Course Description

This is the second of the three-course sequence in political methodology. As such, it picks up where POL 211 left off, namely with consideration of the linear regression model and extensions of the model. The class will be a mixture of mathematical topics, for example matrix manipulation of statistical quantities and writing functions using R, and applied topics, for example estimating and interpreting several different kinds of models.

Course Requirements

There are a variety of readings assignments the student will be expected to complete in a timely fashion. Additionally there will be several problem sets assigned during the course of the quarter, a midterm and final exam, and a poster session in which the student will present his or her research. In most of the lectures and in most applications I illustrate, I will use the R computing environment. For your problem sets, in most cases, you will be instructed to use R. As far as your grade break-down goes, problem sets will account for 40 percent of your total grade; the exams will account for 40 percent of your total grade (20 percent each); and the poster will account for 20 percent of your final grade. More on the poster session and the write-up of the poster will be given in class.

Readings

The primary books we will use in this class are:

Fox’s *Applied Regression Analysis and Generalized Linear Models*. Los Angeles: Sage. (Denoted below as Fox1.)

*An R and S-Plus Companion to Applied Regression*. Los Angeles: Sage. (Denoted below as Fox2.)

In addition to these books, some articles will be assigned. Most of these articles will be available on JStor (www.jstor.org).

Course Itinerary

Jan. 5    Preliminaries and Basic Statistics Review  
Readings:  
Fox1, Chapter 1, Chapter 14.  
Fox, Chapter 14.

Jan. 12   Naive Nonparametric Regression and the Ordinary Least Squares Approach  
Readings:  
Fox1, Chapters 2–3, 5.  
Fox2, Chapter 4.  
Verzani, Chapters 4 and 10.

Jan. 19   Inference and the Linear Model  
Readings:  
Fox1, Chapters 6 and 9-10.  
Verzani, Chapters 8-9.

Jan. 26   Assumptions (?) and Diagnostic Methods for the Linear Model  
Readings:  
Fox1, Chapters 11-13.  
Fox2, Chapter 6.

Feb. 2    Post-Estimation Uncertainty  
Readings:  
Fox1, Chapter 21. TBA

Feb. 9    Functional form and multiplicative regression  
Readings:  
Fox1, Chapter 4, 17.  
Fox2, Chapter 3.

Feb. 16   Instrumental Variables Regression  
Readings:  
Cameron and Trivedi, Chapter 25 (photocopy available)  
Other readings will be posted.

Feb. 23   Models for Missing Data, Truncation and Selection  
Readings:  
Fox1, Chapter 20
March 2  Nonparametric Regression  
Readings:  
Fox1, Chapter 18

March 9  Introduction to Causal Inference and Matching  
Readings:  
TBA