Assignment

Descriptive Statistics

What is Descriptive Statistics?

Descriptive statistics is a branch of statistics focused on summarizing, organizing, and presenting data in a clear and understandable way. Its primary aim is to define and analyze the fundamental characteristics of a dataset without making sweeping generalizations or assumptions about the entire data set.

The main purpose of descriptive statistics is to provide a straightforward and concise overview of the data, enabling researchers or analysts to gain insights and understand patterns, trends, and distributions within the dataset.

Descriptive statistics typically involve measures of central tendency (such as mean, median, mode), dispersion (such as range, variance, standard deviation), and distribution shape (including skewness and kurtosis). Additionally, graphical representations like charts, graphs, and tables are commonly used to visualize and interpret the data.

Histograms, bar charts, pie charts, scatter plots, and box plots are some examples of widely used graphical techniques in descriptive statistics.

Types of Descriptive Statistics

There are three types of descriptive statistics:

- Measures of Central Tendency
- Measures of Dispersion
- Measures of Frequency Distribution

Inferential statistics

What is Inferential Statistics?

Inferential statistics helps to develop a good understanding of the population data by analyzing the samples obtained from it. It helps in making generalizations about the population by using various analytical tests and tools. In order to pick out random samples that will represent the population accurately many sampling techniques are used. Some of the important methods are simple random sampling, stratified sampling, cluster sampling, and systematic sampling techniques.

Types of Inferential Statistics

Inferential statistics are divided into two categories:

- Hypothesis testing.
- Regression analysis.

Probability

Probability Definition:

Probability is a measure of the likelihood of an event to occur. Many events cannot be predicted with total certainty. We can predict only the chance of an event to occur i.e., how likely they are going to happen, using it. Probability can range from 0 to 1, where 0 means the event to be an impossible one and 1 indicates a certain event. Probability for Class 10 is an important topic for the students which explains all the basic concepts of this topic. The probability of all the events in a sample space adds up to 1.

For example, when we toss a coin, either we get Head OR Tail, only two possible outcomes are possible (H, T). But when two coins are tossed then there will be four possible outcomes, i.e {(H, H), (H, T), (T, H), (T, T)}.

Formula for Probability:

The probability formula is defined as the possibility of an event to happen is equal to the ratio of the number of favourable outcomes and the total number of outcomes.

Probability of event to happen P(E) = Number of favourable outcomes/Total Number of outcomes

Sometimes students get mistaken for “favourable outcome” with “desirable outcome”. This is the basic formula. But there are some more formulas for different situations or events.

Types of Probability:

There are three major types of probabilities:

- Theoretical Probability
- Experimental Probability
- Axiomatic Probability

Frequency Distribution

What is Frequency Distribution?

Frequency distribution is used to organize the collected data in table form. The data could be marks scored by students, temperatures of different towns, points scored in a volleyball match, etc. After data collection, we

have to show data in a meaningful manner for better understanding. Organize the data in such a way that all its features are summarized in a table. This is known as frequency distribution.

Types of Frequency Distribution:

There are four types of frequency distribution under statistics which are explained below:

- **Ungrouped frequency distribution:** It shows the frequency of an item in each separate data value rather than groups of data values.
- **Grouped frequency distribution:** In this type, the data is arranged and separated into groups called class intervals. The frequency of data belonging to each class interval is noted in a frequency distribution table. The grouped frequency table shows the distribution of frequencies in class intervals.
- **Relative frequency distribution:** It tells the proportion of the total number of observations associated with each category.
- **Cumulative frequency distribution:** It is the sum of the first frequency and all frequencies below it in a frequency distribution. You have to add a value with the next value then add the sum with the next value again and so on till the last. The last cumulative frequency will be the total sum of all frequencies.