

Abstract

This research is one of the steps towards the area of estimation of population variance using the single and two ancillary variable(s) under single and two phase sampling scheme.

Some generalized ratio estimators for single phase sampling using single and two ancillary variables have been developed. Generalized estimators for two-phase sampling under the no and partial information cases along with their special cases have been discussed. Optimum values of constants of each estimator have been derived. The biases and mean square errors of the proposed estimators have also been computed and compared with some existing estimators.

Empirical study has been performed in order to examine the merits of the proposed variance estimators with the five natural data sets which are having the dissimilar correlation among the study variable and the ancillary variable(s).

After numerical calculation it has been observed that the most of our proposed estimators of single phase sampling are more efficient than the existing estimators at all types of population. Our proposed estimators of no information case are more efficient than the previous estimators at moderate and low correlated population. Our proposed estimators of no information case are more efficient than the available estimators at all types of population. It has been noted that the correlation coefficient does not affect the efficiency of most of our proposed estimator.