TRINITY COLLEGE FOR WOMEN
NAMAKKAL
Department of Mathematics

INFERENTIAL STATISTICS
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Topic: Basis of statistical inference

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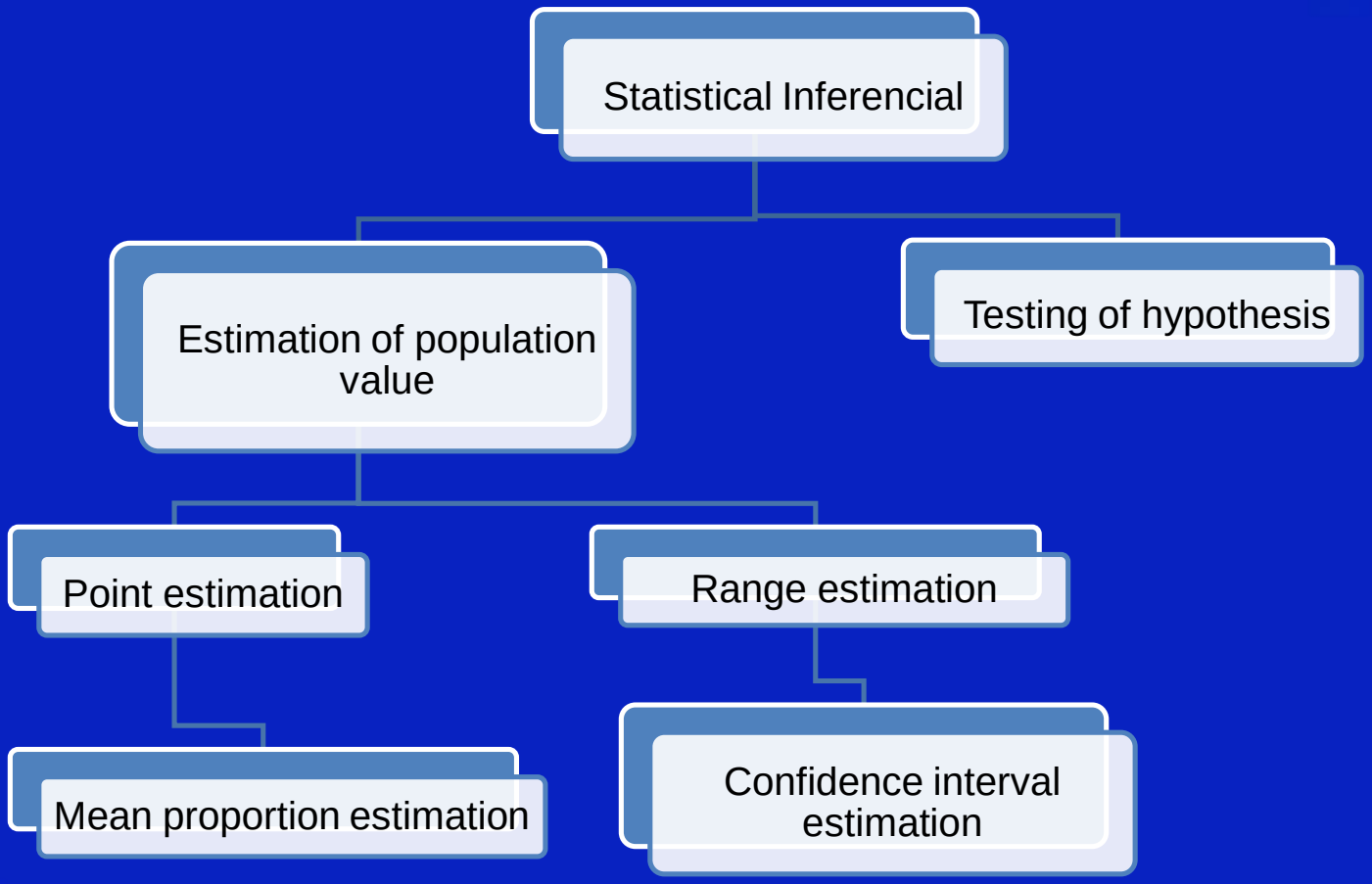
Basis of Statistical inference

Statistical inference is the branch of statistics which is concerned with using probability concept to deal with uncertainly in decision making. It refers to the process of selecting and using a sample to draw inference about population from. Which sample is drawn.


Statistical Inferencial
Estimation of population value
Testing of hypothesis
Point estimation
Range estimation
Mean proportion estimation
Confidence interval estimation

Hypothesis and hypothesis testing

Hypothesis is a supposition made from observation. On the basis of hypothesis we collect the data.

Hypothesis is a tentative justification, the validity of which remains to be tested.

Two hypothesis are made to draw inference from sample value

- Null hypothesis or hypothesis of no difference.

- Alternative hypothesis of significant difference.

Hypothesis and hypothesis testing

The null hypothesis is symbolized as H_0 and alternative hypothesis is symbolized as H_1 or H_A. In hypothesis testing we proceed on the basis of null hypothesis. We always keep alternative hypothesis in mind.

The null hypothesis and the alternative hypothesis are chosen before the sample is drawn.

Null hypothesis

A null hypothesis or hypothesis of no difference (H_0) between statistic of a sample of a sample and parameter of population or between statistic of two samples nullifies the claim that the experimental result is different from or better than the one observed already. In other words null hypothesis states that the observed difference is entirely due to sampling error that is it occurs purely by chance.

Type 1 and type 2 error

When a null hypothesis is tested, there may be four possible outcomes.

1. The null hypothesis is true but our test rejects it.
2. The null hypothesis is false but our test accepts it.
3. The null hypothesis is true and our test accepts it.
4. The null hypothesis is false but our test rejects it.

Type 1 error – rejecting null hypothesis when null hypothesis is true. It is called α - error.

Type 2 error – accepting null hypothesis when null hypothesis is false. It is called β – error.

The alternative hypothesis

Alternative hypothesis of significant difference states that the sample result is different that is greater or smaller than the hypothesis value of population.

A test of significance such as Z – test, t – test, chi – square test is performed to accept the null hypothesis or to reject it and accept the alternative hypothesis.

Characteristics of hypothesis

1. Hypothesis should be clear and precise.
2. Hypothesis should be capable of being tested.
3. If should state relationship between variables.
4. It must be specific.
5. It should be stated as simple as possible.
6. It should be amenable to testing within a reasonable time.
7. It should be consistent with known facts.

THANK YOU

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