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EFFICIENCY OF A DIFFERENCE CUM RATIO ESTIMATOR OF THE POPULATION MEAN IN DOUBLE SAMPLING WITH NON-RESPONSE

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ABSTRACT

Cochran (1977) and Rao (1986) ratio estimators for the population mean $\bar{y}$ in the presence of nonresponse, are but two of those estimators that require the knowledge of the population mean $\bar{x}$ of an auxiliary variate x, for their construction. Practical situations do occur from time to time however, in which we lack the knowledge of $\bar{x}$, and thus Cochran (1977) and Rao (1986) ratio estimators vanish. The present study compares a difference cum ratio estimator (d_1) with Sodipo (1997) simple ($\bar{y}$) and ratio (d) estimators, both theoretically and umerically, when is unknown. We derive some properties of our proposed estimator, and state conditions under which it performs more efficiently than the existing ones. Procedures for the determination of the optimum sizes of the preliminary and second-phase samples, as well as the subsampling rate, using an appropraite cost function, are also discussed.

Keywords: Difference cum ratio, mean, double sampling, estimator, nonresponse.