

**Comparison of Regression Estimator and Ratio Estimator:
A Simulation Study**

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ABSTRACT

We compared ratio and regression estimators empirically based on bias and coefficient of variation. Simulation studies accounting for sampling rate, population size, heterogeneity of the auxiliary variable x , deviation from linearity and model misspecification were conducted. Ratio estimator is better than regression estimators when regression line is close to the origin. Ratio and regression estimators still work even if there is a weak linear relationship between x and y , provided that there is minimal, if not absent, model misspecification. When the relationship between the target variable and the auxiliary variable is very weak, bootstrap estimates yield lower bias. Regression estimator is generally more efficient than ratio estimator.