

# A new computational approach test for testing equality of several two-parameter exponential distributed means under unequal scale parameters

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## Abstract

Testing equality of the several populations' mean is one of the main statistical problems. Classical F test is the most powerful test for the solution of the problem when the assumptions, normality and variance homogeneity, hold. These assumptions may be violated in practice. For such cases, the researchers improved alternative solutions using normality transformation techniques and robust estimators. However, these solutions may not give powerful results in all cases. The problem has a large set of possible solutions when the normality assumption is violated. There are some tests which have been improved using Generalized p-Value [1], Parametric Bootstrap [2] and Fiducial Approach [3] methods for log-normal, inverse-normal and two-parameter exponential distribution in the presence of nuisance parameter in the literature [4]. In this study, a new test based on the Computational Approach method [5], is proposed to solve the problem of testing the equality of two-parameter exponentially distributed populations' means. The performance of the proposed test is compared with the alternatives in terms of penalized power [6]. As a result, the proposed test performed better especially for small samples. In addition, the proposed test has been applied on the real data sets, and thus its advantages over the alternatives have been demonstrated.

## Keywords

ANOVA, Non-normality, Two-parameter exponential distribution, Computational approach test.

## References

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