Non Parametric Test

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Difference

Parametric Test

- A Statistical test, in which specific assumptions are made about the population parameter
- Information about population – completely known

Non Parametric Test

- A Statistical test used in the case of non metric independent variables
- Information about population- unavailable
- Distribution free test

Difference

Parametric Test

- Basis of test Statistic-Distribution
- Measure of central tendency-Mean
- Test is for variables only

Non parametric Test

- Basis of test Statistic-Arbitrary
- Measure of central tendency-Median
- Test applies to both variables and attributes

Difference

Parametric Test

- Measurement level (of variable)- interval or ratio
- Pearson's coefficient of correlation

Non parametric Test

- Measurement level-nominal or ordinal
- Spearman's rank correlation

Non Parametric Test

- Sign Test
- Sign Rank Test
- Spearman’s Rank Correlation Coefficient

Nonparametric Test

Advantages

- NP methods are readily comprehensible, simple an easy to apply
- Do not require complicated sample theory
- The socio-economic data are not in general normally distributed, NP tests are useful in that cases.

Non Parametric Test

Advantages

- NP tests can be used to deal with data which are given in rank, e.g. parametric test can not be applied if scores are in grade .
- No assumption is made about the form of frequency function of parent population from which sampling is done
- NP tests – Psychometric, Sociology ,Educational Statistics etc.

Non Parametric Test

Disadvantages

- NP test applies only if measurements are nominal or

ordinal.

If parametric test exists in that case

NP test is

wasteful of time & DATA.

- Parametric tests are more

powerful than NP tests

Non Parametric Test

Disadvantages

- NP tests are used to test hypothesis only ,not for
- estimating parameters
- No NP test methods are available for testing
- interactions in Analysis of variance model unless
- special assumptions about additivety of the model are made

Hypotheses

Null Hypothesis

- A definite statement about the population parameter
- A hypothesis of no difference & usually denoted by H_0
- R A Fisher – null hypothesis is the hypothesis which is

  tested for possible rejection under the assumption that

  is true

Hypotheses

- Statistical procedures are used to determine whether hypothesis is a a acceptable conjecture or not

- In general we cannot prove that an hypothesis is absolutely true or false

- If the information furnished by the data support the hypothesis, we do not reject it, otherwise we reject it
- The hypothesis being tested is referred as the null hypothesis

Alternative Hypothesis

Any hypothesis which is complementary to the null

hypothesis is alternative hypothesis & denoted by H_1 or H_A

If we accept H_0 , we automatically reject H_1

Types of Errors

- Main objectives in sampling theory is to draw valid inferences about the population parameters on the basis of the sample results.

- Hypothesis can be tested by using the sample characteristics obtained from the data

Types of Errors

- The value of these characteristics vary from sample to sample and thus by chance be quite different from those of the population

- It is possible to make an error in accepting or rejecting any given hypothesis

Types of Errors

- We are liable to commit two types of errors
- Type I error – True hypothesis is rejected , denoted by α
- The term α is also known as the level of significance of the test
- Type II error –Accepting null hypothesis when it is false, denoted by β
- Aim is to apply a test that minimizes both types of errors

Types of Errors

- Type I error- rejecting a lot when it is good
- Type II error- accepting a lot when it is bad
- P[Reject a lot when it is good]= α
- P[Accepting a lot when it is bad]= β
- Producer's risk – α
- Consumer's risk - β
- Power of a test – Probability of rejecting H_0 when it is false, that is, power =1- β
- Aim is to maximize the power of a test