

**Intermediate Social Statistics
Hilary 2010
DRAFT Course Outline**

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Lecture Topics

Introduction to Maximum Likelihood Estimation (MLE)
MLE and the Linear Model
Binary logit and probit
Binary Logit and Probit Models: Extensions and Applications
Ordered Logit/Probit
Multinomial logit/probit
Event Count Models
Duration Models

Course structure

There will be a two hour lecture on Tuesday 2-4 pm in Seminar Room D 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 will be run by Michelle Jackson and Kremen Kalkan on Thursdays of weeks 3, 5, 6 and 8 in the Manor Road Building IT room from 4-6pm.

Topics covered each week

Week Topic

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|---|--|
| 1 | Introduction to MLE

Long, J. Scott 1997, Chapters 1-2 |
| 2 | MLE and the Linear Model

Long, J. Scott 1997, Chapters 1-2 |
| 3 | <i>Binary logit and probit models</i>

This week reviews regression models for binary dependent variables such as yes/no or voted/abstained.

Long, J. Scott. 1997 Regression Models for Categorical and Limited |

Dependent Variables. Chapter 3 and 4.

4 Binary logit and probit models extensions and applications

5 *Ordered logit/ probit*

These models are for ordered categorical variables, e.g. survey questions where there are ordered categories such as strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

6 Long, J. Scott. 1997 Regression Models for Categorical and Limited Dependent Variables. Chapter 5 and 6

Multinomial logit/ probit

These models are for categorical variables that are not ordered, e.g. survey questions where there are categories such as vote Labour, Conservative or LibDem.

7 Long, J. Scott. 1997 Regression Models for Categorical and Limited Dependent Variables. Chapter 5 and 6

Event count models

Models for count data are used for relatively infrequent events, with say an average between 0 and 7 (e.g. the number of presidential vetoes in a year).

Long, J. Scott. 1997 Regression Models for Categorical and Limited Dependent Variables. Chapter 8; and TBA

8 *Duration Models*

Duration Data Analysis. Survival and Hazard Rate Models.

Box-Steffensmeier, Janet M., and Christopher Zorn. 2002. Duration models for repeated events. *Journal of Politics* 64:1069–94; and TBA

Assessment

For those who are taking this course for credit, your grade will be based on four 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 take home exam that will be due in Week 9.

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.

Other Readings

- John Aldrich. 1984. *LPM, Logit, and Probit*. Sage.
- Vani Kant Borooah. 2001. *Logit and Probit: Ordered and Multinomial Models*. Sage.
- Dayton, Mitchell C. 1999. *Latent Class Scaling Analysis*. Sage.
- John Fox. 1991. *Regression Diagnostics*. Sage.
- John Fox. 1997. *Applied Regression Analysis, Linear Models, and Related Methods*. Sage.
- Thomas H. Wonnacott and Ronald J. Wonnacott. 1990. *Introductory Statistics*. Wiley.