

A SIMULATION STUDY COMPARING VARIOUS CONFIDENCE
INTERVALS FOR THE MEAN OF VOUCHER POPULATIONS
IN ACCOUNTING

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ABSTRACT

This research examined the performance of three parametric methods for confidence intervals: the classical, the Bonferroni, and the bootstrap-*t* method, as applied to estimating the mean of voucher populations in accounting. Usually auditing populations do not follow standard models. The population for accounting audits generally is a nonstandard mixture distribution in which the audit data set contains a large number of zero values and a comparatively small number of nonzero errors. This type of mixture situation can be applied to many other disciplines: medicine, engineering.

This study assumed a situation in which only overstatement errors exist. The nonzero errors were assumed to be normally, exponentially, and uniformly distributed. FORTRAN programs were written to carry out simulations of the three methods for computing confidence intervals. Performance comparisons among the three methods were defined in terms of: (1) the confidence interval reliability, (2) the average width of the confidence intervals, (3) the precision of the confidence intervals, (4) the precision stability of the confidence intervals, and (5) the lower limit stability of the confidence intervals.

The classical method was found to be unreliable. The Bonferroni method was conservative for all population conditions. The bootstrap-*t* method was excellent in terms of reliability, but the lower limit of the confidence intervals produced by this method was unstable for all population conditions. The classical method provided the shortest average width of the confidence intervals among the three methods.

This study provided initial evidence as to how the parametric bootstrap-*t* method performs when applied to the nonstandard distribution of audit populations of line items. In this era of widely available high speed computing equipment, the development of the bootstrap methods should be continued and other computer intensive methods should be developed. Further research should search for a reliable confidence interval for a wider variety of accounting populations.