



Winter School in Survey Sampling Methods (SuSaM)  
17-28 January 2022, Department of Economics and Management (\*)

Coordinated by Maria Michela Dickson

<b>WEEK 1 – Monday 17</b>
9.00 - 10.00: Orientation session by the International Relations Division and welcome by the Head of the Division, Conference Room ground floor of the Dept. of Economics and Management, Via Inama 5.
10.00 - 10.30 transfer to the classroom.
10.30 - 11.00 Welcome by the head of Department, Favio Bazzana.
11.00 - 13.00: Prof. Yves Tillé, Université de Neuchâtel, Switzerland Random sampling for finite populations: <i>Definitions of population, variables, parameters, sample. Sampling schemes and designs. First and Second order inclusion probabilities. Sampling strategy.</i>
13.00 - 14.30 Lunch break at the canteen with the student collaborator, in Via T. Gar 18
14.30 - 16.00: Dr. Alina Matei, Université de Neuchâtel R Lab: Introduction to the use of R open source software. Informatics Room n. 1 (ground floor)
16.30 - 17.45: Dr. Alina Matei, R Lab: Use of packages and programming language. Informatics Room n. 1 (ground floor)
18.15 – 19.15 Welcome aperitif at Restaurant Rosa D'Oro, Piazza Santa Maria Maggiore 21
Dinner at the canteen and evening free
<b>Tuesday 18</b>
9.30 - 11.00: Prof. Yves Tillé Estimators and their properties: <i>Unbiasedness, consistency, efficiency and sufficiency. Horvitz-Thompson estimator. Variance of the estimator. Variance estimation. Hajek estimator.</i>
11.30 - 13.00: Prof. Yves Tillé Sampling designs: <i>Simple random sampling without replacement. Stratified sampling. Systematic sampling. Cluster sampling. Two-stage sampling.</i>
13.00-14.30 Lunch break
14.30 - 16.00: Dr. Alina Matei R Lab: Implementation of the most known sampling designs. Informatics Room n. 1 (ground floor)
16.30 - 18.00: Group work with the tutor (to be defined).
Dinner at the canteen and evening free
<b>Wednesday 19</b>
9.30 - 11.00: Prof. Yves Tillé Unequal probability sampling and auxiliary information: <i>Vector of the inclusion probabilities. Use of the auxiliary information. <math>\pi ps</math> sampling design.</i>
11.30 - 13.00: Prof. Yves Tillé Use of auxiliary information at estimation level: <i>Difference estimator. Regression estimator. Ratio estimator. Some practical examples.</i>
13.00 - 14.30 Lunch break
14.30 - 16.00: Dr. Alina Matei R Lab: Use of auxiliary information at design/estimation level. Informatics Room n. 1 (ground floor)
16.30 - 18.00: Dr. Alina Matei R Lab: Implementation of regression and ratio estimators. Informatics Room n. 1 (ground floor)
Dinner at the canteen and evening free
<b>Thursday 20</b>
9.30 - 11.00: Prof. Yves Tillé Sampling errors: <i>Sources of errors in sampling surveys. Sampling errors and consequences on the estimation.</i>
11.30 - 13.00: Prof. Yves Tillé Non-sampling errors: <i>Total and partial nonresponse. Hints on imputation and correction methods.</i>



13.00 - 14.30 Lunch break
14.30 - 15.45: Group work with the tutor (to be defined).
16.00 - 18.00 Guided visit to Trento.
Evening free
<b>Friday 21</b>
8.00 - 19.00 Outdoor seminar at <u>Cantina Toblino Caves</u> (lunch included) with excursion to Garda Lake
9.30 - 12.00: Prof. Diego Giuliani and Dr. Maria Michela Dickson, University of Trento Sampling designs to address old and new problems: how to sample spatial and hidden populations.
Take away dinner at 19.30 and evening free

(\*) When not differently specified, the activities will take place at the Department of Economics and Management, Via Inama 5, in ROOM 1F (1st floor)



<b>WEEK 2 – Monday 24</b>
9.30 - 11.00: Dr. Guillaume Chauvet, ENSAI Introduction to balanced sampling: <i>Methodological aspects. Balanced sampling and linear programming. The Cube method.</i>
11.30 - 13.00 Dr. Guillaume Chauvet Estimation and technical aspects: <i>Total and variance estimation. Quality of balancing. Approximations.</i>
13.00 - 14.30 Lunch break
14.30 - 16.00: Dr. Maria Michela Dickson R Lab: Implementation of balanced sampling designs. Informatics Room n. 1 (ground floor)
16.30 - 18.00: Group work with the tutor (to be defined).
Dinner at the canteen and evening free
<b>Tuesday 25</b>
9.30 - 11.00: Dr. Guillaume Chauvet, Introduction to calibration estimators: <i>Methodological aspects. Properties of the estimator. Calibration on marginal totals.</i>
11.30 - 13.00 Dr. Guillaume Chauvet, Treatment of nonresponse: <i>Modelling nonresponse. Direct calibration. Practical problems.</i>
13.00 - 14.30 Lunch break
14.30 - 16.00: Dr. Maria Michela Dickson, R Lab: Treatment of nonresponse. Informatics Room n. 1 (1st floor).
16.15 meeting point at the entrance of Dept. of Economics and walk to Le Albere area
16.45 – 17.30: autonomous tour of MUSE – Science Museum followed by a guided visit until 18.30
Dinner at the canteen and evening free
<b>Wednesday 26</b>
9.30 - 11.00: Dr. Danila Filipponi, Italian National Institute Coverage errors in surveys: <i>Errors from a list. Undercoverage and Overcoverage. Not-reachable units. Possible solutions.</i> of Statistics.
11.30 - 13.00 Dr. Paolo Righi, Italian National Institute of Statistics Big data and survey sampling.
13.00 - 14.30 Lunch break
14.30 - 16.00: Dr. Flavio Santi, University of Verona Integration from different sources of data: <i>Opportunities deriving from integration. Problems and practical solutions. New sources of data.</i>
16.30 - 18.00: Dr. Maria Michela Dickson LimeSurvey - a platform to conduct surveys: <i>Use of the platform. Creation of tokens. Anonymization and saving of information.</i> Informatics Room n. 1 (ground floor)
Dinner at the canteen and evening free
<b>Thursday 27</b>
8.00 - 13.30: A healthy start on the snow: a 2-hour slide on cross-country skiing on Monte Bondone Transfer by private bus. Please bring a complete change to leave on board.
13.30 - 14.30 Lunch break
15.00 - 18.00: Group work with the tutor (to be defined).
Dinner at the canteen and evening free
<b>Friday 28</b>
8.00 – 10.00 free time to possibly make the swab test if necessary before departure
10.00 – 12.00: Short presentation of UniTrento and delivery of the certificates of attendance and ToRs for 6 ECTS. Sharing of your best shots, videos, and feelings, by the International Relations Division, Conference Room ground floor of the Dept. of Economics and Management, Via Inama 5.
12.30 – 14.00 Farewell lunch at Restaurant Rosa D'Oro
14.30 – 17.00: Presentation of group works.
Take away dinner at 19.30 and evening free