Week 1: Welcome!
Introduction to R and Programming

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Today's agenda

- Welcome & introductions
- Structure and goals of the bootcamp
- Get to know your group
- Let's look at some real data!
- Introduction to R and datatypes

Who we are!

Elena (she/her/hers)
4th year, Developmental
Bunge Lab

Willa (she/her/hers)
4th year, Cog Neuro
Weiner Lab

Why we are doing this!

- Coding skills are becoming increasingly more important, not just for research but for many jobs → It's a transferable skill
- Learning to code can feel really inaccessible and even scary!
  - If you feel this way, you're not alone!
- We want to help make learning R and programming feel more accessible and fun

Why teach R? And why is it so great?!

R is built for working with and analyzing data frames. And that is exactly what we need!

Check out these sites for more information:

- Why is R so great?
- Why R is like a relationship…

From: YaRrr! The Pirate's Guide to R

Structure of the bootcamp

Typical session structure

1. Live coding demo
2. Individual practice
3. Group work on real data
4. Discussion

Download the materials you need each week from our course page.

You will be in the same group for the whole 4 weeks (get to know each other!).

If you have specific questions during (eg. errors) DM the person not presenting and we will help you out.

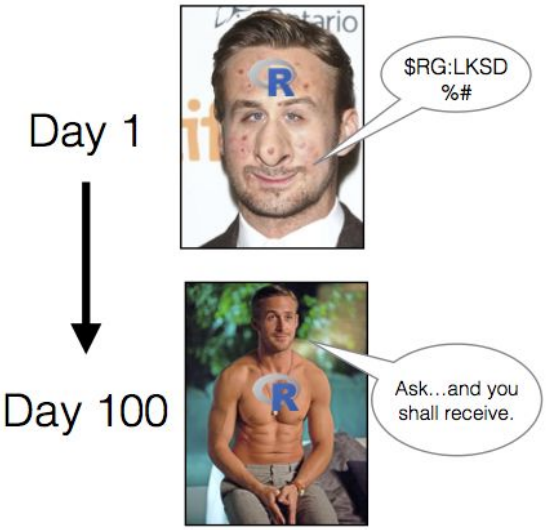
Structure of the bootcamp

Session 1 (7/6)	Session 2 (7/13)	Session 3 (7/20)	Session 4 (7/27)
Intro to R and datatypes	Accessing and working with dataframes	Cleaning and organizing data	Data visualization

- We will be working with the same dataset throughout to get a feel for the process of exploring data and getting it ready for analysis.
- Sessions build on each other so make sure to catch up if you have to miss a session.
- Join Piazza to participate in discussion and ask questions in between sessions

Goals for the bootcamp

- Learn foundational R and programming skills so you can learn more on your own and in your lab
- Feel confident in your skills moving forward
- Build an inclusive, welcoming, and supportive community around programming and data analysis for people at all skill levels and from all backgrounds



Important reminders and some motivation

- Now is the time to learn! There is no time like the present!
- No question is a dumb question. If you are wondering something, chances are, at least one other person is, too. ASK!
- TELL US TO SLOW DOWN! Ask us to repeat or review! This workshop is for you!
- Don’t just do, understand!
- YOU CAN DO IT! Seriously!

Keep in mind...

- People are coming in from different starting points.
- Some things we talk about may be easy for you, and others may be new.
- Be open to brushing up on things you already know and supporting your peers while they learn something new!
- We have tried to make this accessible and interesting for people at various different levels.

Let's meet your groups! (10 minutes)

Go to the breakout room that matches your group number (link)

Meet your group members and introduce yourselves. Ideas for things to talk about are on the next slide

While you are in your groups, we will be around to see if you need any help with your R and RStudio install.

Ideas for what to talk about in small groups

- Say your name, where you are from, what your role is, what lab you're in, and what project you are working on.
- Meme that made you laugh recently?
- Favorite summertime activities?
- Any book or TV recommendations?

Let's dig into some data!

Course page: https://ucb-psychology-quack.github.io/site/summer_bootcamp/bootcamp

Data: A survey from July 2020 about attitudes and beliefs around Covid-19. Researchers collected data from > 1000 people in the US to study trust in the news, the science, and the attitudes around COVID-19.

Questions to keep in mind

- *What are some things you notice about these data just by looking at the spreadsheet ?*
- *What are some questions we could ask with this data ?*

Data types

Think about the data we just looked at:
What kind of information do we want to represent?

- Numbers
- Words (also called “strings” or “characters”)
- Logical - True/False or 0/1 (also called “booleans”)
- *Categorical

That’s all that data types are: the different kinds of information we want to be able to work with and handle.

* This type is special to R!

Let’s get started in R!

Extra slides

Integer, Double, and Numeric Types

This data type takes care of storing numbers

Integers: 0, -1, 5

Numeric: 0.5, 4.5, -3.1415

This distinction is not super important in R, but it can be in other programming languages because the computer stores this information slightly differently.

Character or String

This data type takes care of storing letters and words

Character: “C”, “e”,

String: “hello”, “world”, “party!”, “1”

Note the use of single and double quotation marks! These are important to indicate to the computer that the words are strings!

In R, all the examples above are type character. Some other programming languages distinguish between character and a string of characters, so it is good to know both words.

Boolean or Logical

This data type takes care of storing TRUE/FALSE. It can only have these two values.

We will learn more about why this type is important as we go.

This data type exists in all programming languages. It is foundational to how programming works!