



# Quantitative Methods in the Social Sciences I – Introduction into Regression Analysis

7.5 credits, Spring 2018

Syllabus

Last Updated: December 15, 2017

## Instructors

Sven Drefahl ([sven.drefahl@sociology.su.se](mailto:sven.drefahl@sociology.su.se))

Chiara Comolli ([chiara.comolli@sociology.su.se](mailto:chiara.comolli@sociology.su.se))

## Entry requirements

BA in social science

## 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, but also covers the analysis of binary dependent variables (including logistic regression). 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 binary regression analysis, followed by multiple regression, confounding, and indirect effects. Other topics covered include dummy variables and variable transformations, interactions, and outliers, heteroscedasticity, and multicollinearity.

## **Expected learning outcomes**

After successfully completing the course, the students are expected to:

In terms of knowledge and understanding

- Understand the social scientific research problems regression analysis can be used to address, as well how regression analysis relates to more elementary quantitative methods.
- Have good knowledge of OLS regression and logistic regression and their statistical foundations.
- Understand the scope and limitations of OLS regression and logistic regression.

In terms of capabilities and competences

- Handle data and make the data transformations necessary in order to conduct a successful regression analysis that is suitable for the research problem at hand, using Stata.
- Independently conduct OLS and logistic regression analyses, and present and interpret the results from these analyses

In terms of critical approach

- Assess the conclusions and limitations of own and others' research results from 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 once a week for lectures, computer-based exercises and/or seminars using Stata. Course participants submit exercises and comment on peers' exercises in MONDO and/or during seminars.

## **Examination**

The examination consists of active participation, individual assignments, and a take-home exam. The final grade is based on 17 dimensions (specified below), each of which is graded Good (2 points), Pass (1 point), and Fail (0 points).

Participation is based on the student's active participation in lectures and the computer labs (dimension 1), and the group work assignment (2).

Each of the 4 computer exercises is evaluated (3-6). The computer exercises should include proper solutions to the assigned problems and clear presentations of the Stata-syntax ("do-files") and the output.

The 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 (7), (ii) assessment of the data, variables, and their

manipulation, and the model specification (8), and (iii) evaluation of the interpretation of the results and their potential limitations (9).

The second part consists of a small independent study using regression analysis. The following aspects are evaluated:

- (i) argumentation for why regression analysis is appropriate for the research question (10);  
given the research question:
- (ii) data description, variable choice, and manipulation of the data and the variables (11.), and (iii) model specification (12.);
- (iii) assessment of outliers, functional form, heteroscedasticity, and interactions (13.),
- (iv) clear and appropriate presentation of the results of the regression analysis (14.),
- (v) interpretation of the results (15),
- (vi) discussion of results in light of the research question and the limitations of the analysis (16),
- (vii) Stata-syntax (“do-files”) that are clear and easy to follow (17).

The total number of points a student can receive is 34. Exceptional performance in one or several of the above dimensions can be rewarded with up to 2 extra points.

The final course grade is based on the following criteria:

A (Excellent): 32-34 points

B (Very good): 28-31 points

C (Good): 25-27 points

D (Satisfactory): 21-24 points

E (Sufficient): 18-20 points

Fx (Insufficient): Fail one or two of the dimensions specified above

F (Fail): Fail more than two of the dimensions specified above

Students with grade Fx or F at an exam are entitled to take another exam as long as the course is provided in order to achieve grade E at least. A student with E is not entitled to another examination to raise his/her degree.

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 twice a year: partly at the end of the course, and half a year after the end of the course. Submission data must be submitted no later than one week after completion of the course to be examined during the current semester. If a student fails to meet the deadline or leaves at least one task with significant errors, an examination will be made at the next deadline.

### **Plagiarism, cheating and unauthorized cooperation**

As part of your responsibility as a student, you have to be familiar with the rules for examination. Detailed information is available at the institution's and Stockholm University's website [www.su.se/regelboken](http://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 verbatimly write a text (also applies to single sentences) and without indicating where this comes from. This also applies to

texts you have previously written (self-plagiarism). Having study groups together is encouraged, but when it comes to exam assignments, you must be careful to work for yourself (unless otherwise stated) in order not to risk it being counted as unauthorized cooperation.

### **Course literature**

Course book:

Gordon, Rachel A. Regression Analysis for the Social Sciences. Routledge.

<http://cw.routledge.com/textbooks/9780415991544/>

Supporting literature:

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

Additional literature will be provided during the course.

***Schedule: Quantitative Methods in the Social Sciences I – Introduction into Regression Analysis, 7.5 ECTS-credits, Spring 2018***

<b>Meeting</b>	<b>Date, Time, Room</b>	<b>Topic</b>
1	01/15/18, Monday 09-11 in B389	Introduction
2	01/15/18, Monday 11-13 in B389	Stata Introduction (optional, only for those who never used Stata)
3	01/17/18, Wednesday 09-16 in B389	Correlations and Bivariate regression analysis
4	01/24/18, Wednesday 09-16 in B389	Multiple regression: confounding and partial correlations
5	01/31/18, Wednesday 09-16 in B389	Multiple regression: intervening variables and explaining variance
6	02/07/18, Wednesday 09-16 in B389	Variable transformations
7	02/13/18, Tuesday 09-12 in B389	Interactions 1
8	02/15/18, Thursday 13-16 in B389	Interactions 2
9	02/22/18, Thursday 09-16 in B389	Regression diagnostics
10	02/28/18, Wednesday 09-16 in B389	Regression for binary outcome variables
11	03/07/18, Wednesday 09-16 in B389	Workshop
12	03/15/18, Thursday 09-16 in B389	Workshop