

Weighted Modified Ranked Set Sampling Methods

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Summary

Many authors suggested several modifications for the ranked set sampling (RSS). McIntyre [Austral. J. Agricultural Res. 3 (1952) 385] and Samawi et al. [Biometrical J. 30 (1996) 577] suggested using the extreme ranked set sampling (ERSS). Sinha et al. [Statist. Decisions 14 (1996) 223] and Muttlak [J. Appl. Statist. Sci. 6 (1997)] suggested using the median ranked set sampling (MRSS). Another modification suggested by Muttlak [Modified ranked set sampling, Pak. J. Stat. (2003)] called percentile ranked set sampling (PRSS). Most of the estimators based on the modified ranked set sampling methods will be biased unless the underlining distribution is symmetric. To overcome the bias problem in the modified RSS methods and to increase the efficiency of the estimators of the population mean for skewed distributions, weighted estimators are suggested. The weighted modified RSS estimators are compared with the unweighted modified RSS and the usual RSS estimator. It turns out that we can come up with unbiased estimators for the population mean, also we will improve upon the efficiency of the modified RSS and the RSS methods, for probability distributions considered in this study. (C) 2003 Elsevier Inc. All rights reserved.

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