PSC 8185: LONGITUDINAL DATA ANALYSIS

Department of Political Science ● George Washington University
Fall 2011 ● Mondays, 3:30 – 5:30pm ● Monroe Hall B36

Professor Brandon Bartels       E-mail:  bartels@gwu.edu
Office:  Monroe 476      Phone:  642-1459
Office hours:  Open-door policy for graduate students

COURSE DESCRIPTION

This is an advanced political methodology course for Ph.D. students. The course is sort of a hybrid that covers two classes of models for longitudinal data: (1) models for time-series cross-sectional (TSCS) and panel data; and (2) event history (aka, duration, survival, hazard) modeling. Students are expected to have had courses in intro statistics and linear regression. It would be beneficial, but not essential, to have taken a maximum likelihood course.

First, for TSCS and panel data, we will examine data that consist of subjects (e.g., countries or individuals) tracked over a number of years. While panel and TSCS data possess the same inherent structure, we will review the subtle differences between the two and the different methodological considerations at play. We will discuss the many approaches for analyzing these data that exist in political science and beyond. We will hone in on topics such as pooling, unobserved heterogeneity, causal heterogeneity, fixed effects, random effects, random coefficient models, and so forth. The course has a slight bias toward TSCS data over panel data because of the prevalence of debates in comparative politics and international relations about how to model TSCS data.

Event history data is longitudinal in the sense that one examines factors that influence the amount of time it takes for an event to occur. Event history modeling is concerned with explaining the timing of events—when events will occur. Some of the issues relevant in panel and TSCS data are also relevant for event history analysis. We will discuss issues such as parametric versus semi-parametric models, discrete-time versus continuous-time models, proportional hazards, duration dependence, unobserved heterogeneity, competing risks, and repeated events.

REQUIRED TEXT

RECOMMENDED TEXTS


SOFTWARE
We will rely primarily on Stata. We can also draw comparisons with other software if there is demand. But Stata can handle all of the models we will discuss during the semester.
LEARNING OUTCOMES:
As a result of completing this course, students will:
1. Possess a comprehensive understanding of the methodological issues surrounding panel, TSCS, and event history data.
2. Be prudent methodological consumers and practitioners when it comes to interpreting and applying these types of models.
3. Be able to write a paper—using the methods discussed in class—capable of being published in a professional journal.
4. Be able to write a dissertation chapter using the methods discussed in class.

GRADING
1. Class attendance and participation (50 points): Students are expected to complete all of the assigned readings and to have thought about those readings, to attend each class, and to participate in class sessions. For each week, there are “application articles,” which will serve as the basis of class discussion for a portion of the class.

2. Class presentation (50 points): Each student will give a brief presentation to the class on an article related to class, preferably one in which you have a particular interest. Students can present on an application article or on a methodological article that explores an advanced topic. Please consult with me about the article or reading you would like to present on. I would like these presentations to commence around week 2 or 3. I would like to spread them out throughout the semester so please let me know your topic as soon as you can so that I can plan accordingly.

3. Problem sets (100 points each; 400 points total): There will be four problem sets assigned throughout the semester. Each problem set will require you to demonstrate your understanding of the material and the ability to make appropriate interpretations.

   Problem Set 1: Friday, Sept. 30
   Problem Set 2: Friday, Oct. 21
   Problem Set 3: Friday, Nov. 18
   Problem Set 4: TBA (Finals Week)

Important notes on problem sets:
• You will email your assignments to me. I’ll give further instructions later.
• Feel free to work with your classmates on the problem sets. Collaboration can be beneficial for mastering the material. However, you must do your own work. That is, while you can work together, the final product that you hand in must be your own work.

CLASS POLICIES
University Policy on Religious Holidays:
1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance;
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations;
3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities

ACADEMIC INTEGRITY
I personally support the GW Code of Academic Integrity. It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: http://www.gwu.edu/~ntegrity/code.html

SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM

DISABILITY SUPPORT SERVICES (DSS)
Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: http://gwired.gwu.edu/dss/

UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300
The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:
- crisis and emergency mental health consultations
- confidential assessment, counseling services (individual and small group), and referrals
  http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices

SECURITY
In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

COURSE SCHEDULE (Subject to change)

Part I: Panel and TSCS Data
1. Aug. 29: Introduction to the Analysis of Longitudinal Data

  ** No class on Monday, Sept. 5 (Labor Day)

2. Sept. 12: The Original Beck and Katz Approach to TSCS Data


    Application articles:


3. **Sept. 19: The Fixed Effects Approach**


*Application articles:*


4. **Sept. 26: The Random Effects Approach; Fixed versus Random Effects**


*Application articles:*


5. **Oct. 3: Fixed versus Random Effects; Modeling Dynamics in Panel and TSCS Data**


Review Wilson and Butler (2007)

*Application articles:*


6. **Oct. 10: More on Dynamics; Additional Model Specifications**


7. **Oct. 17:** More on Additional Model Specification; Post-Estimation Procedures for Enhancing Substantive Interpretation


**Part II: Event History Modeling**

8. **Oct. 24:** The Nuts and Bolts of Event History Analysis

   Box-Steinensmeier and Jones, Chapters 1-2

9. **Oct. 31:** Parametric Models

   Box-Steinensmeier and Jones, Chapter 3

   *Application articles:*


10. **Nov. 7**: *The Semi-Parametric Approach: The Cox Model*

Box-Steffensmeier and Jones, Chapter 4

*Application articles:*


11. **Nov. 14**: *Discrete-Time versus Continuous-Time Models*

Box-Steffensmeier and Jones, Chapters 5-6


12. **Nov. 21**: *Time-Varying Covariates, Model Selection, Diagnostics*

Box-Steffensmeier and Jones, Chapters 7-8


13. **Nov. 28**: *Heterogeneity*

Box-Steffensmeier and Jones, Chapters 9


*Application articles:*


14. **Dec. 5: Multiple Events and Competing Risks**

Box-Steffensmeier and Jones, Chapter 10


*Application articles:*


**ADDITIONAL RECOMMENDED READINGS**

*Models for Panel and TSCS Data*


*Event History Modeling*


