Quantitative Methods in the Social Sciences I – Introduction into Regression Analysis
7.5 credits, Fall 2023

Syllabus
Last Updated: June 27, 2023

Course Organizer
Sven Drefahl (sven.drefahl@sociology.su.se)

Entry requirements
Bachelor's degree, English 6 (corresponds to European reference level B2)

Course contents
This course deals with regression analysis in the social sciences. Regression analysis is a basic method in the social scientists' toolkit and its thorough understanding is a prerequisite for mastering other quantitative methods. This course is intended for students at the advanced (Master's and doctoral) level and requires basic knowledge of quantitative methods in the social sciences.

The objective of the course is to provide a thorough understanding of the uses of regression analysis in the social sciences. The course has an emphasis on understanding the uses, scope and limitations of regression analysis and of the relevance of its underlying assumptions, as well as on conducting regression analysis of social scientific research problems.

The course focuses primarily on Ordinary Least Squares (OLS) regression with continuous dependent variables. These methods will be approached through their two main purposes, namely the estimation of the effects of variables and the explanation of variance. The course starts with a discussion of simple regression analysis, followed by multiple regression, confounding, and indirect effects. Other topics covered include dummy variables and variable transformations, interactions, and outliers, heteroscedasctity, and multicollinearity.

Expected learning outcomes
After successfully completing the course, the students are expected to:

In terms of data management:
- Use STATA to manipulate and analyze data
- Construct variables based on one and/or several pre-existing variables
- Clean the data of errors and inconsistencies
- Make the data transformations necessary in order to conduct a successful regression analysis using Stata

In terms of basic statistics using Stata:
- Describe variables in terms of distribution, percentages, mean, median and variance
- Conduct bivariate analyses

In terms of OLS regression:
- Understand the social scientific research problems OLS regression can be used to address, as well how regression analysis relates to more elementary quantitative methods.
- Independently conduct OLS analyses in STATA, and present and interpret the results from these analyses
- Understand the scope and limitations of OLS regression.

In terms of documentation:
- document variable constructions, data file management, and analysis procedures in such a way that replication is facilitated

In terms of critical approach
- Assess the conclusions and limitations of own and others' research results from OLS regression analyses

In terms of preparedness for further study
- Be prepared to successfully complete further training in quantitative methodology in the Department of Sociology and elsewhere

Teaching and Course Organization
The course is offered at half-time over 10 weeks. Course participants and instructors meet approximately twice a week for lectures, computer-based exercises and/or seminars using Stata. Course participants submit exercises and comment on peers' exercises in Athena and/or during seminars.

Examination
The examination consists of individual home-assignments, one peer-review assignment, one group-work assignment (formative assessment), and a final take-home exam (summative assessment).

The individual home-assignments, the peer-review assignment, and the group-work assignment are graded Pass or Fail. All of them need to be graded pass to receive a final grade.

The final take-home exam consists of two parts. The first part consists of a critical evaluation of an assigned study. The following aspects are evaluated:
- (i) discussion of the appropriateness of regression analysis for the research problem addressed (1),
- (ii) assessment of the data, variables, and their manipulation (2), and the model specification (3), and
- (iii) evaluation of the interpretation of the results (4) and their potential limitations (5).

The second part consists of a small independent study using regression analysis. The following aspects are evaluated:
- (iv) argumentation for why regression analysis is appropriate for the research question (6),
- (v) data description and variable choice (7), and manipulation of the data and the variables (8), and model specification (9),
- (vi) assessment of outliers (10), heteroscedasticity (11), and multicollinearity (12),
- (vii) clear (14) and appropriate (15) presentation of the results of the regression analysis,
- (viii) interpretation of the parameters (16) and other model results (17) in terms of statistical and substantive significance (18),
- (ix) discussion of results in light of the research question (19) and the limitations of the analysis (20),
- (x) Appropriate Stata-syntax examples and "do-files" that are clear and easy to follow (21).

The final grade is based on the 21 dimensions specified above, each of which is graded between Good (2 points), Pass (1 point), and Fail (0 points). In addition, on-time submission of complete individual home-assignments and on-time submission of a complete peer review assignment also give 2 points each. The total number of points a student can receive is 46.

The final course grade is given as follows:

A (Excellent): 42-46 points
B (Very good): 37-41 points
C (Good): 32-36 points
D (Satisfactory): 27-31 points
E (Sufficient): 23-26 points
Fx (Insufficient): Fail one to four of the graded dimensions specified above
F (Fail): Fail more than five of the graded dimensions specified above

Students with grade Fx are eligible to resubmit the same final examination. Students with grade F are entitled to take another exam as long as the course is provided in order to obtain grade E at least. Students with E or higher are not entitled to another examination to raise their grade. Students who received grade Fx or F on exams twice from the same examiner can request to be evaluated by another examiner. Such request should be sent to the Director of Studies.

Examination takes place during the course and there is a final take-home exam that must be submitted at the specified deadline. All other course work must be submitted no later than one week after the end of the course period to be examined during the current course. If a student fails to meet this deadline or leaves at least one task with

significant errors that must be resubmitted, a reexamination will take place at the next examination opportunity

Plagiarism, cheating and unauthorized cooperation
It is the responsibility of the student to be familiar with the rules for examination. Detailed information is available at Stockholm University's website www.su.se/regelboken. Teachers are obliged to report suspicion of cheating and plagiarism to the Director of Studies and the Disciplinary Board. An example of plagiarism is to formally or almost verbatim copy a text (even a single sentence) without indicating where this comes from. This also applies to texts you have previously written (self-plagiarism). Study groups are encouraged, but when it comes to individual course work, students must take care to submit independent work and not unauthorized cooperation.

Interim provisions
Students may request that examination according to this syllabus be completed up to three semesters after it expires. The request is to be directed to the Director of Studies. This regulation is valid for all assessed parts of the course.

Course literature

Course book (**available as e-book through the SU librar**y):

1. Gordon, Rachel A. Regression Analysis for the Social Sciences. Routledge.
   https://www.routledge.com/Regression-Analysis-for-the-Social-Sciences/Gordon/p/book/9781138812512

Supporting literature:

1. Treiman, Donald. Quantitative Data Analysis: Doing Research to Test Ideas. Wiley.

Additional literature will be provided during the course.