

Sampling and Survey Design

Code: 104854
ECTS Credits: 6

Degree	Type	Year	Semester
2503852 Applied Statistics	OB	2	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites

It is not necessary to have specific prior knowledge since it is an introductory course. However, it is useful to have notions of concepts from the social and behavioral sciences, knowledge of basic statistics, EXCEL and some experience with statistical packages (SPSS, R, ...). Those who consider that they need additional training will be recommended the pertinent bibliography.

Objectives and Contextualisation

In today's society, surveys are an increasingly important tool to obtain information about the population for scientific, business, political or administrative purposes.

This course in survey methodology has as its objective that students understand and critically evaluate surveys as a social research technique, and that they develop the necessary skills to design, carry out and analyze surveys.

The mastery of the survey methodology gives access to good professional opportunities. There is a demand for well-prepared experts in this field, both in the private sector (market research, public opinion companies, political consultancy) and in the public sector (CEO, Idescat, CIS, INE, departments and various secretariats). The knowledge of the survey methodology is also very useful for academic research in various disciplines such as psychology, economics, business administration, sociology, political science, or education.

Competences

- Correctly use a wide range of statistical software and programming languages, choosing the best one for each analysis, and adapting it to new necessities.
- Make efficient use of the literature and digital resources to obtain information.
- Select the sources and techniques for acquiring and managing data for statistical processing purposes.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.

- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Use quality criteria to critically assess the work done.
- Work cooperatively in a multidisciplinary context, respecting the roles of the different members of the team.

Learning Outcomes

1. Choose the most suitable type of sampling for official statistics and econometrics.
2. Critically assess the work done on the basis of quality criteria.
3. Design surveys in the context of official statistics, econometrics and public health.
4. Design syntax modifications to programmes in order to conduct new processes.
5. Identify and select the most important information sources for the descriptive analysis of data of different types: social, environmental, medical, economic, etc.
6. Make effective use of references and electronic resources to obtain information.
7. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
8. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
9. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
10. Use spreadsheets for the descriptive analysis of data.
11. Work cooperatively in a multidisciplinary context, accepting and respecting the roles of the different team members.

Content

This course is an introduction to the principles and practice of survey design. The main contributions of the research in Survey Methodology are reviewed on the factors that affect the quality of the surveys.

This subject aims to combine the theoretical perspective with the development of applied skills to design and carry out surveys. Using the phases of the survey process as a common thread, the different sources of error will be presented following the perspective of the Total Survey Error, as well as the ways to mitigate it. . The concept of error will be used as a framework to discuss the consequences of using different methods of data collection, the coverage capacity of the sampling frames, alternative sampling designs and their impact on the standard errors of the survey statisticians, the effects of the design of the questionnaire as an instrument of measurement (impact of the order of the questions, differences in its wording, among others), the supervision systems of the field work, the role of the interviewer and the respondent, the impact of the non-response in the statistics of the survey, or the treatment and analysis of the data obtained. The design of surveys implies taking a set of decisions making an adequate balance between the research objectives, the survey errors, the economic costs, and the calendar restrictions that they entail.

Module 1: Basic concepts and definition of a project

1. *Definition of survey*

1.1 Origins of the surveys

1.2 Essential characteristics of the surveys

1.3 Strengths and weaknesses of the surveys

1.4 Types of surveys

1.5 Phases of a survey

1.6 Types of error

2. *Survey methods*

3. *The design of the sample*

3.1 Delimitation of the study universe

3.2 The sampling frame

3.3 The sample size

3.4 Probabilistic sampling

3.4.1. Simple random sampling

3.4.2. Systematic random sampling

3.4.2. Stratified random sampling

3.4.3. Random sampling by conglomerates: mono / bi / multistage

3.5 Non-probabilistic sampling

3.5.1. Sampling by installments

3.5.2. Strategic sampling or "trial"

3.5.3. Circumstantial sampling: of "volunteers", "snowball"

3.6 The sampling error (E)

3.7 The confidence interval

Module 2: Design and administration of a questionnaire

4. *Definition of research objectives*

4.1 Operationalization of concepts. Construction of questions

4.2 Types of variables and questions

4.3 Measurement and pretest errors

4.4 Order and presentation of the questionnaire

4.5 Test questionnaire and final drafting

5. *The administration of the questionnaire*

5.1 Contribution of the surveyors to the survey error

5.2 Supervision of fieldwork

5.3 Non-response errors

Mòdul3: Analysis and presentation of results

6. *Data preparation*

6.1 Preparing the data to work

6.2 Analysis of the data

6.2.1 Univariable exploration

6.2.2 Bivariate analysis

6.3 Data quality

6.3.1 Validity

6.3.2 Reliability

6.4 Results report

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Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents

Methodology

In the subject the sessions are divided into theoretical, with presentations of the contents by the teacher, and practices. The practices will be done in the computer under the supervision of the teacher, and others will be autonomous. The correction of exercises and recommended practices will be supervised by the teacher.

*The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Supervised			
Data processing	22	0.88	
Definition of survey	9	0.36	
Design of a project	17	0.68	
Questionnaire design	23	0.92	
Sampling procedure	9	0.36	
Survey	12	0.48	
Transversal project	45	1.8	
Work field	13	0.52	

Assessment

The evaluation method consists in the elaboration of a set of practices, and in the realization of a final exam.

1. Examination: 50% in the final computation of the course. The final exam will be used to evaluate the theoretical
2. Practice: 50% in the final computation of the course. Group practices (must approve): initiated in class in group

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Student

s assessment may experience some modifications depending on the restrictions to face-to-face activities enforce

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Data processing	15	0	0	2, 4, 10
Definition of survey	6	0	0	6
Design of a project	11	0	0	3
Questionnaire design	15	0	0	3, 5, 8
Sampling procedure	6	0	0	3, 1
Survey	8	0	0	3, 1
Transversal project	30	0	0	2, 3, 4, 5, 9, 8, 7, 1, 11, 6, 10
Work field	9	0	0	2, 8, 7

Bibliography

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Software

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