POL 3085: Quantitative Analysis in Political Science
Lab Syllabus

Fall 2019

TA:	Hannah McVeigh		
Email:	mcvei012@umn.edu		
Office Hours:	W 10:00 - 12:00, 1214 SS		
Lab:			
Section 002:	F 10:10 – 11:00	Section 003:	F 11:15 – 12:05
	Blegen 440		Blegen 440

Objectives: The lab sections are designed as a supplement to lecture and will focus on the practical application of quantitative data analysis. Using the open-source software R, students will learn how to summarize data, conduct basic analyses, present their results using both tables and graphs, and diagnose potential issues with the application of statistical models. The lab exercises will be structured to lead up to the final project so that will students have all the necessary skills to perform the analyses necessary for their final research paper.

Required: Students will need a USB/Google drive for lab. This will be used in **every** lab section throughout the semester. Students should contact the instructor immediately if there are extenuating circumstances that would prevent them from providing their own drive and arrangements will be made to provide them with one.

Personal Laptops: Students are encouraged to bring laptops to lab, but they are expected to be used for purposes relevant to that day's class. It is useful, but by no means necessary, to use a personal machine during lab to minimize the chance of work being lost. To install R and RStudio on your personal machine, follow the instructions in the document Downloading and Installing R on the Course Canvas page. If you do not have a personal computer, and need to work on R outside of lab, there are several open computer labs on campus that have the necessary software.

On-Campus Computer Labs with R and RStudio:

- Blegen Hall 440

- Coffman Memorial Union B60

- Walter Library 103

- Coffey Hall 50

- Learning and Environmental Sciences 220, 230

Lab Materials: R is only learned through working through and 'breaking' code. Successful R users must develop habits of precise, intentional, and annotated code. Therefore, each lab will consist of a brief introduction to the commands as well as time for students to apply the code for themselves.

For each lab, there will be (at least) three files you will need to download and save on your USB/Google drive:

- Lab Handout

- Example R Script

- Dataset (+ Codebooks)

The lab handouts detail the commands and packages used for the lab and walk through examples illustrating how to write and use the commands. At the end of each handout is an exercise directing students to use the commands to answer questions about the data. The example R script contains the code used in the examples within the handout. Primarily, it should be used to work through the examples and as a reference for writing R scripts. Finally, starting in lab 2, real datasets will be downloaded and referenced throughout lab. Students should make sure to download both the data file as well as the accompanying codebooks to answer questions about the data.

Lab Feedback: Each student is expected to complete every the lab exercise. The lab exercises will be graded for lab participation. However, due to the size of the class, only a random selection of labs will be graded each week. We will use a random number generator to select students the Monday following lab and will hand back the graded lab exercises the following Friday. These labs, combined with participation during lab sessions, will make up 120 points of the students' final grade.

Useful R References:

- Monogan, James E. III. "Political Analysis Using R." 2015. Springer. Available for free from library website.

- Wickham, Hadley and Garrett Grolemund. "R for Data Science." http://r4ds.had.co.nz/

- R package **swirl**

- Quick R website: http://www.statmethods.net/

- Interactive R Tutorial: http://tryr.codeschool.com/

- Stack Overflow for Troubleshooting: https://stackoverflow.com/questions/tagged/r

- Google + "in R"

Lab Plan:

Sept. 6   Intro to R and RStudio

Sept. 13   Data Introduction

Sept. 20   Recoding Variables

Sept. 27   Univariate Graphs and Descriptive Statistics

Oct. 4   Bivariate Graphs

Oct. 11   Transforming Variables

Oct. 18   Bivariate Statistics

Oct. 25   Check-In

Nov. 1   Bivariate Hypothesis Testing

Nov. 8   Bivariate Regression

Nov. 15   Multivariate Regression

Nov. 22   Assumptions of Regression

Dec. 6   Final Project Workshop