SOCY-6111: Data II
Fall Semester 2018

Classroom: Ketchum Hall 1B40 Class Meeting: F, 9:00-11:30am

Instructor: Ryan K. Masters
Office: Ketchum Hall 264
Office Hours: MW, 11:15-1:00pm. Also by appointment.
Stata Office Hours (i.e., "Lab"): Fridays, 2:00-3:30pm, Ketchum Hall 1B24
Email: ryan.masters@colorado.edu

Course Overview

This course is intended to develop your understanding and use of statistical techniques for answering sociological questions. The course has two general aims:

(1) Expand your understanding of statistical techniques for sociological inquiry.
(2) Develop efficient and sound use of Stata for quantitative analyses of sociological questions.

Overall, my hope is for you to develop understandings of quantitative thinking, learn skills necessary to effectively describe and analyze quantitative data, and adopt a critical approach when reading and assessing others' empirical claims.

Statistics

The core of this course will be devoted to expanding your understanding and use of statistical techniques. I will review ordinary least squares (OLS) and maximum likelihood estimation (MLE), as well as introduce you to a few extensions of generalized linear models (GLM). We will also cover issues related to measurement, model building, interpretation of results, collinearity, omitted variable bias, other violations of B.L.U.E., two-way effects, and other important considerations in quantitative research.

Computer Programming

Statistical analyses in the social sciences are now entirely performed by computer programs. Gone are the days of hand computations, bean counting, and clunky card-reading machines. Thus, this course will feature a heavy dose of statistical analyses using Stata programming as well as interpreting Stata-generated output. All Stata scripts will be provided so that you can load, edit, and analyze raw data on your own time/terms. I strongly encourage to work with one another when practicing Stata, and I also strongly urge you to attend Stata Labs.

Optional Stata lab/office hours will be a central component of Data II.

Course Meetings

Class:	Fridays, 9:00-11:30am	Ketchum Hall 1B40
Optional Stata Lab:	Fridays, 2:00- 3:30 pm	Ketchum Hall 1B24 (Bring your laptop!)

Course Material

Applied Regression: An Introduction. Sage Series: Quantitative Applications in the Social Sciences. By Colin Lewis-Black and Michael Lewis-Black. Purchase online: https://us.sagepub.com/en-us/nam/applied-regression/book244616
Referred to as "LB" on D2L.

Understanding Regression Assumptions. Sage Series: Quantitative Applications in the Social Sciences. By William D. Berry. Purchase online: http://www.sagepub.com/books/Book3056?seriesId=Series486&sortBy=defaultPubDate+desc&rows=50&pager.offset=50&fs=1
Referred to as "Berry" on D2L.

Logistic Regression: A Primer. Sage Series: Quantitative Applications in the Social Sciences. By Fred Pampel. Purchase online: http://www.sagepub.com/books/Book10146?seriesId=Series486&rows=50&sortBy=defaultPubDate%20desc&fs=1#tabview=toc
Referred to as "Pampel" on D2L

Online Readings: I will post weekly readings and Stata material to D2L.

Recommended Texts:

Counterfactuals and Causal Inference: Methods and Principles for Social Research. By Stephen L. Morgan and Christopher Winship. Referred to as "M&W" in the schedule. Either 1st or 2nd Edition is fine.
http://www.cambridge.org/us/academic/subjects/sociology/sociology-general-interest/counterfactuals-and-causal-inference-methods-and-principles-social-research

Regression: A Second Course in Statistics. By Thomas H. Wonnacott and Ronald J. Wonnacott.
http://www.amazon.com/Regression-A-Second-Course-Statistics/dp/0898749700

A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences. By Gary Goertz and James Mahoney.
http://press.princeton.edu/titles/9898.html

Course Requirements and Assessment
There will be 300 possible points in this course, broken down as follows:

Assessment	Points
Homework Assignments (5)	100 (20 points each)
Midterm (in-class)	100
Final (take-home)	100

POLICIES & ACCOMMODATIONS

Accommodations

1. Appropriate academic accommodations will be provided to students with disabilities. Please contact the Disability Services office located in Center for Community as soon as possible to obtain documentation: N200 (303-492-8671) http://disabilityservices.colorado.edu/ . Guidelines for addressing temporary medical conditions and/or injuries can be found at http://disabilityservices.colorado.edu/general-information/temporary-injuries
2. The University of Colorado at Boulder has both legal and moral obligations to accommodate students who choose to abstain from classes and/or miss scheduled examinations in order to observe holidays. If you plan to be absent from class to observe a holiday, please notify me of any scheduling conflicts by September 15.

Course Expectations and Honor Code

1. I expect academic integrity (and the university requires it!). While I encourage you to collaborate with one another on exercises, support each other in studying, and edit each other's work, you are expected to turn in original work and complete all exams on your own. Students caught cheating will be reported to the Honor Code Council, and will also have their course grade justly penalized. Information about the Honor Code can be found at http://www.colorado.edu/policies/student-honor-code-policy
2. Every homework assignment shall be turned in during the first five minutes of class on the scheduled due date. All assignments turned in after this time on the same day or emailed on the due date will be punished two points. Please type your homework assignments, exams, and papers.

3. Please know that the syllabus and course schedule are not set in stone. I reserve the right to change the basic course requirements, due dates, and overall content and schedule with adequate notice to students via D2L, class announcements, and/or email.

Classroom Etiquette

Please refrain from conversing with your neighbors during class. This can be quite disruptive to fellow students around you.

Laptops are not needed in class, but please bring one to the Stata Lab if attending.

Turn off all cell phones before class begins.

You and I both have the responsibility for maintaining a professional learning environment. Those who fail to adhere to basic modicum of adult behavior may be subject to discipline. Please be courteous and sensitive to alternative perspectives, especially when dealing with topics pertaining to race, culture, religion, sexuality, political ideology, nationality, gender identity & expression, age, and disability.

Please know that the University provides me a class roster containing your picture and legal name as it's listed in the Registrar's Office. I will happily honor a request to remove your picture and/or address you by an alternative name if you like. Please notify me early in the semester and be patient with me as I am terrible with names.

Email Policy

Please include "6111" in the subject line of all course-related emails to flag your email. I will be more likely to respond to these emails more quickly.

Respect, Discrimination, and/or Harassment

Please respect your classmates. Topics discussed in class may be interpreted as contentious by some, and I would like everyone to feel comfortable enough to freely and openly participate. I will do my best to present the material and discuss the topics in an open and inclusive manner.

Fall 2018 Data II Schedule

August 31
Syllabus, Course Overview, and Expectations: What you Know and What We'll Cover

31 Lab
Stata Basics 1: Loading and Cleaning Data, Labeling and Editing Measures

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September 7
Regression Models and Measurement: Means, Covariance, and "Error"
Readings: L-B & L-B 1-22

7 Lab
OLS and Observational Data: Berkeley Admissions Example

September 14
Review of OLS and B.L.U.E.
Readings: L-B & L-B 23-52; Berry 1-18

14 Lab
OLS and Coefficients: Interpreting Xs and Ys and Model Output

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September 21
Violations of B.L.U.E. and Estimators: Unbiasedness, Efficiency, and Consistency.
Readings: L-B & L-B 55-95; Berry 18-57

21 Lab
Relaxing OLS Assumptions I

September 28
Violations of B.L.U.E. and Model Diagnostics
Homework #1
Readings: Berry 67-83

28 Lab
Relaxing OLS Assumptions II

October 5 CLASS CANCELED (IAPHS Annual Meeting)

5 LAB CANCELED (IAPHS Annual Meeting)

October 12
Regression Estimators of Causal Effects: Multivariate OLS and Identification
Homework #2 Due

12 Lab
Controls: Omitted Variable Bias

October 19
Model Building Using Regression
Homework #3

19 Lab
Mechanisms: Mediators and Moderators I

October 26
Advanced Model Fitting: Selection and Multiple Interactions

26 Lab
Advanced Model Fitting: Selection and Multiple Interactions

November 2
********** MIDTERM **********

NO LAB

November 9
Categorical Data Analysis I: Contingency Tables, Odds, and Probabilities
Readings: Pampel 1-18

9 Lab
Contingency Tables: Odds and Probabilities

November 16
Categorical Data Analysis II: Maximum Likelihood Estimation and Logistic Regression
Pampel: 18-45

16 Lab
Logit Models: Fitting, Interpreting, and Presenting

November 23: CLASS CANCELED (Thanksgiving Holiday Break)

23 LAB CANCELED (Thanksgiving Holiday Break)

November 30
Categorical Data Analysis III: Model Fitting
Readings: Pampel 45-54
Final Assigned & Homework #4 Due

30 Lab
Logit Models II: OVB, Mediating and Moderating Associations

December 7
Categorical Data Analysis IV: Count Models
Homework #5 Due

7 Lab
Count Models

Final Due on December 15th