

BOOTSTRAP MULTIPLE COMPARISON PROCEDURE BASED ON THE F DISTRIBUTION

Patrícia de Siqueira RAMOS¹
Mariani Tabarim VIEIRA²

- **ABSTRACT:** *This work is aimed to propose a bootstrap version of the multiple comparison test based on the F distribution presented by Calinski and Corsten in 1985 and compare it to the original version by Monte Carlo simulation. The two procedures test the homogeneity of treatment means within each of two or more subsets using minimization of the sum of squares among partitions as criterion. Their performances are evaluated computing the Type I error rates and power, and the simulation algorithms were implemented in R software. Under H_0 and normality, both tests control the Type I error rates. Under H_0 and non-normality, the bootstrap test (CFB) controls the Type I error rates and therefore is robust while the original test (CF) is conservative under lognormal distribution for $k=10$ and $r=10$. Under partial H_0 , the CF test is liberal for small differences, δ , between means and conservative for larger differences, while the CFB test is always liberal and with higher Type I error rates with δ increasing. Under H_1 , the CFB test is more powerful due to its liberal trait for normal and non-normal distributions. The CF test is recommended in practical situations since it controls Type I error rates in most situations and shows higher power values.*
- **KEYWORDS:** *Comparison of means; resampling; cluster analysis; sum of squares; Monte Carlo simulation; Type I error rate; power.*

¹Universidade Federal de Alfenas - UNIFAL, Instituto de Ciências Exatas, CEP 37130-000, Alfenas, MG, Brasil. E-mail: patricia.amos@unifal-mg.edu.br

²Universidade Federal de Alfenas - UNIFAL, Faculdade de Nutrição, CEP 37130-000, Alfenas, MG, Brasil. E-mail: marianivieira@hotmail.com