Hypothesis testing procedures

Science, Statistics

Testing hypothesis procedures Hypothesis testing is an instrumental tool to decision-making that identifies significance of relationships or changes in processes. Established significance calls for consideration of a hypothesized association in decision making while absence of significance means that the hypothesis is insignificant. When engaging in hypothesis testing procedures for the population with known standard deviation, a researcher needs to consider the involved standard error. This value is important in determining confidence limits for decision making over the hypothesis to be tested and is derived from the known standard deviation. When testing hypothesis for a population whose standard deviation is not known, however, a researcher must first consider a sample standard deviation. This is then used to estimate the population standard deviation towards generating the required standard error (Mendenhall, Beaver and Beaver, 2009).

In testing for mean, and using the test statistic approach to a two-sided hypothesis for a known standard deviation, a researcher would formulate a two-sided null hypothesis. He would then use the standard deviation to generate the standard error through dividing the standard deviation by square root of the sample size. A test statistic is then determined from the formula, $(\bar{x}-\mu)$/standard error and is compared with derived confidence limits from tables using $\alpha/2$ confidence level. This distributes the rejection region to either side of the distribution. The test statistic is then compared to the intervals for a decision on whether to reject or not to reject the null hypothesis. For an unknown population standard deviation, a researcher develops a two-sided hypothesis and applies a sample standard deviation to estimate the population standard deviation towards determining the

standard error. The researcher then determines the test statistic and confidence intervals using a $\alpha/2$ confidence level, and compares them for a decision (Anderson, Sweeney, Williams, Greenman and Shoesmith, 2010).

References

Anderson, D., Sweeney, D., Williams, T., Greenman, J. and Shoesmith, E. (2010). Statistics for business and economics. Hampshire, UK: Cengage Learning EMEA.

Mendenhall, W., Beaver, R. and Beaver, B. (2009). Introducción a la probabilidad y la estadística. Belmont, CA: Cengage Learning.