

STAT

STAT2540 Survey and Sampling

[15h] 2.5 credits

This course is taught in the 2nd semester

Teacher(s): Yves Berger
Language: french
Level: 2nd cycle course

Aims

Objective (in terms of abilities and knowledge)

This course aims at providing the student the basic knowledges on the sampling methods, with a particular, but not exclusive, emphasis on sampling from (finite) human populations. At the end of the course, the student should be able to correctly designing a simple survey and analysing the results.

Main themes

Topics to be treated

- General framework of inference in finite population; population, sampling, statistics for the inference based on experimental data, linear homogenous estimation: elementary units, complex units.
- Sampling with unequal probabilities: Hansen-Hurwitz and Horvitz-Thompson estimators, for the particular case of simple random sampling.
- Estimators improvement through auxiliary information: ratio estimator, regression estimator
- Sampling from complex units: stratified sampling, cluster sampling, two stages sampling.
- Sampling from biological populations: basic issues in sampling, estimation of the population size.

Content and teaching methods

Summary: Content and methods

- General framework of inference in finite population; population, sampling, statistics for the inference based on experimental data, linear homogenous estimation: elementary units, complex units.
- Sampling with unequal probabilities: Hansen-Hurwitz and Horvitz-Thompson estimators, for the particular case of simple random sampling.
- Estimators improvement through auxiliary information: ratio estimator, regression estimator
- Sampling from complex units: stratified sampling, cluster sampling, two stages sampling.
- Sampling from biological populations: basic issues in sampling, estimation of the population size.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Basic references:

- Mouchart, M. and J.-M. Rolin (1981), Enquêtes et sondages, Série "Recyclage en Statistique, Vol.5, U.C.L. Louvain : Comité de statistique.
- Lohr, Sharon L. (1999), Sampling : Design and Analysis, Duxbury Press: Brooks/Cole Publishing Company.
- Rao Poduri, S.R.S. (2000), Sampling Methodologies with Applications, London: Chapman and Hall.

Other credits in programs

ECGE3DS/MK	Diplôme d'études spécialisées en économie et gestion (Master in business administration) (marketing)	(2.5 credits)
MATH22/S	Deuxième licence en sciences mathématiques (Statistique)	(2.5 credits)
STAT2MS	Master en statistique, orientation générale, à finalité spécialisée	(2.5 credits)
STAT3DA/B	diplôme d'études approfondies en statistique (biostatistique et épidémiologie)	(2.5 credits)
STAT3DA/E	diplôme d'études approfondies en statistique (statistique et économétrie)	(2.5 credits)
STAT3DA/P	diplôme d'études approfondies en statistique (pratique de la statistique)	(2.5 credits)