**5. Write down 10 differences between Descriptive statistics and inferential Statistics**

**Ans:**

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|  | **Descriptive Statistics** | **Inferential Statistics** |
| **Purpose** | Summarizes and describes the main features of a data set. | Makes predictions or inferences about a population based on a sample of data. |
| **Scope** | Limited to the data at hand. | Extends beyond the data at hand to make generalizations about a larger population. |
| **Objective** | To provide a clear summary of data. | To draw conclusions and make decisions based on data. |
| **Techniques** | Uses measures such as mean, median, mode, range, variance, and standard deviation. | Uses techniques such as hypothesis testing, confidence intervals, and regression analysis. |
| **Data** | Works directly with actual data. | Uses sample data to make inferences about a population. |
| **Representation** | Often represented in graphs, tables, and charts. | Often represented in probabilistic terms and statistical models. |
| **Tools** | Tools include frequency distribution, and measures of central tendency, plotting. | Tools include t-tests, chi-square tests, ANOVA, and regression analysis. |
| **Assumptions** | Does not require assumptions about the data distribution. | Requires some assumptions about the data distribution (e.g., normality). |
| **Error Metrices** | No measurement of error since it describes known data. | Involves measurement of error and uncertainty, such as margins of error and confidence levels. |
| **Example** | Calculating the average score of students in a class. | Estimating the average score of all students in a school based on a sample. |