Session 06
Introduction to Statistics

By Nurul Akter Towhid

Statistics

Statistics may be defined as a science which deals with collection, organization, classification, presentation, summarization, analysis and interpretation of statistical data.

Types of Statistical Method:

1. **Descriptive statistics:** It includes statistical methods involving the collection, presentation and characterization of a set of data. The methods are: graphic, measures of central tendency, measure of dispersion, skewness.

1. **Inferential statistics:** It includes statistical methods for estimating the characteristics of a population or making decisions concerning a population on the basis of sample results.

Level of Measurement

A variable has one of four different levels of measurement:

1. Nominal
2. Ordinal
3. Interval
4. Ratio

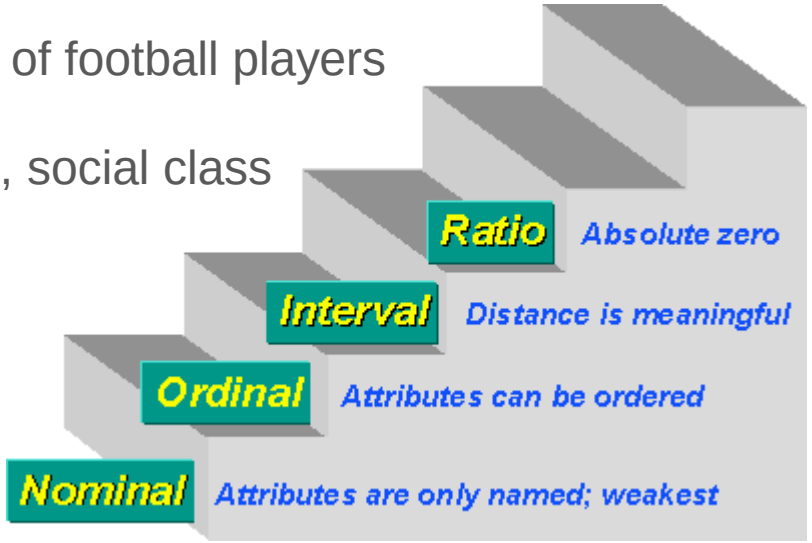
Level of Measurement

Nominal: Social Security numbers,numbering of football players

Ordinal: Preference rankings, market position, social class

Interval: Temperature, IQ score

Ratio: Income, costs



Measures of Central Tendency

A measure of central tendency is a single value that attempts to describe a set of data by identifying the central position within that set of data.

1. Mean
2. Median
3. Mode

	Mode	Median	Mean	Variance/ Standard Deviation
Nominal	yes	no	no	no
Ordinal	yes	yes	no	no
Interval/Ratio	yes	yes	yes	yes

Measures of Dispersion

Literal meaning of dispersion is scatter ness. Dispersion is the degree of the scatter ness or deviation of each value in the data set from a measure of central tendency usually the mean or median.

Batch I	49	50	50	51
Batch II	0	0	100	100

Different measures of Dispersion

1. **Absolute measure:**
    a. Range
    b. Quartile Deviation
    c. Mean Deviation
    d. Standard Deviation
2. **Relative measure:**
    a. Co-efficient of range
    b. Co-efficient of quartile deviation
    c. Co-efficient of mean deviation
    d. Co-efficient of standard deviation
    e. Co-efficient of variation

Correlation

Correlation is a term that is a measure of the strength of a linear relationship between two quantitative variables.

Coefficient Interval	Correlation
0.00 – 0.199	Very Weak
0.20 – 0.399	Weak
0.40 – 0.599	Medium
0.60 – 0.799	Strong
0.80 – 1.000	Very Strong

Describing Data (Graphical)

Basic principle of graphs:

(i) A graph should be clear and simple; a complicated graph defeats its own purpose.

(ii) A graph should be completely self explanatory.

(iii) The origin, the vertical and the horizontal scales should be so chosen that a graph does not convey a false impression about the nature of the data.

Types of Diagrams:

(i) bar diagram, (ii) pie diagram, (iii) histogram, (iv) frequency polygon, (v) line diagram, (vi) scatter diagram etc.