



Estimating a Finite Population Mean Using Transformed Data in Presence of Random Non-Response

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Abstract

Developing finite population estimators of parameters such as mean, variance, and asymptotic mean squared error has been one of the core objectives of sample survey theory and practice. Sample survey practitioners need to assess the properties of these estimators so that better ones can be adopted. In survey sampling, the occurrence of non-response affects inference and optimality of the estimators of finite population parameters. It introduces bias and may cause samples to deviate from the distributions obtained by the original sampling technique. To compensate for random non-response, imputation methods have been proposed by various researchers. However, the asymptotic bias and variance of the finite population mean estimators are still high under this technique. In this paper, transformation of data weighting technique is suggested. The proposed estimator is observed to be asymptotically consistent under mild assumptions. Simulated data show that the estimator proposed is much better than its rival estimators for all the different mean functions simulated.

Keywords: Mean squared error, bias, kernel regression, two-stage cluster sampling, confidence interval lengths.

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