University of Glasgow | School of Psychology

Teaching Reproducible Data Analysis in R: Practicalities

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Useful things to plan for when you change to R

- Pedagogical Approach
- Assessment
- Teacher skills not related to R
- Classroom set-up
- Open minds

Support materials

- What has worked well
  - R-videos we made and found on the web
  - Exercises and classes we authored
  - Data available on the web
  - Intro to R materials on the web (datacamp, making animals talk, swirl)

- Things more challenging to adapt
  - Non-tidyverse materials can only take us so far
  - Passive exercises – active works best
  - Most data science materials need adapting to use for beginners
  - Most Psych introductory materials are focussed on stats with less focus on data skills

Still a challenge: sharing materials with each other and students in the best way
- Github websites may be a solution

Assessment

Formative & peer marked

Regular exercises

Opportunities to practice skills

Reports

Assessment what we have tried

- Formative
  - Submissions for peer review on Slack
  - Web exercises with webex
  - Different levels of formative tasks (beginner, intermediate, advanced)
  - R-analysis plans for reports for peer review

- Summative
  - Weekly exercises marked with assesser (UG)
    - Problems to solve, practice with skills
  - Exercises not marked with assesser (PG)
    - Problem – based approaches: generate and analyse a hypothesis for a previously unseen dataset/dataset generated by students
    - In-class exams – similar to weekly exercises, but under exam conditions
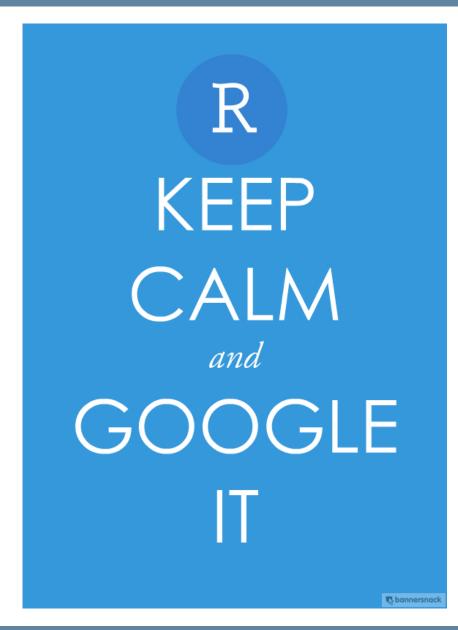
The hard and soft of it

- Devices
  - Computer labs vs student's own devices
  - Supporting this
  - Access
- Challenges
  - Old operating systems
    - Forbidden code
  - ?Installing on own devices in class vs not in class?

- Software
  - R and RStudio pre-loaded
  - Packages pre-installed
  - R Server (free for Academic Institutions)
- Challenges
  - R changes all the time
  - Knitting to pdf
  - Re-installing packages
    - Forbidden code

The most surprising things students find challenging

- Challenges:
  - Using computers
  - Downloading and saving files on their own computers
  - Finding files on their own computers
  - Setting the working directory
  - Uploading the correct file for an assessment
  - Spotting typing/debug errors
  - Updating their software

- Solutions
  - Build resilience – live coding and making mistakes
  - Repeating messages
  - Sharing data/markdown/scripts as zipped (though beware the unzipping challenge)
  - RStudio-server
  - Getting R on our student desktop, but encouraging students to use their own devices