UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Statistics 423 Sampling Theory of Surveys

Principles of sampling. Questionnaire design. Various types of sampling designs: simple random, stratified, systematic, cluster, multi-stage cluster. Ratio and regression estimates. Estimation of required sample size. Estimation of population size and density. Problems of nonresponse.
Course Hours: H(3-1T)
Prerequisite(s): Any one of Statistics 217, 327, 333, 357, Applied Psychology 301, Engineering 319, Mathematics 323, Psychology 312, Sociology 311 or consent of the Division.

Syllabus

Topics

Simple random sampling, estimators of associated parameters and their properties. Extension to sampling for proportions and percentages.

Stratified random sampling, estimators of associated parameters and their properties. Extension to sampling for proportions and percentages.

Ratio estimator, bias and variance of ratio estimator, sample estimation of variance of ratio estimate. Comparison with mean per unit estimator.

Regression estimators, two types of regression estimators, bias and variance of regression estimators, sample estimation of variance of regression estimator. Comparison with other estimators.

Systematic sampling, comparison with stratified random sampling, problems of linear trend, and/or periodic variations. Variance of the estimated mean and sample estimate thereof.

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98.04.20 Prerequisite addition: 05:07:01