EDUC-771: Topics - Panel Data and Event History Methods
Fall 2023

Instructor: Brian McCall

Optional Texts:


Other Texts:


Learning Objectives:

By the end of the course students will have:

• gained knowledge of statistical methods for panel data and event history methods.
• gained the ability to critically assess government and academic reports and research articles that employ such methods.
• learned the R commands to be able to estimate such models and perform various statistical tests with such models.
• be able to use these methods to conduct their own research.

Course Grading:

A student’s grade will consist of their performance in three areas: class participation, homework, and the group research project.

The relative breakdown of each of these areas in determining a student’s overall grade is as follows.

• 10% Class Participation
  o Class participation includes attending class and actively participating in all discussions, activities, etc. during class
  o At the end of the semester, each student will write a brief summary of their participation activities during the semester.

• 30% Homework
  o Homework assignments must be turned in on the day that they are due. Late homework assignments will receive a 10% reduction.

• 20% Article Presentation
  o Each individual will make a 20-minute presentation of a research article that employs the statistical methods discussed in class. Articles can be chosen either from the reading list or, subject to approval by the instructor, elsewhere. More information about the research project will be given later in the semester.

• 40% Research Project
  o The research project is a semester-long project that will result in a research paper.
  o One-third of the grade is determined by a 30-minute presentation, while two-thirds of the grade is determined by an approximately 20-page paper.
  o The presentations will take place on the last day of class (December 4, 2023), and the final paper will be due December 11, 2023.
  o More information about the research project will be given later in the semester.
Software:

There are several statistical software programs, e.g., R, SAS, SPSS, and Stata. For this class, we will use R. R is a good software program for advanced statistical methods and its free!

canvas:

Much of the communications for this course will be through a canvas worksite. This site includes:

- An electronic form of the syllabus.
- Chat room for discussions on difficult topics.
- Homework and Other Assignments.
- Additional Reading Material and PowerPoint slides used in the lecture.
- Datasets.
- General Announcements.

Data Sets Used in Class:

In this class, many of the exercises in the homework as well as the group project will come from various data sets that are widely used in educational research.

Education Longitudinal Study of 2002 (ELS) conducted by the National Center for Education Statistics.

High School Longitudinal Study of 2009 (HSLS) conducted by the National Center for Education Statistics.


Integrated Postsecondary Education Data System (IPEDS) conducted by the National Center for Education Statistics.

Panel Study of Income Dynamics (PSID) conducted by the Institute for Social Research (ISR).

British Household Panel Survey (BHPS) conducted by the ESRC UK Longitudinal Studies Centre with the Institute for Social and Economic Research at the University of Essex.
Course Topics

Review of Discrete Choice Models:
- Overview of Dichotomous Choice Models
- Maximum Likelihood Estimation
  - Logit/Probit Models
  - Estimating Logit/Probit Models with Stata
- Overview of Multinomial Choice Models
  - Multinomial Logit
  - Estimating Multinomial Logits with Stata

Panel Data Models:
- Working with and Preparing Panel Data
- Random Effects Linear Regression Models
- Fixed Effects Linear Regression Models
- Panel Data Models with Endogenous Regressors
- Dynamic Panel Data Models
- Panel Data Ordinal and Count Models
- Difference in Differences Estimation
- Event Study Models

Event History Analysis:
- Introduction to Event History Analysis
- Why do Event History Analysis
  - Terminology of Event History Analysis
- Single Spell Events
  - Continuous-time data
    - Parametric Methods
      - Adding Time-Constant Regressors
    - Non-parametric Methods
    - Cox regression
    - Adding Time-Varying Regressors
      - Models with Time-varying Coefficients
    - Models with Unobserved Heterogeneity
    - Specification tests

If you feel you need an accommodation for any sort of disability, please make an appointment to see me during my office hours.

***Please turn cell phones off before entering the class***
• Competing Risks Models

• Discrete-time data
  • Parametric Methods
  • Flexible Methods
  • Models with Unobserved Heterogeneity
  • Multiple Spell Duration Models with Fixed and Random Effects

Additional Readings on Panel Data
(*) Indicates papers I will discuss in class


**Additional Readings on Event History Analysis**


