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**LEVEL: 300**

**DEPT: ANATOMY**

**COURSE: STA 312(DEMOGRAPHY & BIOSTATISTICS)**

**ASSIGNMENT: HYPOTHESIS TESTING**

**Questions**

1. What do you understand by hypothesis testing
2. Differentiate between the classical and p-value approach for hypothesis testing
3. What is the importance of hypothesis testing in Research

**Answers**

1. Hypothesis testing is an act in statistics whereby an analyst tests an assumption regarding a population parameter. The methodology employed by the analyst depends on the nature of the data used and the reason for the analysis. It is used to assess the plausibility of a hypothesis by using simple data. Such data may come from a larger population, or from a data generating process

 Hypothesis testing is one of the most important concepts in statistics because it is how you decide if something really happened, or if certain treatments have positive effects, or if groups differ from each other or if one variable predicts another.

1. The Classical Approach to hypothesis testing is to compare a test statistic and a critical value. It is best used for distribution which give areas and require you to look up the critical value(like the student’s distribution) rather than distributions which have you look up a test statistic to find an area(like the normal distribution). The classical approach also has three different decision rules, depending on whether it is a left tail, right tail, or two tail test. One problem with the classical approach is that if a different level of significance is desired, a different critical value must be read from the table.

The P-Value Approach, short for Probability Value, approaches hypothesis testing from a different manner, instead of comparing z-scores or t-scores as in the Classical approach, you are comparing probabilities, or areas. The level of significance (alpha) is the area in the critical region. That is, the area in the tails to the right or left of the critical values. The p-value is the area to the right or left of the test statistic. If it is a two tail test, then look up the probability in one tail and double it. If the test statistic is in the critical region, then the p-value will be less than the level of significance. It does not matter whether it is a left tail, right tail, or two tail test. The rule always holds.

1. The importance of Hypothesis Testing in research is to determine if the variation between or among groups of data is due to true variation or if it is the result of sample variation. With the help of sample data, researchers form assumptions about the population, then they have to test their assumptions statistically.