

“Survey sampling methods and applications”

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15 February 2021

09:00 - 10:15 – Convenience sampling VS Probabilistic sampling. Some basic concepts (population, parameters, sample, etc.). Sampling designs. First- and second-order inclusion probabilities. Sampling strategy.

10:30 -12:00 – Estimators and their properties. Estimation of qualitative and quantitative variables. The estimator of Horvitz-Thompson.

Lunch break

14:00 - 15:45 – Introduction to R software: some recalls of basic concepts. Introduction to package “sampling”.

16 February 2021

09:00 - 10:15 – Simple random sampling. Systematic sampling. Stratified sampling.

10:30 -12:00 – Cluster and two-stage sampling. Sampling elusive populations: snowball, adaptive and network sampling methods.

Lunch break

14:00 - 15:45 – R lab: selection of samples by means of the main studied methods and estimation.

17 February 2021

09:00 - 10:15 – Use of auxiliary information in the design phase and in the estimation phase. Post-stratification. Calibration on marginal totals.

10:30 -12:00 – Panel surveys. Coordination in repeated surveys. Attrition and possible solutions. Multiple survey frames.

Lunch break

14:00 - 15:45 – R lab: some exercises on real survey problems.

18 February 2021

09:00 - 10:15 – Coverage errors. Treatment of nonresponse (partial and total). Imputation techniques. Calibration.

10:30 -12:00 – Sampling in the era of big data: what prospects for the future?

Reference textbook: Tillé, Y. (2020). *Sampling and estimation from finite populations*. John Wiley & Sons.

Additional material (slides, papers, chapters and R codes) will be distributed during classes.