NEW GENERALIZED ESTIMATORS FOR THE POPULATION VARIANCE USING AUXILIARY INFORMATION

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Received 05:06:2008 : Accepted 23:09:2008

Abstract

We suggest a generalized class of estimators for the population variance using an auxiliary variable. Tripathi et al. (T.P. Tripathi, Singh, H.P. and Upadhyaya, L.N. A general method of estimation and its application to the estimation of coefficient of variation, Statistics in Transition 5(6), 887–908, 2002) proposed some generalized estimators for a population parameter. By adapting these estimators to population variance, we develop some estimators. We obtain the mean square error (MSE) equation of the proposed estimators. We illustrate the results with an application using original data.

Keywords: Variance estimation, Ratio estimator, Auxiliary variable, Bias, Minimum mean square error.

2000 AMS Classification: 62D05.

1. Introduction

Using auxiliary information in estimation takes advantage of the correlation between the auxiliary variate \(x\) and the variate of interest \(y\). When information about the auxiliary variable is available, it increases the precision of the population variance.

The problem of estimating a parameter \(\theta_0\) using a single parameter \(\theta_1\) was dealt with by Das and Tripathi [1]. They defined the following general classes of estimators when a