

## Formulation of estimator for population mean in stratified successive sampling using memory-based information

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### Abstract

In study described in this article, we developed a memory type estimator for the population mean in stratified successive sampling. We used the past sample information together with the current sample information through hybrid exponentially weighted moving averages statistics. We have also used the information available on auxiliary variable to construct the proposed estimator. We studied the properties of the proposed estimator. Further, we examined the performance of the proposed estimator in comparison with conventional estimator of the population mean and the results are demonstrated by using the data set of simulation as well as natural population. After observing the auspicious findings, we suggest that the proposed estimator can be applied to solve real-life problems.

**Key words:** successive sampling, HEWMA, regression estimator, variance, minimum variance, efficiency.

### 1. Introduction

In the context of socio-economic surveys, our society is composed of various classes of individuals like business owners, salaried persons, daily wages labourers, etc., and these distinct classes have various levels of income and expenditure. Therefore, when assessing these socio-economic parameters, it is needed to categorize these heterogeneous units of the population into different homogenous strata based on their socio-economic status, which necessitates the application of stratified random sampling techniques. It may also be noticed that socio-economic factors such as income and expenditure are changing over a period of time. When the characteristics are liable to change over time, successive sampling is the most preferred method for estimating

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