

Simultaneous confidence intervals among mean components in elliptical distributions

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Abstract

We consider simultaneous confidence intervals for pairwise comparisons among components of mean vector. Such a situation arises, for example, in multiple comparisons of the components of repeated measurements of the same quantity in different conditions. Actually, in order to construct the simultaneous confidence intervals, it is required to give the upper percentiles of $F_{\max \cdot p}^2$ statistic. However, in general, it is difficult to find the exact values even under normality. So the approximate upper percentiles of $F_{\max \cdot p}^2$ statistic have been discussed by many authors (see, e.g., [1]). In this study, we consider approximation to the upper percentiles of $F_{\max \cdot p}^2$ statistics based on Bonferroni's inequality in elliptical distributions. Further, in order to evaluate the accuracy of the approximations, some numerical results by Monte Carlo simulations are given.

Keywords

Asymptotic expansion, Bonferroni's inequality, Elliptical distributions, Monte Carlo simulation, Pairwise comparisons.

References

- [1] Seo, T. (1995). Simultaneous confidence procedures for multiple comparisons of mean vectors in multivariate normal populations. *Hiroshima Math. J.* 25, 387–422.