Abstract

In this study we compare methods for population ratio estimation by using (1) the ratio between sample mean of target variable and sample mean of auxiliary variable and (2) mean of the ratio between sample of target variable and sample of auxiliary variable when unknown population mean of auxiliary variable in simple random sampling. Under study population come bivariate normal distribution, bivariate poisson lognormal distribution and bivariate cauchy distribution. Population coefficient of variation(c.v.) of both auxiliary variable (X) and target variable (Y) is c.v. = 0.2,0.5 and 0.8. Population correlation coefficient (ρ) of between auxiliary variable (X) and target variable (Y) is ±0.5, ±0.6, ±0.7 and ±0.8. Sample size is 10, 100 and 200. Confidence Interval is 95%. Two estimators of population ratio under study are $r_1 = \hat{R} = \frac{\bar{Y}}{\bar{X}}$ and $r_2 = \hat{R} = \frac{1}{n}\sum_{i=1}^{n}\frac{Y_i}{X_i}$. Under study. R (2.10.1) software is used for simulation technique with 1,000 iterations each condition. The conclusions of this study is summarized as population come bivariate normal distribution and bivariate poisson lognormal distribution , the small sample (n=10), both ratio of mean and mean of ratio have coverage probability no difference all case of population correlation coefficient. But the large sample (n=100,200), coverage probability of ratio of mean have higher than mean of ratio. And population come bivariate cauchy distribution , coverage probability of ratio of mean have higher than mean of ratio all case of sample size and all case of population correlation coefficient.

In future work, may be studied from a stratified random sampling or simple random sampling. Comparing the other estimators of the ratio population with similar the distribution in this study or other distribution. And Interval estimation may be use the Bootstrap.