Statistics

Basic-1 Assignment

Questions

Assignment

Q1. What is Statistics?

Ans -

Statistics, in short, is the field of study that involves collecting, organizing, analyzing, interpreting, and presenting data. It provides tools and techniques to make sense of information, draw conclusions, and make informed decisions in various fields, such as science, economics, social sciences, and more. Statistics helps us understand patterns, trends, and relationships within data, enabling us to make predictions and test hypotheses about the world around us.

Q2. Define the different types of statistics and give an example of when each type might be used.

Ans - Sure, in short, there are two main types of statistics:

1 -Descriptive Statistics:

Definition: Descriptive statistics involve summarizing and describing data to understand its main features, such as central tendency, variability, and distribution.

Example: A survey collects data on the heights of a group of people. Descriptive statistics are used to calculate the average height, the range of heights, and the most common height, providing a clear overview of the data.

2 - Inferential Statistics:

Definition: Inferential statistics involve drawing conclusions or making predictions about a larger population based on a sample of data, using probability and hypothesis testing.

Example: A political poll surveys a random sample of voters to predict the winner of an upcoming election. Inferential statistics are used to estimate the overall voter preferences and make projections about the election outcome for the entire population of voter

Q3. What are the different types of data and how do they differ from each other? Provide an example of each type of data.

Ans - there are two types of data

(1) Qualitative data also called numerical data

In qualitative data there are subtypes

(1) discrete or integer

For ex 1,2,4,5

(2)- continuous or float

Ex- 242.475,5.11

(2) Quantitative data also called categorical data

In quantitative data there are also subtypes just like

Q4. Categorise the following datasets with respect to quantitative and qualitative data types: (i) Grading in exam: A+, A, B+, B, C+, C, D, E

Ans - Qualitative data

Subtype - ordinal data

(ii) Colour of mangoes: yellow, green, orange, red

Ans - Qualitative data
Subtype - nominal

(iii) Height data of a class: [178.9, 179, 179.5, 176, 177.2, 178.3, 175.8,...]

Ans - Quantitative data

Subtype - continuous data or float

(iv) Number of mangoes exported by a farm: [500, 600, 478, 672, …]

Ans - Quantitative data

Subtype - discrete or integer

Q5. Explain the concept of levels of measurement and give an example of a variable for each level.

Q6. Why is it important to understand the level of measurement when analyzing data? Provide an example to illustrate your answer.

Q7. How nominal data type is different from ordinal data type.

Ans - Nominal Data:

1-Represents categories or groups.

2- No inherent order or ranking among categories.

3 - Examples: Colors, types of fruits, gender, marital status.

Ordinal Data:

1- Represents categories with a natural order or ranking.

2 - Differences between categories are not quantifiable.

3 - Examples: Ranks (1st place, 2nd place, etc.), educational levels, Likert scales (e.g., satisfaction levels).

Q8. Which type of plot can be used to display data in terms of range?

Q9. Describe the difference between descriptive and inferential statistics. Give an example of each type of statistics and explain how they are used.

Ans - Descriptive statistics summarizes and describes data, providing a clear and concise representation of its main features (e.g., mean, median, standard deviation). It is used to understand the data's characteristics and patterns.

Example: Calculating the average age of a group of individuals.

Inferential statistics draws conclusions or makes predictions about a population based on a sample of data. It uses probability and hypothesis testing to generalize findings to a larger group.

Example: Conducting a survey with a random sample of voters to predict election results for the entire population.

In short, descriptive statistics describe data, while inferential statistics make predictions about a larger population based on a sample.

Q10. What are some common measures of central tendency and variability used in statistics? Explain how each measure can be used to describe a dataset.

Note: Create your assignment in Jupyter notebook and upload it in GitHub & share that github repository link through your dashboard. Make sure the repository is public.