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**COURSE: STAT 312**

**COURSE TITLE: BIOSTATISTICS**

1. Hypothesis testing, in statistics, a method for testing how accurately a mathematical model based on one set of data predicts the nature of other data sets generated by the same process. Hypothesis testing grew out of quality control, in which whole batches of manufactured items are accepted or rejected based on testing relatively small samples. An initial hypothesis (null hypothesis) might predict, for example, that the widths of a precision part manufactured in batches will conform to a normal distribution with a given mean (see mean, median, and mode). Samples from new batches either confirm or disprove this hypothesis, which is refined based on these results.

 Hypothesis is a tentative prediction or explanation of the relationship between two variables. It implies that there is a systematic relationship between independent and dependent variable

 Good and Hatt define hypotheses as a shrewd guess or interference that is formulated and provisionally adopted to explain observed facts or condition and to guide in futhark investigation

1. The first approach of hypothesis testing is a classical test statistic approach, which computes a test statistic from the empirical data and then makes a comparison with the critical value.   If the test statistic in this classical approach is larger than the critical value, then the null hypothesis is rejected. Otherwise, it is accepted

 **WHILE**

In statistics, the p-value is the probability of obtaining results as extreme as the observed results of a statistical hypothesis test, assuming that the null hypothesis is correct. The p-value is used as an alternative to rejection points to provide the smallest level of significance at which the null hypothesis would be rejected. A smaller p-value means that there is stronger evidence in favor of the alternative hypothesis.

1. **Importance of hypotheses testing in research**
* Hypotheses enables the researcher to objectively investigate new areas of discovery. Thus, it provides a powerful tool for the advancement of knowledge
* Hypothesis provide objectively to the research activity
* It also provides directions to conduct research such as defining the sources and relevance of data
* Hypotheses provides clear and specific goals to the researchers. These clear and specific goals provide the investigator with basis for selecting sample and research procedures to meet these goals.
* Hypotheses provides link between theories and actual practical research
* It provides a bridge between theory and reality
* A hypothesis suggests which type of research is likely to be the most appropriate
* As it is a tentative statement of anticipate results, it guides the researcher towards the direction in which the research should proceed.
* It stimulates the thinking process of researcher as the researcher forms the hypothesis by anticipating the outcome
* It also determines the most appropriate research designs and techniques of data analysis
* Hypotheses provides understanding to the researches about what expect from the result of the research study.
* It serves as framework for drawing conclusions of a research study
* Without hypotheses, research would be like aimless wandering