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Stochastic Properties of Certain Empirical Horvitz-Thompson Estimation Strategies*

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Abstract

The aim of the work was to compare the properties of three estimation strategies for the finite population total. In each of them, the empirical Horvitz-Thompson estimator was used. Three sampling schemes were considered - Pathak's scheme, greedy scheme and proportional greedy scheme. Relative bias and relative mean square error of empirical Horvitz-Thompson estimator were compared. The aim of the work was achieved by means of a simulation experiment, which consisted in repeatedly generating sample replications using the three considered sampling schemes. Next, the distribution of estimates obtained for all these sample realizations was examined. For each strategy, the considered estimation accuracy measures were close to zero even for a small number of sample replications. In addition, simulations were conducted for generated populations with different correlation coefficients. The impact of changing an arbitrarily set correlation coefficient on estimation accuracy was examined.

Keywords: inclusion probability, Pathak's scheme, greedy scheme, proportional greedy scheme

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