Quantitative Methods in the Social Sciences 2 (aka QMSS2 and SO7033) Spring 2020
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Version 2020 01 23 – Minor adjustments can occur!

Course topics and design

The course covers advanced applications of linear regression (e.g., marginal effects, decomposition methods, measurement error), extensions of linear regression (multilevel and panel data models), and models for discrete outcomes (binary, ordered and multinomial logit). The course emphasizes the craftsmanship of conducting and interpreting these methods. The course requires prior knowledge of linear and logistic regression similar to what is given in Sociology III at SU. Students who lack relevant knowledge should take Quantitative Methods in the Social Sciences I, SO7032, which is also preparing for this course.

We must stress that QMSS2 is an advanced level regression course. This means that basic and intermediate understanding of regressions, such as that offered by QMSS1, is a necessary requirement. It is also necessary to have good knowledge in the Stata program package: we will not offer any help with basic level stata skills. For those who needs a stata refresher nonetheless, we recommend the IDRE facilities at UCLA (https://stats.idre.ucla.edu/stata/).

The course design centers on active student participation. Lectures will only give an introduction (1 hour max), the bulk of theoretical learning will take place by reading and discussing texts and conducing analyses in labs or assignments.

The literature and article seminars are mandatory. Each student will be assigned a paper to present (max 10 min) and prepare 5 questions to discuss during the seminar (while still reading all papers). We will form groups for discussion, with 1 student per paper represented. Any student that cannot attend will do this in report form (max 2 pages), see further instructions under assignments.

The examination will be done in the forms of group and individual assignments, which will be of formative kind (i.e., focused on furthering skills, not only tick of what is understood vs. not understood). You will find the grading criteria below.

The literature consists of both methodological and research article texts, all in article form. The textbook is available both online (for free via SU computer) http://methods.sagepub.com/book/regression-analysis-and-causal-inference and in print (for purchase).

Course readings

[See schedule overview for the course outline]

The course book by Best and Wolf (2014b) is of handbook type; it contains independent chapters on specific topics written by leading scholars. We will also use some chapters in an older handbook; Bryman and Hardy (2004/2009). For references purposes, Morgan (2013) is also a very comprehensive handbook (we provide some suggestions for alternative readings from this book below).

Refresher (not part of curriculum, but indicative of course requirements)
Stolzenberg (2004, p. 165-180) or Wolf and Best (2014).

Course introduction
Mustillo, Lizardo and McVeigh (2018): whole article

Literature seminar 1: Marginal effects, decomposition, measurement error
Stolzenberg (2004): Assumptions and computational requirements, and Assumptions (178-180), Nonlinear and non-additive models (188-203)
Jaccard and Dodge (2004): whole chapter (237-257)
Jann (2008): whole article, except Estimation of sampling variances (458-460). 464-468 can be read very briefly.
Solon (1989): mainly part I
Baron and Kenny (1986)

For those unacquainted with regression diagnostics, read Fox (1991) and the chapters on Non-Normally Distributed Errors, Non-constant Error Variance and Nonlinearity. An alternative on non-linear effects is Lohmann (2014)

Literature seminar 2: Fixed effects methods, multilevel methods
Petersen (2004): whole chapter
Allison (2009): Chapters 1 and 2
Hox and Wijngaards-de Meij (2014): whole chapter except Statistical Tests and Multilevel Analysis of Dichotomous Data

An alternative reading on fixed effects is Firebaugh, Warner and Massoglia (2013) or (Brüderl and Ludwig 2014)

Literature seminar 3 – Inference
Stolzenberg (2004): Regression inference about population parameters (180-188)
Wolf and Best (2014): Statistical Inferences of Regression Results
Little (2004): whole article
Aho, Derryberry and Peterson (2014): whole article
Bernardi, Chakhaia and Leopold (2017): whole article
Wasserstein and Lazar (2016): whole article

Article seminar 1 – Linear models
England et al. (1988)
Daymont and Andrisani (1984)
Sampson, Raudenbush and Earls (1997)

Literature seminar 4 – LPM and logit with issues
Best and Wolf (2014a): whole article
Mood (2010): whole article
Karlson, Holm and Breen (2012): whole article
Myung (2003): whole article. NB! that the author makes some erroneous claims regarding "LSE" in the beginning of the article. LSE is not just a descriptive tool.

Literature seminar 5 – Ordered logit, multinomial logit, and choice models
Long (2014): whole chapter (skip the "Adjacent Category Logit Model", "Stereotype Logit Model")
Hoffman and Duncan (1988): whole article

Article seminar 2 – Non-linear models
Breen et al. (2009) : whole article
Chan and Goldthorpe (2007) : whole article

Literature seminar 6 – Causality
Goldthorpe (2001): whole article
Gangl (2010): whole article

Grading criteria

The course grade is based on a total assessment of all assignments. Each assignment examines one or more of the expected learning outcomes, and each expected learning outcomes is examined through one or more assignments. Which expected learning outcomes are examined by which or which assignments are given by Table 1 below. Expected learning outcomes are graded for each task in three steps: Good, Sufficient (with some shortcomings) and Not sufficient.

The final grade mark is the result of an aggregation of results from the different course outcomes. The final grade mark is not a summary of the participle marks. The more statistically complex and theoretically demanding submission tasks that are conducted individually, have a greater weight in the grade. A weak result on an expected learning outcome is not offset by a strong result on another Expected learning outcome.

Expected learning outcomes [Translated from Swedish Original]

Knowledge and understanding: the student will

1. have good knowledge of advanced applications of linear models (such as interactions, transformations, margin effects, hypothesis test, decomposition methods, measurement errors) focusing on how the models are interpreted, as well as the statistical basics of these approaches
2. have good knowledge of linear model extensions (multilevel regression and panel data analyzes), focusing on how the models are interpreted, as well as the statistical basics of these methods
3. have good understanding of models for discrete outcomes (linear probability models, binary logit, ordered logit and multinomial logit), focusing on how the models are interpreted, as well as the statistical basics of these methods
4. understand the basic problems of causal inference in social sciences.
5. have knowledge of different research traditions within quantitative social sciences

Skills and competence:

6. the student will independently be able to perform, present and interpret results for advanced linear model applications
7. independently be able to perform, present and interpret the results for linear model extensions
8. independently be able to perform, present and interpret results for discrete outcomes models.
9. practically as well as theoretically analyze model specification and functional form, and address potential problems and sources of error, be able to compare and evaluate different regression models.

Values and approaches: the student is able to

10. assess and critically evaluate the results of published quantitative analyzes in social science research based on the methods discussed in the course
11. understand which methods are appropriate as well as unfit to use, given data, dependent variables and questions.

Table 1. Expected learning outcomes by assignment.

	ass 1	ass 2	ass 3	ass 4	ass 5	ass 6
1. Knowledge - linear model applications	X		X			
2. Knowledge - linear model extensions (multilevel, panel)		X				
3. Knowledge - discrete outcome models				X	X	
4. Understand causal inference						X
5. Knowledge research traditions			X	X		X
6. Perform, present and interpret - linear model applications	X		X			
7. Perform, present and interpret - linear model extensions (multilevel, panel)		X				
8. Perform, present and interpret - discrete outcome models				X	X	
9. Model specification and evaluation	X		X	X		
10. Assess evaluate published studies		X				
11. Understand feasibility (RQ, data, depvar)		X	X	X		

References

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NB! All links provided requires a connection via the Stockholm university domain.