

SUMMARY

Estimation of certain population characteristics has been a problem for survey statisticians and others since long ago. Number of estimators has been proposed for estimation of population mean and total from time to time. Sampling with unequal probabilities has many tools for estimation and number of procedures has been developed since its emergence. In this thesis a new estimator of population total has been obtained following the idea of Murthy (1957).

An introduction to various available unequal probability sampling methods is given in chapter 1. The design behavior of various unequal probability sampling estimators has been discussed in the same chapter, The review of literature is given in chapter 2.

The New estimator is obtained in chapter 3. The new estimator reduces to the estimator of population total in simple random sampling for equal probabilities. The new estimator is unbiased. The variance of the new symmetrized estimator is also obtained in the same chapter.

In chapter 4 empirical study has been calculated. The empirical study is based upon the sampling variances of various estimators and ranks of estimator based on the variance. The relative efficiency of the estimators involved in the study has also been calculated. From this empirical study it is found that the new estimator performs reasonably well as compared to other estimators involved in the study.

The regression analysis on the basis of ranks has also been carried out to see the effect of coefficient of variation, correlation coefficient skewness and kurtosis on performance of an estimator. It is found in this study that the new estimator will have better performance in populations that have negative skewness, negative kurtosis, low correlation and low coefficient of variation. The new estimator can therefore be recommended for populations having this sort of nature.