EDUC 263: Data Management and Manipulation in R

Software to install before first class meeting

Please skim through all of the instructions before getting start.

Note: R bootcamp (Step 5 below) walks you through installing R and RStudio if you would like to skip to that section for Steps 2 and 3.

1. Create a piazza account

- We will be conducting all class-related discussion on this platform instead of using CCLE.
- We have added your email to the Piazza site for this class.
- Course resources have not been posted. We will post more information as the quarter approaches
- If you did not receive an email invitation to join our class piazza page follow-up with me.

2. Install R

- Go to https://cran.r-project.org/
- Select "Download R for Windows"
  - Click "install R for the first time"
  - Click "Download R 3.6.1 for Windows"
- Select "Download R for (Mac) OS X"
  - Click "R-3.6.1.pkg"

3. Install RStudio

- Go to https://www.rstudio.com/products/rstudio/download/
- Select "RStudio 1.2.1335 - Windows 7+ (64-bit)" for Windows users
- Select "RStudio 1.2.1335 - macOS 10.12+ (64-bit)" for Mac users

4. Create R Markdown file that "knits" HTML document in RStudio

- What do we mean by this?
  - We will use R Markdown for lectures and turning in problem sets (homeworks).

  - R Markdown allows us to create documents in a variety of formats (HTML, pdf, word, etc.). For example, this document was created using R markdown (pdf).

  - Here is a link to more information on R Markdown outputs.

- Steps to follow to create R Markdown file that knits HTML document
  - Load RStudio

  - At the top left corner select "File" ->"New file" -> "R Markdown"

  - Select "HTML", title your markdown file (optional), and click "OK"

  - Now select the "Knit" tab (icon with blue yarn ball) or scroll down and "Knit to HTML"

  - Give your file a name and save (can delete later) in place that is easy to locate (Desktop, Dowonloads, etc.)

  - You should have a saved HTML file (extension .HTML) and an R markdown file (extension .Rmd)

5. Complete free R bootcamp tutorial here

- Follow the link and select "Try for free"
- Create an account
- This tutorial may take 2-4 hours
- We encourage you all to complete this tutorial and run code on your own RStudio to get some practice.

6. Watch videos on relative and absolute filepaths

- Absolute versus relative file paths Youtube link
- Relative paths and working directory in R Youtube link

7. Install tinytex

- Why are we asking you to do this?
  - You will need to install LaTeX (lah-tech or lay-tech) on your computer to create pdf documents in R Markdown.

  - You do not need to know how to use LaTeX. LaTeX is used in the background to compile pdf documents for you.

  - Here is a helpful article on creating PDf reports using R, R Markdown, LaTeX, and knitr.
- We **strongly recommend** installing **tinytex** in RStudio because it is smaller in size and it only installs LaTeX packages you need. **However, if you have MikTeX/MacTeX already installed** on your computer we recommend you update to the most current version of MikTeX/MacTeX.

- **Please note that you only need to install one!** You may run into some issues if you try to install tinytex and you already have MikTeX/MacTeX installed so please stick to only one.

- Instructions for installing tinytex

  Here is a helpful link to install tinytex

  1. Open up RStudio
  2. In the "console" paste the following and hit return(enter): **install.packages('tinytex')**
     - *Do not worry about the code right now. We will review how to install packages in the following weeks.*
  3. Once the package is installed, paste the following code in the "console" and hit return(enter): **tinytex::install_tinytex()**

- Instructions for installing MikTeX/MacTeX
  - We understand that installing MikTeX/MacTeX can be challenging and time-consuming and for that reason, we recommend installing tinytex if you do not already have MikTeX/MacTeX installed. We ask you to come to class with all the software installed. Please reach out to me if you are running into problems. I am happy to help.

8. Create R Markdown file that "knits" PDF document in RStudio

- Why are we asking you to do this?
  - We will ask you to submit problem sets (homeworks) as pdf documents.

- Steps to follow to create R Markdown file that knits PDF document
  - Once tinytex or MikTeX/MacTeX are installed, return to RStudio
  - At the top left corner select "File" -> "New file" -> "R Mardown"
  - Select "PDF", title your markdown file (optional), and click "OK"
  - Now select the "Knit" tab (icon with blue yarn ball) or scroll down and "Knit to PDF"
  - Give your file a name and save (can delete later) in place that is easy to locate
  - You should have a saved pdf file (extension .pdf) and an R markdown file (extension .Rmd)

  If you receive an error shoot me an email and we can troubleshoot together

9. Create R Markdown file that "knits" (PDF) beamer presentation in RStudio

- Why are we asking you to do this?
  - Beamer is essentially a pdf presentation created by LaTeX.
  - Lectures will be in beamer format and we want you to be able to run lecture slides on your own.

  - Once tinytex or MikTeX/MacTeX are installed, create R Markdown file that knits to (PDf) beamer presentation.

- Steps to follow to create R Markdown file that knits beamer presentation
  - Return to RStudio
  - At the top left corner select "File" -> "New file" -> "R Mardown"
  - Select "Presentation" on the left table, then "(PDF) Beamer", and click "OK"
  - Now select the "Knit" tab (icon with blue yarn ball) or scroll down and "Knit to PDF (Beamer)"
  - Give your file a name and save (can delete later) in place that is easy to locate
  - You should have a saved pdf file (extension .pdf) and an R markdown file (extension .Rmd)
  - If you were unable to knit to pdf in the step above, this may not work for you
  - If you receive an error shoot me an email and we can troubleshoot together

Disclaimer: I am a Mac user and will do the best I can assisting with any Windows issues