

POLS 7014: Intermediate Political Methodology

Spring 2023

Instructor

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Office Hours: Tuesday 1:30–3:00 PM
and by appointment

Class Schedule

Wednesday 3:55–6:40 PM
Candler Hall 214

Introduction

This course is the third course in the graduate methods sequence. This course will focus on a particular statistical model used throughout the social sciences — the linear regression model. We will learn how to estimate the linear regression model and perform inference with it. We will learn how to identify and resolve potential problems common when estimating linear regression models. Finally, we will learn about a few models that extend beyond the standard linear regression model.

In addition to these statistical issues, we will also discuss how the results of regression analysis should be presented. We will practice both writing about regression analysis and presenting the results of regression analysis via tables and graphs.

Requirements and Evaluation

The main requirements of the course are to attend class, keep up with the readings, turn the homework assignments in on time, and ask lots of questions. We will attempt to cover a great deal of technical materials during the semester and will go as quickly or as slowly as is necessary to adequately cover the material.

Evaluation for the course will be based on homework assignments, a mid-term exam and a final exam. There will be between 8 and 10 homework assignments due during the semester. The assignments will be a combination of analytical problems, computer-generated graphs, and written essays and research notes. I encourage students to work together on assignments, but students must write up the assignments on their own. Late assignments will not be accepted unless prior arrangements have been made. Homework assignments will count for 40% of the final grade. The mid-term exam will count for 25% of the final grade. The final exam will count for the remaining 35% of the final grade. If you think you may miss an exam I need to know immediately.

Readings and Software

Required Texts

There are two required texts for this course. The first is a very good applied regression textbook and will be used extensively throughout the course:

Fox, John. 2016. *Applied Regression Analysis and Generalized Linear Models, 3rd edition*. Thousand Oaks, CA: Sage Publications. (ISBN 978-1-4522-0566-3).

The second is a companion book to the main textbook that focuses on using R to perform statistical analysis:

Fox, John and Sanford Weisberg. 2019. *An R Companion to Applied Regression, 3rd edition*. Thousand Oaks, CA: Sage Publications. (ISBN 978-1-5443-3647-3).

Supplemental Texts

There are a number of additional books that you may find useful throughout the class. The first is the undergrad text that I have used to teach undergraduate stats courses in the past. It does a good covers many of the methods used in political science research. It is a nice reference to have on the shelf.

Agresti, Alan, and Barbara Finlay. *Statistical Methods for the Social Sciences*, any edition. Upper Saddle River, NJ: Prentice Hall.

Some of my colleagues love this boo and use it in their undergraduate statistics courses. It is more advanced than Agestri and Finlay and use R throughout the text.

Imai, Kosuke. 2017. *Quantitative Social Science: An Introduction*. Princeton, NJ: Princeton University Press.

There are many alternative statistics textbooks which you may want to make use of during the semester. If you are struggling to learn a concept in one textbook, reading about the same concept in a different textbook may quickly clear things up. Here is one that I find to be useful. There are many other books out there and I would be happy to recommend more supplemental texts, if you are interested.

Kennedy, Peter. *A Guide to Econometrics*.

Software

Becoming comfortable with statistical software is an important part of this course. I use R and will teach this course using R. While you are welcome to complete your homework assignments in any statistical package with which you are comfortable, I encourage you to use R in this course. R is a very good statistical software package that is available for free at www.r-project.org. The Fox R companion text we will be using for class is a great introduction to the software. Perhaps the more important reason for you to use R is that homework assignments for the course are likely to closely mirror the exercises and examples in Fox's R companion book.

Additional Readings

There are a few additional readings for the course. You will either receive a copy of these readings from me or a copy will be easily accessible on the internet.

Other Issues (in no particular order) Other Issues (in no particular order)

1. **Disabilities:** Students with disabilities of any kind are strongly encouraged to tell me at the beginning of the semester, so appropriate accommodations can be made. If you plan to request accommodations for a disability, please register with the Disability Resource Center. They can be reached by visiting Clark Howell Hall, calling 706-542-8719 (voice) or 706-542-8778 (TTY), or by visiting <http://drc.uga.edu>.
2. **Instructor Availability:** I am available to meet with students by appointment if anyone cannot attend my posted office hours. Please email me to schedule a meeting.
3. **Classroom Behavior:** Students should behave professionally throughout the course. Disruptive behavior in discussion sections will not be tolerated. Laptops and other electronic may be used to take notes in class, but not in a way that is disruptive to other students.

UGA is committed to creating a dynamic, diverse, and welcoming learning environment for all students and has a non-discrimination policy that reflects this philosophy. Our class will respect all students regardless of race, color, sex (including sexual harassment and pregnancy), sexual orientation, gender identity, ethnicity or national origin, religion, age, genetic information, disability, or veteran status.

4. **Cheating and Plagiarism:** All course work must meet the standards put forth in the University of Georgia's Student Honor Code. See the Academic Honesty Policy for details on what is expected of you.
5. **FERPA Notice:** The Federal Family Educational Rights and Privacy Act (FERPA) grants students certain information privacy rights. See the registrar's explanation at reg.uga.edu/general-information/ferpa/.
6. **Mental Health and Wellness Resources:** If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of

Student Affairs at 706-542-7774 or visit <https://sco.uga.edu/>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.

UGA has several resources for a student seeking mental health services (<https://www.uhs.uga.edu/bewelluga/bewelluga>) or crisis support (<https://www.uhs.uga.edu/info/emergencies>).

If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA for a list of free workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.

Additional resources can be accessed through the UGA App.

7. **Artificial Intelligence-Based Software:** Artificial intelligence-based technologies, such as ChatGPT, must not be used to generate responses for course assignments.

Tentative Course and Topics Schedule

January 12

Introduction to Inference

Berry, Donald A. and LeeAnn Chastain. 2004. "Inferences about Testosterone Abuse among Athletes." *Chance* 17(2): 5-8.

Bailey, Michael. 2012. *Real Stats: Experiments, Data, Policy, Politics, and Law*. Chapter 2 and 3.

January 19

Inference and Significance Testing

Agresti and Finlay (1997) Chapters 4-6.

January 26

Examining Data/ R Refresher

Fox (2016) Chapters 2-3

Fox and Weisberg (2019) Chapters 1-3.3, 9

King, Gary. 1991. "On Political Methodology." Sections 1-3. *Political Analysis*. 2:1-30. (gking.harvard.edu/files/polmeth.pdf)

Healy, Kieran and James Moody. 2014. "Data Visualization in Sociology." *Annual Review of Sociology* 40:105-128.

February 2

Linear Regression

Fox (2016) Chapters 5.1, 6.1

Fox and Weisberg (2019) Chapters 4.1-4.2

February 9

Multiple Regression

Fox (2016) Chapters 5.2, 6.2-6.4

Fox and Weisberg (2019) Chapters 4.1.-4.9

February 16

Dummy-Variables

Fox (2016) Chapter 7

February 23

Introduction to Interactive Terms

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis*. 14:63-82.

March 2

Midterm Exam

March 9

Spring Break-No Class

March 16

Assumptions of OLS/Transformations

Fox (2016) Chapter 4

Fox and Weisberg (2019) Chapter 3.4

Berry, William D. 1993. *Understanding Regression Assumptions*. Newbury Park, CA: Sage Publications. pp. 1-12.

March 23

Fox (2016) Chapter 9

Linear Models in Matrix Form

March 30

Fox (2016) Chapter 11

Fox and Weisberg (2019) 8.1–8.3

Kahn, Joan R. and J. Richard Udry. 1986. “Marital Coital Frequency: Unnoticed Outliers and Unspecified Interactions Lead to Erroneous Conclusions.” *American Sociological Review*. 51(5): 734-737.

Influential Data

April 6

Fox (2016) Chapter 12

Fox and Weisberg (2019) 8.4–8.6

Nonlinearity

April 13

MPSA-No Class

April 20

Fox (2016) Chapter 13 and 16

Fox and Weisberg (2019) 8.8–8.9

Collinearity and Time Series

April 27

Fox (2016) Chapter 14

Fox and Weisberg (2019) 6.1–6.4

Logistic Regression and Review

May 9 (3:30PM-6:30PM)

Final Exam