

Statistics Bridge Introduction to R: Syllabus/schedule

August 6, 2019

Unless otherwise noted, modules are about 75 minutes long: 45 minutes for presentation, 20 minutes for breakout and 10 minutes for discussion of solutions.

- Monday – Intro to R
 - Module 0: Introduction, what is R, starting R, why R? why not R?
 - Module 1: Basics of R, with Rstudio
 - * R as a calculator
 - * helpful shortcuts: tab-complete, up arrow, Ctrl-{ up arrow }
 - * vectors and indexing and subset assignment
 - * some basic functions; help()
 - * vectorized calculations, comparisons
 - * basic R objects: vectors, matrices, dataframes, lists
 - * basic graphics
 - * breakout problems
 - Module 2: Managing R and your analyses
 - * managing R objects, the R workspace
 - * using packages (installing, loading, namespaces)
 - * the working directory and basic file reading/writing
 - * getting R help online
 - * breakout problems
- Tuesday – Working with data

- Module 3: Working with data
 - * dataframes/matrices
 - * attributes, missing values and factors
 - * subsetting
 - * strings
 - * dates and times
 - * simulation, sample()
 - * more on reading data
 - * breakout problems
- Wednesday - Programming
 - Module 4: Calculations
 - * vectorized calculations and efficiency
 - * apply, lapply
 - * tabulation, stratified analyses, aggregation, merging data
 - * breakout problems
 - Module 5: Programming in R
 - * loops, if-else
 - * writing your own functions, function arguments, functions as objects
 - * basic scoping and environments
 - * breakout problems
- Thursday – The tidyverse and analyses
 - Module 6: Data manipulation using the tidyverse
 - * stratified analyses: groupwise operations and split-apply-combine using dplyr
 - * reshaping and tidying data
 - * breakout problems/homework
 - Module 7: Data analysis
 - * regression, GLMs
 - * smoothing
 - * optimization
 - * breakout problems

- Friday - Graphics and wrap-up
 - Module 8: Graphics
 - * exporting graphics (vector/raster formats)
 - * lattice graphics
 - * ggplot2
 - * breakout problems