

## **TYPE I ERROR RATES OF T1 STATISTIC**

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### **Abstract**

Non-normality and heteroscedasticity are two common problems encountered when dealing with testing for location measures. When these two problems occur at the same time, rates of Type I error are usually inflated resulting in spurious rejection of null hypotheses. By substituting robust measures of location and scale such as trimmed means and Winsorized variances respectively in place of the usual means and variances, tests that are insensitive to the combined effects of nonnormality and variance heterogeneity can be obtained. In this study, we modified T1 statistic proposed by Babu, Padmanabhan & Puri (1985) with 15% symmetric trimming and also variable trimming with indeterminate percentage. The variable trimming percentages were based upon a trimming criterion using robust scale estimators, MAD<sub>n</sub>, T<sub>n</sub> and LMS<sub>n</sub>. Type I error rates of these methods on J =4 groups in unbalanced designs having unequal variances were compared. Skewed data from g- and h- distributions were considered in this study. The T1 statistic with 15% symmetric trimming was shown to have good control of Type I error compared to the methods using the scale estimators. However, the methods using the scale estimators showed improvements in rates of Type I error when sample size was large.

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Key Words : Trimming, Type I error, Robust scale estimators .