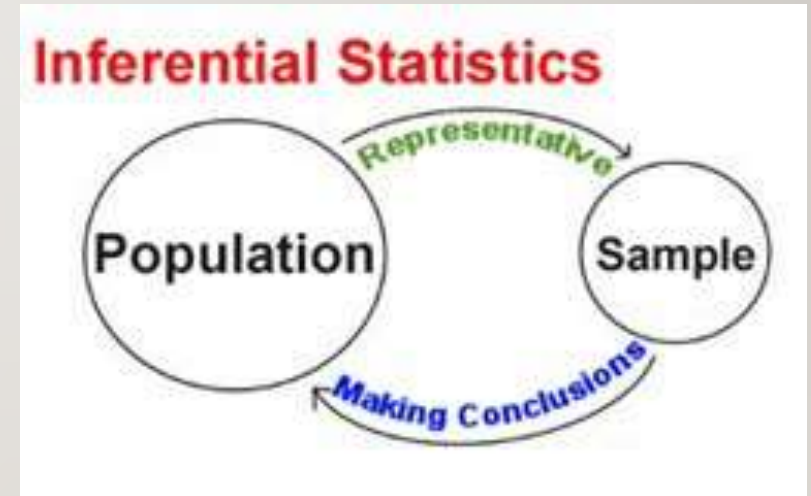# INFERENTIAL STATISTICS AND HYPOTHESIS TESTING

INFERENTIAL STATISTICS

- Inferential statistics is used to draw inference from the sample of the huge data.

- In this session we are going to talk about the following topics
  - t-Tests
 - Correlation Coefficients
  - Chi-Square

HYPOTHESIS TESTING

- Hypothesis testing is a statistical method that is used in making statistical decisions using experimental data.

- Hypothesis Testing is basically an assumption that we make about the population parameter.

- A hypothesis test evaluates two mutually exclusive statements about a population to determine which statement is best supported by the sample data.

- When we say that a finding is statistically significant, it's thanks to a hypothesis test.

BASICS OF HYPOTHESIS TESTING

- The basic of hypothesis is **"Normalization"** and **"Standard Normalization".**
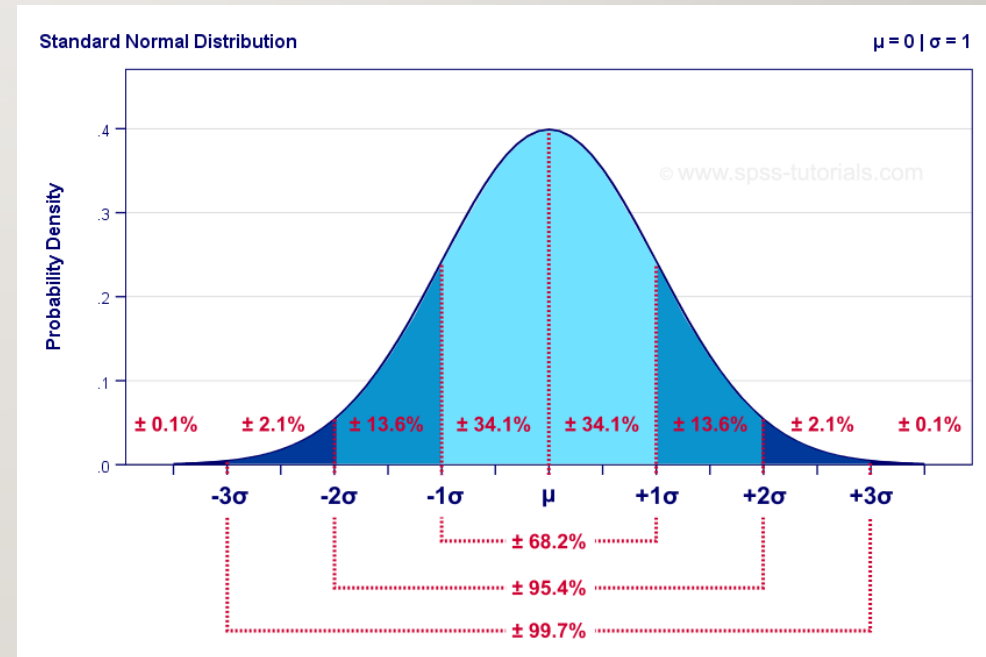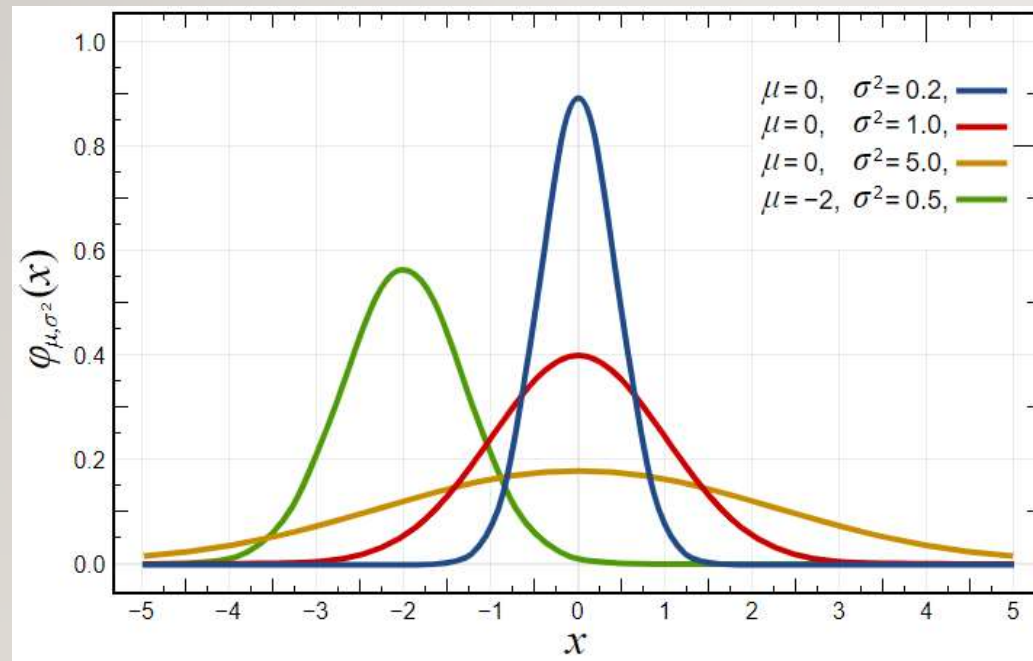
PARAMETERS OF HYPOTHESIS TESTING

- **Null Hypothesis:-** In inferential statistics, the null hypothesis is a general statement or default position that there is no relationship between two measured phenomena, or no association among groups.

- **Alternative Hypothesis:-** The alternative hypothesis is the hypothesis used in hypothesis testing that is contrary to the null hypothesis. It is usually taken to be that the observations are the result of a real effect.

- **Errors:-** There are two types of errors Type-I and type-II.

PYTHON LIBRARY

- Numpy

- Pandas

- Scipy

- Matplotlib

T-TEST

- t-Test is used to see whether two groups are similar or not.

- Two-sided one-sample t-test

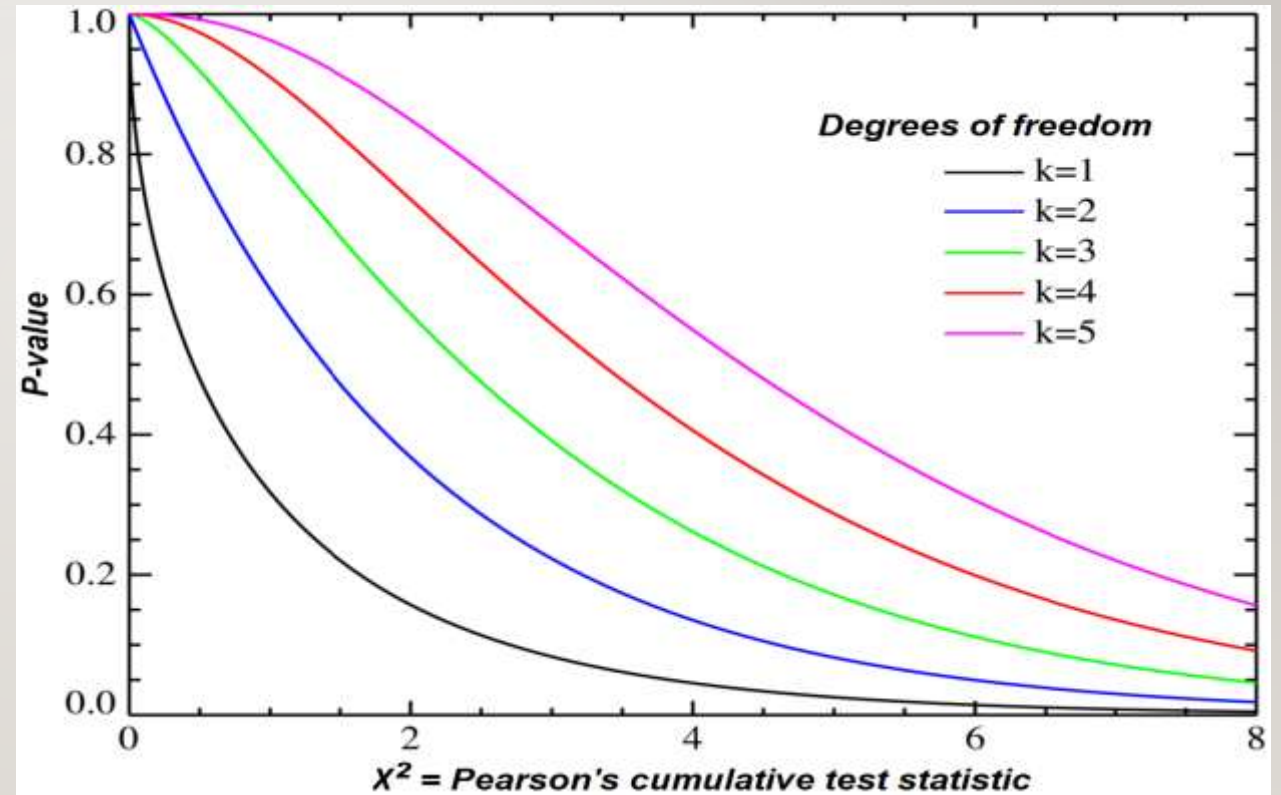- Independent t-test

- Paired t-test
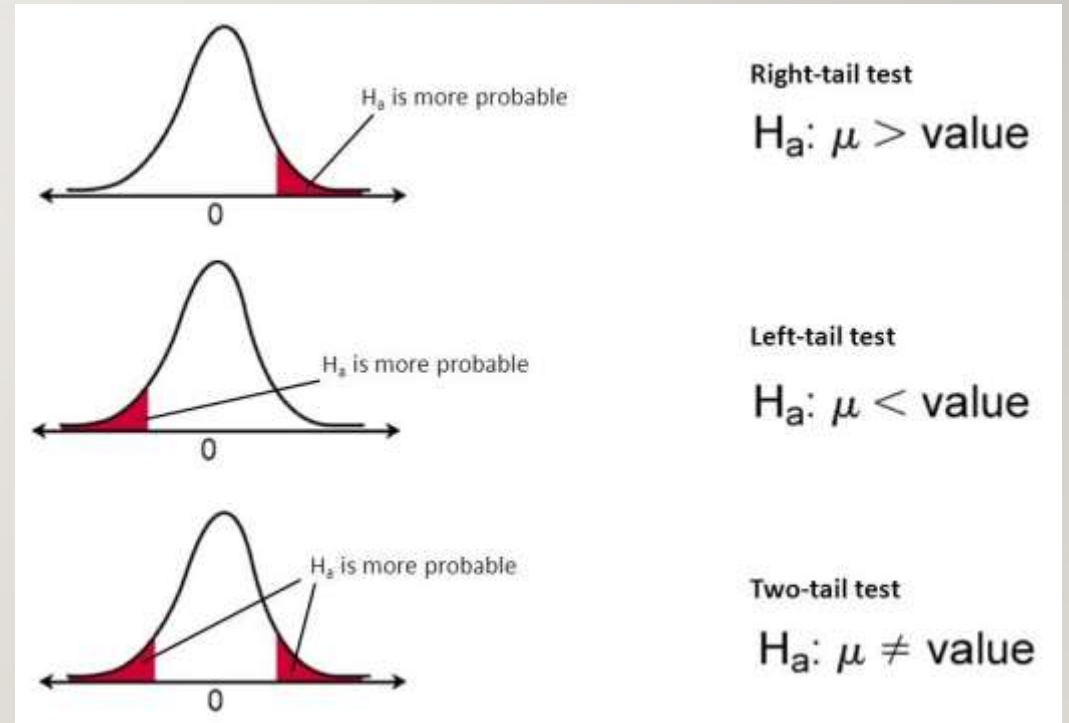
CORRELATION COEFFICIENT

- The correlation coefficient is a statistical measure of the strength of the relationship between the relative movements of two variables.

- Three relations can be established depending upon the value of the correlation coefficient
    - Positive
    - Negative
    - Neutral

Correlation Coefficient

Positive Correlation · Negative Correlation · No Correlation
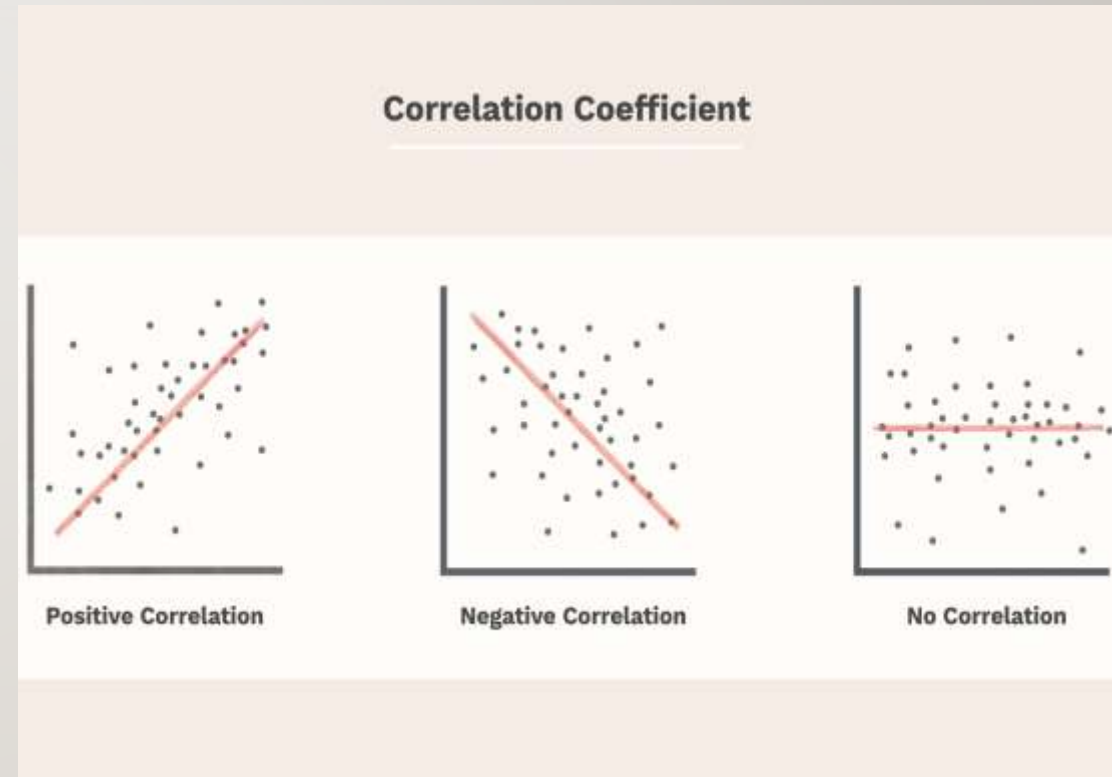
CHI-SQUARE TEST

- Unlike Correlation Coefficients, Chi-Square is used to test the level of association between two categorical variables.

- The chi-square test is also known as X^2 test.

THANK YOU