

Abstract

Hypothesis testing and computation of unconditional confidence limits are well established statistical procedures. However, if after the null hypothesis has been rejected, confidence limits are computed, then we enter the realm of conditional estimation after rejection. Of particular interest is the notion that such confidence intervals/sets may contain values of the parameter previously rejected during the hypothesis testing. This could occur if a type 1 error has been committed, that is, the hypothesis tested was rejected when it is true. In a given statistical test, the probability of a type 1 error is equal to the value set for alpha.

We organize the thesis as follows. In Chapter 2, following the introductory chapter, the confidence interval for the mean of a Normal population with known variance is explored in detail. An extension of the work in the case of the variance parameter is outlined in chapter 3. The next two chapters present the conditional interval estimation of the shape parameter of the Weibull distribution. The coverage probability of the unconditional confidence interval under the conditional probability density function of the test statistic is examined. The techniques used were adapted from the work of Paul Chiou and Chien-Pan Han (1994) as it relates to the exponential scale parameter. It is noted that the summary of Chiou and Hans' work on the exponential distribution has been done in Mahdi (2000). In chapter 6, the construction of the conditional confidence

interval for the shape parameter of the Pareto distribution is explored.

Tables and Figures are used to illustrate the results obtained during the research. Following the conclusions highlighted in chapter 7, abbreviations are included in the Appendix A and sample code in Appendix B.