Module 3: R

Submodule 1: Hello, World

Expected length: 0.5 day

Guiding question: How can we start using R?

Concepts: R, RStudio, mathematical operators, libraries, functions, scripts, R Markdown

Description: This lesson introduces the students to R and RStudio, gets them working in basic R commands, and teaches them about R file types.

Instructor Preparation: Run all code to ensure it generates the same output as described in the lesson.

| Materials and resources | Learning objectives |
| --- | --- |
| 01-hello-world\_deck.html | 1. a fully-functional R and RStudio setup  2. understanding and using parts of the RStudio IDE  3. run basic commands in R  4. creating and using different R file types for different purposes |

| Length | Lesson content | Guidelines, tips, and tricks |
| --- | --- | --- |
| 30 min | Getting set-up  (Alexander (eds), 2021, Chapters 2-4)  - R  - R Studio | Allow time for questions following the slides.  Participants should have a fully operational version of RStudio before the end of this lesson. |
| 25 min | R basics  (Wickham and Grolemund, 2017, Chapter 4) | Participants should be following along in their own RStudio environments. |
| 20 min | Formative exercises  1. Create an object.  2. Use an R function on that object and save the result.  3. Apply a mathematical operator to the result. | Allow 10 minutes of independent work time.  Take up for 10 minutes, with RStudio open to demonstrate.  Ask students for errors they encountered. |
| 25 min | File types  (Wickham and Grolemund, 2017 Chapter 6 and 27)  - Scripts  - RMarkdown | Participants should be following along in their own RStudio environments. |
| 20 min | Formative exercises  1. Create an R script to perform basic math  2. Creating and knitting an RMarkdown document that loads packages | Allow 10 minutes of independent work time.  Take up for 10 minutes, with RStudio open to demonstrate.  Ask students for errors they encountered. |