UNIT 1
METHODS OF DESCRIBING DATA

Introduction

[Need to be fill]

Learning Outcomes

- [Need to be fill]

INTRODUCTION TO STATISTICS

Statistics refers to the study of collecting, analyzing, interpreting, presenting, and organizing data in a particular manner.

IMPORTANCE OF STATISTICS

- Statistics makes the work simple & provides a clear picture on the work we do on a daily basis.
- The statistical methods help us to research on different streams such as medicine, economics, business, social science and so on.
- Statistics provides us with different types of organized data with the help of graphs, diagrams and charts.
- Statistics come handy while we do critical analysis.

TYPES OF STATISTICS

1. **Descriptive Statistics** is essentially describing the data through methods such as graphical representations, measures of central tendency and measures of variability.

2. **Inferential Statistics** are techniques that allow us to use these samples to make generalizations about the populations from which the samples were drawn. It is, therefore, important that the sample accurately represents the population.

SOURCES OF DATA

1. **Primary** Sources of Data

- specific information collected by the person who is doing research
- the researchers collects data through surveys,interviews,direct observation and experiments
- **Example**:
  A survey wants to know the effects of total lockdown during Covid 19 pandemic.So he will conduct interviews from every part of the population.

2. **Secondary** Sources of Data

- any materials collected from published records such as newspapers, journals, research papers.
- **Example**:
  effects of vaccine on people from Gombak area

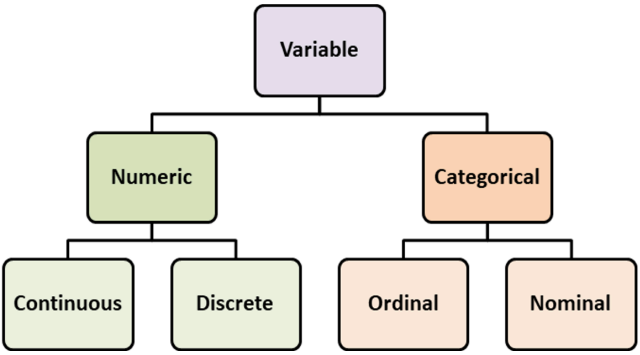
TYPES OF DATA

1. **Quantitative**: numeric form , which can be discrete that includes finite numerical values or continuous which also takes fractional values apart from finite values.

   Eg. The number of girls in a class can only take finite values, so it is a discrete variable, while the cost of a product is a continuous variable.

2. **Qualitative**: not-numerical which can be based on methods such as interviews, grades given in an exam etc.

   It can be nominal and ordinal, where nominal data does not contain any order such as the gender, marital status, while ordinal data has a particular order such as ratings of a movie, sizes of a shirt.



NOMINAL DATA

In statistics, nominal data (also known as nominal scale) is a type of data that is used to label variables without providing any quantitative value. It is the simplest form of a scale of measure.

Example:

ORDINAL DATA

Ordinal data is a statistical type of **quantitative data** in which variables exist in naturally occurring ordered categories. The distance between two categories is not established using ordinal data.

DISCRETE DATA

Discrete Data can only take certain values.

Example: the number of students in a class "*We can't have half a student!*"

CONTINUOUS DATA

Continuous Data can take any value (within a range)

Examples:

- A person's height: could be any value (within the range of human heights), not just certain fixed heights,
- Time in a race: you could even measure it to fractions of a second,
- The length of a leaf

INTERVAL LEVEL OF MEASUREMENT

It's a numerical scale in which the order is known and the difference between the values has meaning. The interval scale is the third level of measurement and encompasses both nominal and ordinal scales. This scale can also be referred to as an interval variable scale (interval variable is used to describe the meaningful nature of the difference between values).

The major challenge with interval data is that there's no true zero so deeper statistical analysis is impossible.

RATIO LEVEL OF MEASUREMENT

A ratio scale has an order, a set value between units, and absolute zero. It's an interval scale with a true zero.