On Presentation a new Estimator for Estimating of Population Mean in the Presence of Measurement error and non-Response

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Extended Abstract

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Introduction

According to the classic sampling theory, errors that are mainly considered in the estimations are sampling errors. However, most non-sampling errors are more effective than sampling errors in properties of estimators. This has been confirmed by researchers over the past two decades, especially in relation to non-response errors that are one of the most fundamental non-immolation errors. More done researches, had studied non-sampling errors individually, however, in practice, two or more non-sampling errors occur together. In this paper, are considered two types of non-sampling errors in the stage of estimation of population mean: measurement error and non-response error. Has been proposed a new estimator for estimating the mean population in the presence of measurement and non-response errors. It has been shown theoretically and experimentally that the proposed estimator is more efficient than the Hansen and Hurwitz's unbiased estimator and other existing estimators.

Material and methods

Since we can have populations for which the correlation between the studied variable and the auxiliary variable can be positive or negative simultaneously, for the positive correlation, the ratio estimator, and for the negative correlation, we need an product estimator. Therefore, we need an estimator that can express both conditions. For such populations, it is suggested that the estimator combines the ratio exponentiol estimator and the product exponentiol estimator using the probability balance method.

Results and discussion

The effect of measurement and non-response errors on the population mean is simultaneously examined and has been proposed a class of new estimators for the estimation of the mean of the variable population studied, when the measurement and non-response errors occur in both variable studied, and the proposal . The proposed estimator is compared with some of the existing estimators both theoretically and empirically, and it has been shown that in either case the proposed estimator is more efficient than the other estimators.

Conclusion

The following conclusions were drawn from this research.

- In each of the six communities, the proposed estimator is better than the other estimators.
- proposed method is easy to implement and it is a powerful mathematical tool to obtain the new population mean estimators with little additional works.

Keywords: Population mean; Exponentiol estimator; Mean squared error; Measurement error; Non-response; second referral;

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