INTRODUCTION TO REQUIRED SOFTWARE

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AGENDA

- Introduction to the software used across this camp and beyond
- Installing R, RStudio, and GitHub Desktop
- Creating accounts in Overleaf and GitHub
- Basic features across platforms and interfaces

MACHINE REQUIREMENTS

- Most of you will have machines that can handle downloading this software.
- While I will be able to demonstrate everything via my MacBook with macOS, some processes are a bit different on Windows operating systems. I will try to explain both processes, but please let us know if you need more guidance.
- If you are unsure about a step or where something is located on your machine, just raise your hand and Jennifer will come around to address the issue.
- If at the end of class you are unsure of whether your machine has storage, capacity, etc. sufficient to manage these programs for the term, I will stick around for a bit to answer questions and troubleshoot.

WHAT IS R?

- R is an open source statistical computing software.
- We use R to manage data, perform different statistical operations, and visualize data of different types.
- Over the course of the week and into your respective quantitative methods sequences you will have various opportunities to develop your skills in programming in R.

OUR PLAN WITH R

- Today we will just focus on getting R and its associated, user-friendly interface, RStudio, onto your machines.
- Jennifer and Noor will guide you through more tasks over the next few afternoons to cover basic programming concepts in R, managing data, and basic data manipulation.
- Further opportunities will expose you to more advanced statistical techniques and data visualization. We'll take it easy to start with!

DOWNLOADING R

- First, let's download R at this link: https://bit.ly/3AILwfa.
- Be mindful to choose the download that matches your operating system.
- Take a few minutes to just download this and put it in the proper applications folder on your computer.

BASE R

- If you open up R you will see it is very obviously a no frills environment.
- The **Console** that opened up and a potential **Script** are really the only items *necessary* to start programming in R.
- But, we are about to make a pivot that will make programming in R a lot more accessible, organized, and aesthetically pleasing.

RSTUDIO (AKA POSIT)

- Most people nowadays *do not* operate R in its barebones environment.
- Instead, people have pivoted toward primarily programming in R (and now other languages) out of RStudio.

RSTUDIO (AKA POSIT)

- RStudio is and *integrated development environment* (IDE). This is a fancy way of saying that RStudio facilitates expanded use of R.
- The specifics of this expansion will become more clear as you interact with RStudio further.
- RStudio *did* just receive a rebrand as Posit in recent months. I am personally still getting used to this.

DOWNLOADING RSTUDIO

- You can access RStudio through either a Desktop version *or* an online server application. I personally like the Desktop version and that is what we will cover here today. You can change this based on your personal preference at a later time.
- Let's download RStudio Desktop (the free version) from this link: https://bit.ly/3Ry9O2g.
- Remember again to download the correct application for your operating system.

DOWNLOADING RSTUDIO

- Take some time to download RStudio. Once it’s done downloading and its in the correct applications folder on your computer, open it up.

LET'S EXPLORE!!

PANEL ENVIRONMENT

- You'll see that RStudio appears to be divided in a 4 panel environment. (You might only have 3 of the 4 right now as the Source panel is not yet open.)
    1. Source
    2. Console
    3. Environment and History
    4. Auxiliary Functions

OPENING A SCRIPT

WHY R?

- In the past, we have encountered the discussion about *why* R?
- For us, the first answer is that R is FREE!! Updates are free, additional packages are open source and free. This itself is a huge upside.
- Second is the relative age and extensive backlog associated with R and social science.
    - Because so many people have been using R for a good amount of time, there are a lot of questions already answered about implementing R in the work we do. This cuts down a lot of troubleshooting and programming time.
- Maybe languages such as Python will eventually get there, but the community has just not caught up yet.

GIT

- Our downloads continue…
- We will also learn about some methods of version control this week. We'll use Git and its associated platform, GitHub, to do so.
- First, we'll download Git: https://git-scm.com/downloads

GITHUB DESKTOP

- Let’s visit https://github.com/ to make a GitHub account.
- Once you have created an account, we’ll move over to the Desktop download at https://desktop.github.com/.
- Once again, download the version pertinent to your operating system.

GITHUB

- I won't say too much here as we have a bit of time dedicated to version control.
- If you want to know more you can visit the R text to get a better feel of what Git and GitHub are.
- We will also all apply for the GitHub Student Developer Pack: https://education.github.com/pack
- You'll also need to access Caesar or provide a picture of your student ID to finish this form. This will give you some expanded access to GitHub beyond the base access.

OVERLEAF

- The *last* part of this set up is for Overleaf.
- Overleaf is a web-based platform for document preparation. This is again something that you'll just have to believe that I'll explain more later.
- But, basically Overleaf will be a way that we can access LaTeX, another software distribution, without downloading it locally on our machine.
- Let's create an account by visiting https://www.overleaf.com/register.

LET'S EXPLORE!!

ROUNDING TODAY OUT

- Today we've downloaded the basic software applications necessary to get through Math Camp and probably beyond.
- We've also made accounts that will allow us to further integrate modern scientific software into our workflows.
- The next week and a half will be dedicated to exploring these tools more.

Error ×