Intermediate Social Statistics
Hilary 2012

Topics to be covered:

Research Design and Measurement
Binary logit and probit
Binary Logit and Probit Models: Extensions and Applications
Ordered Logit/Probit
Multinomial logit/probit
Duration Models
Introduction to Time Series
Introduction to Maximum Likelihood Estimation (MLE)

Course description

The course provides students with multi-variate analysis skills that build on the introduction to statistics course. Students are expected to have a familiarity with ordinary least squares regression methods. The course is designed to provide students with the essential statistical tools for conducting research and for intelligently consuming published research in the social sciences. The course will first provide students with an overview of research design and measurement techniques. This will then be followed by a series of lectures on the estimation methods employed for equations with limited-dependent variables –for example, probit and logit. Each of the week lectures is accompanied by a set of practical exercises that are described in the lecture, covered in the classes, and then included in the homework assignments. One of the week lectures will cover time series analysis. And concluding lecture provides students with the intuition regarding maximum likelihood estimation that is the foundation for the various estimators covered in each of the weekly lectures.

Course structure

There will be a two-hour lecture on Tuesday 2-4 pm in the IT room in the Manor Road Building every week during Hilary term. These lectures are accompanied by four classes where the practical aspects of the models discussed in the lecture will be taken up. Classes are tentatively scheduled to be run on Thursday of weeks 3, 4, 6 and 8 in the Manor Road Building IT room from 4-6pm – although this is subject to confirmation.

Topics to be covered:

Week 1: Research Design and Measurement

- Kellstedt and Whitten: Chapters 4 and 5.

Additional Readings

- Joshua D. Angrist and Jörn-Steffen Pischke. The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics

Week 2: Binary Logit and Probit

- John Aldrich & Forrest Nelson, *Logit and Probit Models*, Sage, 1985.
- Long, J. Scott. 1997 Regression Models for Categorical and Limited Dependent Variables. Chapter 3 and 4.
- Long, J.S. and Freese, J. (2006) *Regression models for categorical dependent variables using Stata.* Stata Press. Chapter 4.

Week 3: Binary Logit and Probit: Extensions and Applications

- John Aldrich & Forrest Nelson, *Logit and Probit Models*, Sage, 1985.
- Long, J. Scott. 1997 Regression Models for Categorical and Limited Dependent Variables. Chapter 3 and 4.
- Long, J.S. and Freese, J. (2006) *Regression models for categorical dependent variables using Stata.* Stata Press. Chapter 4.

Week 4: Ordered Logit/Probit

- Long, J.S. (1997) *Regression models for categorical and limited dependent variables.* Sage. Chapter 5.
- Long, J.S. and Freese, J. (2006) *Regression models for categorical dependent variables using Stata.* Stata Press. Chapter 5.

Week 5: Multinomial Logit/Probit

- Long, J.S. (1997) *Regression models for categorical and limited dependent variables.* Sage. Chapter 6.
- Long, J.S. and Freese, J. (2006) *Regression models for categorical dependent variables using Stata.* Stata Press. Chapter 6.

Week 6: Duration Models

- Cleeves, M., Gould, W., and Gutierrez, R. (2002) *An introduction to survival analysis using Stata.* Stata Press.

- Cox, D.R. and Oakes, D. (1996) *Analysis of survival data.* Chapman & Hall.

Week 7: Introduction to Time Series

- Kellstedt and Whitten: pp 233-242.
- Damodar Gujarati, *Basic Econometrics*, McGraw-Hill, 4th ed., 2002. Chapters 12 and 17; 12-22.

Week 8: Introduction to Maximum Likelihood Estimation (MLE)

- Eliason, S. (1993) *Maximum likelihood estimation: logic and practice*. Sage.

- Long, J.S. (1997) *Regression models for categorical and limited dependent variables.* Sage. Chapter 2.

Assessment

For those who are taking this course for credit, your grade will be based on three weekly assignments. Your homework assignments should be handed into your class instructors at the date indicated on each of the weekly assignments. In the homework, you will be expected to demonstrate skill in the application of, and ability to evaluate critically, the models and methods discussed in both the lectures and classes. There will also be a final take home exam that will be due in Week 9 (subject to confirmation).

Principal Texts:

J Scott Long. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Sage.

J Scott Long and Jeremy Freese. 2006. *Regression Models for Categorical Dependent Variables Using Stata*. Stata Press.

Paul M. Kellstedt and Guy D. Whitten. 2009. The Fundamentals of Political Science Research. Cambridge University Press.

John Aldrich & Forrest Nelson, *Logit and Probit Models*, Sage, 1985.

Eliason, S. (1993) *Maximum likelihood estimation: logic and practice*. Sage.

Cleeves, M., Gould, W., and Gutierrez, R. (2002) *An introduction to survival analysis using Stata.* Stata Press.