

Estimation of Population Mean Using Coefficient of Variation and Quartiles of an Auxiliary Variable

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Abstract

In this paper we have proposed a class of modified ratio estimators for estimation of population mean of the study variable using the linear combination of the Coefficient of Variation and First quartile, Third quartile, Inter-quartile range, Semi-quartile range, Semi-quartile average of the auxiliary variable. The bias and the mean squared error of the proposed estimators are derived and are compared with that of the Simple random sampling without replacement (SRSWOR) sample mean, the classical ratio estimator and the existing modified ratio estimators. Further we have also derived the conditions for which the proposed estimators perform better than the existing estimators. An empirical study has been carried out for certain natural populations to assess the performances of the proposed estimators with that of the existing estimators. From the empirical study it is observed that the proposed modified ratio estimators perform better than the existing estimators.

Keywords: Bias, mean squared error, modified ratio estimators, natural populations, simple random sampling.