Stockholm University

Department of Statistics
2020-01-20/PGA

Course description

Sampling and estimation

7.5 Higher Education Credits (ECTS Credits), advanced level
Course code: ST720A
Spring 2020

Contents

The course consists of one unit:

1. Sampling and estimation. 7.5 ECTS credits

Sampling methodology is about drawing representative samples from a finite population and how to best use existing information. The course covers the most commonly used sampling designs: simple random sampling, stratified sampling, sampling with varying inclusion probabilities (known as πps-sampling), cluster sampling, multistage sampling and systematic sampling. How to choose between methods and designs and how to implement them, is also discussed. The course discusses different estimation procedures, particularly when there are different types of auxiliary information in the frame. The course provides useful knowledge about planning and assessing different types of surveys designs.

Course literature

- Särndal, CE, Swensson, B. and Wretman, J. (2003), Model Assisted Survey Sampling, Springer-Verlag, New York Inc.
- Additional material distributed during the course

Learning Goals

After completing the course the student should be able to

1. explain the advantages and disadvantages of standard sampling designs
2. choose appropriate sampling designs for different selection problems
3. choose suitable estimators depending on the problem and the access to auxiliary information
4. carry out estimation and precision estimation on data from different sampling designs, with and without auxiliary information
5. describe and use common estimation methods for non-response problems, including imputation and calibration

Teaching

Teaching consists of lectures (F1-L11), exercises (Ex1-Ex5) and computer exercises (CL1-CL2) according to the course schedule. NOTE! The first lecture (Lecture 1) is mandatory and the last scheduled lecture (F12) is an examination session, where the students orally present the result of an assignment.

Course Schedule

See the webpage of the course.

Examination

The examination consists of

- A written examination
- An assignment, which is examined through a written report and an oral presentation

Grading Criteria

The assignment is graded as Pass (G) or Fail (U). If a compulsory assignment is graded as Fail (U), the student will have only one chance to re-submit the assignment and this has to be done within a week. The written examination is graded as A, B, C, D, E, Fx and F. The passing grades are A, B, C, D and E, where A is the highest and E is the lowest. Failing grades are F and Fx, where F is lower than Fx. When obtaining a failing grade F or Fx in the written examination, we will not give extra exercises or extra assignments to obtaining a passing grade.

If the student has passed both parts of the examination the final grade is decided by the written examination.

Grading criteria for the written examination

The maximum total credit is thus 100 points for each examination. Grades are given on a seven-point rating scale:

A	90-100 points
B	80-89 points
C	70-79 points
D	60-69 points
E	50-59 points
Fx	40-49 points
F	00-39 points

To pass the course a minimum grade of E is required.

For more information about examination, see the course plan.

Teachers and Communication

Course coordinator and examiner

Per Gösta Andersson, room B 777
Email: per.gosta.andersson@stat.su.se, phone: 08 - 16 29 56
Reception hours: Tuesdays 1 -2 pm

Teaching Assistant

Edgar Bueno, room B 788
Email: edgar.bueno@stat.su.se