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Sampling Theory

Estimation Under Purposive Sampling

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Abstract

Purposive sampling is described as a random selection of sampling units within the segment of the population with the most information on the characteristic of interest. Nonparametric bootstrap is proposed in estimating location parameters and the corresponding variances. An estimate of bias and a measure of variance of the point estimate are computed using the Monte Carlo method. The bootstrap estimator of the population mean is efficient and consistent in the homogeneous, heterogeneous, and two-segment populations simulated. The design-unbiased approximation of the standard error estimate differs substantially from the bootstrap estimate in severely heterogeneous and positively skewed populations.

Keywords:

Design-unbiased approximation Heterogeneous and two-segment populations Homogeneous Nonparametric bootstrap

Mathematics Subject Classification:

62D05 62F40

Notes

Note: Values in parentheses are the design-unbiased approximations of the estimated standard errors.

(a)Bootstrap estimates using k = 100 replications, n = resample size, at trimmed N = 257.

Note: Values in parentheses are the design-unbiased approximations of the estimated standard errors.

(a)Bootstrap estimates using k = 100 replications, n = resample size, at trimmed N = 274.

Note: Values in parentheses are the design-unbiased approximations of the estimated standard errors.

(a)Bootstrap estimates using k = 100 replications, n = resample size, at trimmed N = 277.

Note: Resample size = n.

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