A Simulation Study on Resampling Based Methods for Comparing k Independent Groups

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1 Abstract

The F-test is the most well-known method for comparing more than two independent groups. The F-test assumes that all groups are normally distributed and their variances are homogenous. But the data usually does not hold these assumptions. Another well-known method, Kruskal-Wallis test, is the ranked based alternative of the F-test for comparing k independent groups. Also, resampling based methods, which are highly computer intensive, can be used to compare these groups.

In this study, a Monte Carlo simulation is conducted to compare five methods in terms of their power and ability to control Type I error using various simulation settings. We consider five methods: the F-test, Kruskal-Wallis test (?), permutation test (?), null resampling based test (?), bootstrap-t trimmed mean Welch test (?). The F-test and Kruskal-Wallis test are included as a reference in this work.

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