UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Demographic Analysis

2223-1-F8203B043

Learning objectives

The course aims at providing statistical tools for the evaluation and the analysis of socio-demographic changes in a population. The first part of the course focuses on the comparison of synthetic indicators using the decomposition of rates and cross-sectional aggregated data. The second part of the course introduces the use of demographic projections and forecasts to discuss future scenarios. Finally, the third part of the course introduces longitudinal data and methods for demographic studies.

Knowledge and understanding. This course allows students to acquire knowledge and understanding as follows:

- tools for the evaluation and the analysis of socio-demographic changes in a population
- decomposition of demographic rates
- sequence analysis

Applying knowledge and understanding. At the end of the course, students will acquire the tools to:- identify the causes of demographic changes

- discuss future scenarios
- analyse longitudinal data as a sequence

Contents

1. Analysis of socio-demographic trends, comparison.

2. Future demographic scenarios: demographic projections and forecasts.

3. Sequence analysis for demographic studies.

Detailed program

1. Socio-demographic trends:

a. Repeated cross-sectional surveys

b. Synthetic measure: crude rates and age-specific rates

c. Comparison between crude rates: problems, cohort effect and effect of the rates, decomposition of Kitagawa.

d. Comparison between cohorts: Convergence/divergence model

e. Focus on the demographic dynamics of the Italian population.

f. Practice Lab 1: analysis of the past demographic evolution distinguishing the cohort effect and the effect of the rates.

2. Future demographic scenarios: demographic projections and forecasts:

a. Methods for population projections

b. Derived projections

c. Constant and variant rates

d. Contribution of rates and population structure to the future scenarios

e. Practice lab 2: projection of a demographic phenomenon and formulation of hypotheses.

3. Sequence analysis applied to demographic cases:

a. Longitudinal data

b. Sequence definition

c. Comparison between sequences

d. The distance between sequences

e. Optimal Matching Algorithm

f. Matrix costs

g. Examples of demographic and biostatistics studies

h. Practice lab 3: family reunification process among migrants using sequence analysis

Prerequisites

None.

Teaching methods

Lectures and practice labs. The lectures introduce the theoretical and methodological aspects; the practice labs allow students to practice the statistical tools with real data to develop an individual project on a project defined with the teaching of the course. For the practice labs, student will use STATA and Excel.

Assessment methods

Students attending lectures and practice labs: an individual written homework for the third lab and an oral presentation of the results of the first and second lab. This mixed assessment method allows verifying the capacity of analysis of the students by means of application to real data of the methodologies, the ability to interpret and discuss these results based on the literature both on a form of a research report and an oral presentation.

Students not attending lectures and practice labs: oral exam. The oral exam aims at verifying the acquisition of both methodological issues (methods, hypotheses, limits and interpretation of the results) and the knowledge of main population dynamics in Italy as explained in the textbooks. The exam will take place at the end of the course.

Textbooks and Reading Materials

Students attending lectures and practice labs

Textbooks

- Stefani Scherer, Analisi dei dati longitudinali, Il Mulino, 2013.
- Firebaugh, Analyzing repeated surveys, SAGE University Paper, 1997 (the e-book is available on the website of the Unimib Library).

Additional material available on the e-learning website

- selected articles

Students not attending lectures and practice labs

Textbooks

- Stefani Scherer (2013). Analisi dei dati longitudinali, Il Mulino. Capitoli 1,2 e 5.
- Golini A. (2019). Italiani poca gente. Il paese ai tempi del malessere demografico. Luiss
- Golini A. e Rosina A. (a cura di) (2011). Il secolo degli anziani. Come cambierà l'Italia. Il Mulino.

Additional material available on the e-learning website:

- Selected papers
- Videos of lectures and labs

During the Covid-19 emergency, in case of difficulty in finding the textbooks, alternatives choices will be suggested.

Semester

II semester, approximately from the end of February to mid April

Teaching language

Italian

Sustainable Development Goals