Comparing Two Independent Groups Through Quantiles

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The most common approach for comparing two independent groups is on the basis of some measure of location. If the population distributions are symmetric the mean is appropriate, but if the population distributions are skewed a robust measure of location might be preferred. In addition to this, it is often of interest to determine whether the differences occur in the tails of distributions or not. Therefore, the quantiles should be considered, especially the lower and upper ones. There are great number of methods for estimating population quantiles and additional comparisons of various quantile estimators in the literature. Some well-known examples are **?**, **?**,**?**, **?**, **?** as well as **?**. The quantile estimators may be based on one or two order statistics, rather based on all of the order statistics by taking a weighted average as is Harrell Davis estimator. Moreover, Sfakianakis and Verginis derived three quantile estimators that again use a weighted average of all the order statistics and have advantages in some situations(**?**). In this study, Harrell Davis estimator and three estimators by Sfakianakis and Verginis are used in conjunction with a percentile bootstrap method with the aim of comparing two independent groups via the quantiles. When comparing the quantiles that are close to the median, Sfakianakis and Verginis estimators coped well with the Harrell Davis estimator, and when comparing the quantiles that are close to zero or one Sfakianakis and Verginis estimators performed better in terms of actual type I error rates.

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