



Descriptive Statistics

PROF. P. K. DHAL
M.ED.III SEMESTER,11 A.M.,
DATED.20/05/2020

Meaning of Descriptive Statistics

- ▶ Statistics is a branch of math that is used to analyse, interpret, and predict outcomes from data.
- ▶ Descriptive statistics explain the basic concepts used to describe data.
- ▶ This is major field for scholars interested in Data Science, Economics, Psychology, Machine Learning, Sports analytics Education.
- ▶ Descriptive statistics is basically the analysis of data that helps to describe, show or summarize data in a meaningful way.
- ▶ Descriptive statistics allow Statisticians to make conclusions through the data they have analyzed or reach conclusions
- ▶ These are just a way to describe data.

Concept Of Descriptive Statistics

- ▶ These are numbers that are used to summarize and define data.
- ▶ The word "data" denotes to the information that has been collected from an experiment, a survey, a historical record. For example, if statistician evaluate birth certificates, a descriptive statistic might be the percentage of certificates issued in country, or the average age of the mother.
- ▶ Several descriptive statistics are often used at one time to give a full picture of the data. Descriptive statistics are just descriptive.
- ▶ In general, Descriptive statistics deals with the description or simple analysis of population or sample data.
- ▶ Most simple procedure to analyse data is to classify individual observations into two or more categories. e.g. classified into employed/unemployed , male/female, rural/urban etc.

Descriptive Statistics

- ▶ A variable is a measurable characteristic which changes from one member of a sample or a population to another, for example, age of a person, GDP of a country.
- ▶ A continuous variable is a measurable characteristic which potentially can take any value in a continuous range, without any breaks or jumps.
- ▶ A discrete variable is a measurable characteristic which is restricted to a specific set of values. Discrete data are often represented by bar charts, showing Continuous data are usually represented as histograms, showing frequency density per unit of the variable.
- ▶ Descriptive statistics has great relevance in maths because simply presenting raw data cannot be understood by people. Descriptive statistics enables people to present the data in a more expressive way, which allows simpler interpretation of the data.
- ▶ Descriptive statistics makes use of graphical techniques and numerical descriptive measures to summarize and present the data.

Tabular Methods

- ▶ Tabular method of data presentation is wide spread in all spheres of human life. These methods are used to summarize data from a sample or population into table format. Data is grouped into categories and the number (or frequency) of observations in each category is obtained.
- ▶ Frequency distribution is a type of tabular method. A frequency distribution is a tabular summary of data showing the frequency of items in each of several non-overlapping classes. The objective is to provide insights about the data that cannot be quickly obtained by looking only at the original data.

Graphical Methods

- ▶ These methods are applied to visually describe data from a sample or population. The shape of sample data can indicate the shape of the population from which it is taken.
- ▶ Graphs provide visual summaries of data which is more quickly and completely describe essential information than tables of numbers.
- ▶ Graphs are essential as these provide insight for the analyst into the data under scrutiny, and illustrate important concepts when presenting the results to others.
- ▶ A graphical method is developed which signifies the accuracy of test results. The graphs can be constructed from Producer's scores and Consumer's scores on each of the scales of test score.

Types of Graph

- ▶ **The Bar Chart:** To Construct a Bar Chart, place categories on the horizontal axis, then place frequency (or relative frequency) on the vertical axis. After that construct vertical bars of equal width, one for each category. Its height is proportional to the frequency (or relative frequency) of the category.
- ▶ **The Pie Chart:** For drawing pie chart, make complete circle that represents the total number of measurements. Partition into slices - one for each category. Then, the size of a slice is proportional to the relative frequency of that category. Determine the angle of each slice by multiplying the relative frequency by 360 degree.
- ▶ **Graphical Methods for Quantitative Data include Stem-and-leaf plot and Histogram.**
- ▶ **Stem-and-leaf plot: Steps for Constructing Stem and Leaf Display are as follows:**
- ▶ **Break up each data into two pieces: Stem and leaf. To do this, select one or more leading digits of the data for the stem. The trailing digit or digits become leaves.**
- ▶ **List possible stem values in a (vertical) column, with the smallest stem on top.**
- ▶ **Record the leaf corresponding to each stem beside it in a row.**
- ▶ **Indicate the units for stems and leaves somewhere in the display.**
- ▶ **In general, we want the number of stems to be between 5 and 20, if possible.**
- ▶ **Histogram:** A histogram is a graphical representation of a frequency (or relative frequency distribution). A histogram displays the shape of the data. It is useful when it is logical to group data into numerical categories.