Introduction to the
R Statistical Computing Environment
Syllabus – Summer 2017
5.30–7.30pm Weekdays (June 27 – July 7)

Instructor:
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Course webpage: TBA

1 Overview
This is a course designed to introduce the R statistical environment. It will cover both basic and intermediate tasks social scientists frequently use. By the end of this class, students should be able to manipulate data, run statistical models, write preliminary programs, and produce high quality graphics in R.

The course will be mostly lectures. There will be one lab session each week to have a hands-on experience together. The plan is to solve exercises in R about the topics we cover in class.

2 Lectures and Lab Sessions
The lectures will be mostly applied. There will be examples and exercises during class. Students are more than welcome to bring their laptops to lectures and lab sessions to follow the materials. We may not have enough time to address all R problems students may encounter during lectures. Therefore, we will have two lab sessions, one per week. During these sessions, we will solve exercises together, and if you encounter any problems, we will try to address
them immediately. And, of course, students are more than welcome to stop by office hours or schedule an appointment in case they have questions.

There is no formal assessment in the course such as tests or quizzes.

3 Book

We will use one book in this course:


The book is available for purchase at the University of Michigan bookstore and Amazon. It is also available online through the University of Michigan Library. You will need your login ID and password provided by the ICPSR Summer Program to have access to the book. Since there may be limitations on the number of simultaneous access to the book, I strongly recommend that you have a personal copy of the book (e-book or softcover).

4 Script or Editor?

There are several ways of interacting with R. Some recommend that you use R with the RStudio editor. It is a powerful interactive development environment (IDE). It is free, too. This class will use the built-in R Script Editor to have a wider appeal. Students are more than welcome to use their editor of choice. Though, my help may be limited in the case of other editors.
5 Schedule

June 27  Introduction
Obtaining R, interface, packages

June 28  Data Manipulation
Reading in, recoding, and cleaning data

June 29  Descriptive Statistics
Central tendency, dispersion, bivariate tests

June 30  Lab Session I
Practice problems

July 3   Linear and Generalized Linear Models
Estimation and diagnostics

July 4   No class

July 5   Linear Algebra and Programming in R
Vectors, matrices, and preliminary programming

July 6   Additional Programming
Probability distributions, functions, and loops

July 7   Data Visualization
base, lattice and if time permits ggplot2
Lab Session II: Practice problems