

Confidence Intervals for the Inverse Mean and Difference of Inverse Means of Normal Distributions with Unknown Coefficients of Variation

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Abstract. This paper investigates the performance of the confidence intervals for a single inverse mean and difference of two inverse means of normal distributions with unknown coefficients of variation (CVs). The confidence intervals for the inverse mean with unknown coefficient of variation (CV) were constructed based on the generalized confidence interval (GCI) approach and the large sample approach. The generalized confidence interval and large sample confidence interval for the inverse mean with unknown CV were compared with the generalized confidence interval for the inverse mean. Moreover, the confidence intervals for the difference of inverse means with unknown CVs were constructed using the GCI approach, large sample approach and method of variance estimates recovery (MOVER) approach and then compared with existing confidence interval for the difference of inverse means based on the GCI approach. The coverage probability and average length of the confidence intervals were evaluated by a Monte Carlo simulation. Carrying out the simulation studies, the results showed that the generalized confidence interval provides the best confidence interval for the inverse mean with unknown CV. The generalized confidence interval and the MOVER confidence interval for the difference of inverse means with unknown CVs perform well in terms of the coverage probability and average length. Finally, two real data are given to illustrate the proposed confidence intervals.