Suvita Sakchainan 2012: A Comparison of Methods of Confidence Interval Estimation for the Difference between Two Population Means for Lognormal Distribution. Master of Science (Statistics), Major Field: Statistics, Department of Statistics.
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This research studies the comparison of confidence interval estimation methods for the difference of two independent population means for lognormal distribution. In addition, five confidence interval estimation methods are studied as follows: the maximum likelihood approach (ML), Zou's method (ZOU), the generalized confidence interval method of Krisnamoorthy and Mathew (GK), the generalized confidence interval method of Maiklad (TK) and Bootstrap percentile (BP). The Monte carlo simulation was conducted for 198 situations to examine and compare the coverage probability, the average width of confidence interval, and the relative bias. The results of this research show that the coverage probability of GK and TK methods are larger than the nominal level for all situations. Furthermore, the coverage probabilities of BP and ML methods are larger than the nominal level when σ_1^2 and σ_2^2 are slightly difference. When the average width of confidence interval is considered, the GK method is the best efficiency for large (σ_1^2, σ_2^2) and a wide difference of σ_1^2 and σ_2^2. In case of the increasing sample size, the TK method is the best efficiency when large (μ_1, μ_2) and (σ_1^2, σ_2^2) and wide difference of (μ_1, μ_2) and (σ_1^2, σ_2^2). For the large sample size, BP method provides the narrow average width of confidence interval. In addition, the ML method is the best efficiency when σ_1^2 and σ_2^2 close to 1. In case of the relative bias is considered, the ZOU method is the best efficiency when σ_1^2 and σ_2^2 close to 1. However, the ML method is the best efficiency when (μ_1, μ_2) and (σ_1^2, σ_2^2) are small and slightly difference. Moreover, the efficiency of TK and BP methods are lower than other methods for all situations.

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