequently occurring value in a data set.

Note:

* The mode is easier to determine if the data is in the form of a frequently take.
* If no value is repeated there’s no mode
* There is a possibility of multiple modes

**MEASURES OF DISPERSION**

Dispersion

* As per Barley “Dispersion is a mean of variation of items.

Objectives of Measuring Dispersion

* To determine the reliability of an average
* To compare the variability of two or more series
* For facilitating the lose of other statistical measures.
* Basis of statistical Quality Control

**Method of Measuring Dispersion**

* Range
* Interquantile range & Quantile deviation
* Mean Deviation
* Standard Deviation
* Coefficient of Variation
* Lorenz Curve.

Range (R):

* It is the simplest measures of dispersion
* It is defined as the difference between the larger and smallest values in the series, R=L-S.

**Mean Deviation (MD)**

* It is also called Average Deviation
* It is defined as the arithmetic average of the deviation of the various items of a series compared from measures of central tendency like mean or median

**Standard Deviation**

* Most important & widely used measure of dispersion
* First used by Kar Person in 1893
* Also called root mean square deviation
* It is defined as the square root of the arithmetic mean of square of the deviation of the values taken from the mean.

**Test of Significance**

* Test of significance is a formal procedure for comparing observed data with a claim (also called a hypothesis) whose truth we want to asses
* A significance test uses data to evaluate a hypothesis by compare sample point estimated of parameter to values predicted by the hypothesis.

**T – TEST**

One sample T- test

t = $\frac{\overline{x}-µ\_{0}}{(\frac{s}{\sqrt{n}})}$

Two sample student T- Test

t = $\frac{signal}{noise}$

Paired = T-test

t = $d/(sd/\left(n\right)˄1/2$

**F- TEST**

F = $\frac{explained Varience}{Unexplained varience}$

F = $\frac{between-group variability}{within-group vairability}$

Chi- square test :

$x\_{e}^{2}$ = $\frac{Σ. (0\_{1}-E\_{1})^{2}}{E\_{1}}$

$L\_{0}$= Observed frequencies

$L\_{E}$= Expected frequencies

**CORRELATION**

Correlation is the relationship between two or more paired factor or two or more sets.

* Types of Correlation

TYPES

TYPE 3

TYPE 2

TYPE 1

Simple

Multiple

Partial

Linear

No Linear

Positive

Negative

No perfect