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Sampling Theory

# Estimation Under Purposive Sampling

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Pages 277-284 | Received 01 Sep 2004, Accepted 01 Aug 2005, Published online: 15 Feb 2007

Cite this article <https://doi.org/10.1080/03610910600591610>

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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

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## 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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