

Total Estimator with Non-response using Calibration Method: Simulated and empirical medical data.

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Abstract

The calibration method is a unified approach to use auxiliary information for reducing both the sampling error and the non-response bias in a survey. Non-response is usual in medical studies. The literature provides two standard methods for treating non-response: imputation and weighting. This work is concerned with weighting. We used the method in order to estimate the total of a variable. Simulated and medical data were used. We considered simple random sampling without replacement and four situations of estimation to compare: a) sample of complete response; b) sample with random non-response and total estimated only with respondents, ignoring non-response; c) and d) sample with non-response but estimating the total using population and sampling auxiliary information in the calibration method. We compared the four estimators by the mean square of the errors (MSE) and the relative biases. We conclude that the judicious use of auxiliary information reduced significantly both the non-response bias and the MSE for the simulated and our empirical data (leishmaniasis, an infectious disease). We suggest apply this method in different areas of biometry.

Key words: non-response adjustment; auxiliary information; non-response bias.

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