

Statistical tests:

1. T-Test:

- Explanation: T-tests are used to compare means between two groups.
- Example: Compare the average exam scores of two different classes to see if there is a statistically significant difference.

2. Chi-Square Test:

- Explanation: Chi-square tests assess the independence or goodness of fit of categorical data.
- Example: Determine if there's a significant association between smoking status (yes/no) and lung cancer (yes/no) in a group of patients.

3. ANOVA (Analysis of Variance):

- Explanation: ANOVA is used to compare means between three or more groups.
- Example: Compare the mean test scores of students in three different schools to see if there are any significant differences.

4. Regression Analysis:

- Explanation: Regression analyzes the relationship between dependent and independent variables.
- Example: Predict a person's monthly expenditure based on their income, age, and education level.

5. Correlation Analysis:

- Explanation: Correlation measures the strength and direction of a linear relationship between two continuous variables.
- Example: Assess if there is a significant correlation between the number of hours spent studying and final exam scores.

6. Non-Parametric Tests:

- Explanation: Non-parametric tests are used when data doesn't meet parametric assumptions.
- Example: Compare the rankings of two sets of products in a consumer preference survey using the Mann-Whitney U Test.

7. Hypothesis Testing:

- Explanation: Hypothesis testing involves testing a null hypothesis against an alternative hypothesis.
- Example: Use a Z-test to determine if the mean weight of a sample of apples differs significantly from a known population mean.