Assignement-2

1. What is the difference between inferential and descriptive statistics?

Descriptive statistics:

- Describe the features of populations and/or samples.
- Organize and present data in a purely factual way.
- Present final results visually, using tables, charts, or graphs.
- Draw conclusions based on known data.
- Use measures like central tendency, distribution, and variance.

Inferential statistics:

- Use samples to make generalizations about larger populations.
- Help us to make estimates and predict future outcomes.
- Present final results in the form of probabilities.
- Draw conclusions that go beyond the available data.
- Use techniques like hypothesis testing, confidence intervals, and regression and correlation analysis.

2. What is the difference between population and sample in inferential statistics?

Population: It is a large group consisting of elements having at least one common feature. **Sample:** It is nothing but a part of the population that is so selected to represent the entire group.

COMPARISION	POPULATION	SAMPLE
Meaning	It refers to the collection of all the elements possessing common characteristics that comprises universe.	Sample means a subgroup of the members of population chosen for participation in the study.
Includes	Each and every unit of the group.	Only a handful of units of population.
Characteristics	Parameter	Statistic
Data Collection	Complete enumeration or census	Sample survey or sampling
Focus on	Identifying the characteristics.	Making inferences about population.

3. Most common characteristics used in descriptive statistics?

Graphical/Pictorial Method Histograms:

- Scatter plots
- Geographical Information Systems (GIS)
- Sociograms

Measures of Central Tendency:

- Mean
- Median
- Mode

Measures of Dispersion:

- Range
- Variance
- Standard Deviation
- Skew

Measures of Association:

- Chi-square
- Correlation

4. How to calculate range and inter-quartile range?

Range: The distance from the highest value to the lowest value.

Range=max-min

Inter-quartile range: The IQR describes the middle 50% of values when ordered from lowest to highest.

- To find the interquartile range (IQR), first find the median (middle value) of the lower and upper half of the data. These values are quartile 1 (Q1) and quartile 3 (Q3). The IQR is the difference between Q3 and Q1.

  IQR= Q3-Q1

5.How is the statistical significance of an insight assessed?

- Statistical significance is often calculated with statistical hypothesis testing, which tests the validity of a hypothesis by figuring out the probability that your results have happened by chance.

- Here, a “hypothesis” is an assumption or belief about the relationship between your datasets. The result of a hypothesis test allows us to see whether this assumption holds under scrutiny or not.