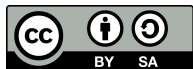




PNASHR-Workshop



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Agenda

1. Discuss possible “5-year plan” (e.g. [reproducible project management](#)) (30 min)
 - Overall data framework
 - Uniform data collection tools
 - Data management
 - Data sources
 - Data analysis
2. Hands-on workshop and R “onramp” (60 min)

Overall data framework

1. Data collection

- Sources and collection methods

2. Data management

- [Findable, Accessible, Interoperable, and Reusable \(FAIR\) Principles](#)

3. Data analysis

- [Code review](#), collaboration, generalizable

4. Data sharing

- Visualizations, API key, App platforms, Web tracking

Uniform data collection tools

1. Text message questionnaires

- [REDCap](#)

2. Online survey or time series questionnaires

- [REDCap](#)

3. Other survey tools

- [Qualtrics](#)
- [ODK](#)

4. Automated, reproducible and trackable QA/QC procedures for exposure data

Data management

1. Raw data → publication
2. Extension of “chain of custody” for samples

Data sources

1. [AFF Health Indicators](#)
2. Visit this page to explore datasets for burden, need, impact
 - Please add (via GitHub or email), especially for:
 - Forestry
 - Fishing
 - Oregon
 - Idaho
 - Alaska

Data analysis

1. Develop collaborative code development tools (Github?)
2. Develop systems for code review
3. Develop functions and tools that can be generalized and shared

Hands-on workshop

1. Exercise 1: Introduction to R and RStudio

- Option 1: Use the DEOHS maintained RShiny server
 - <https://rstudio.sph.washington.edu/>
- Option 2: Install R and RShiny onto your personal computer

2. Exercise 2: Flexible Dashboard

- https://github.com/elaustin/Ag-Health-Indicators/blob/master/Injury%20Data%20WA/flexdash_injury.Rmd

Resources

- Eddie Kasner (ejkasner@uw.edu)
 - <https://github.com/eddiekasner/aghealthindicators#aff-health-indicators>
 - <https://github.com/eddiekasner/PNASHR-Workshop>
- Elena Austin (elaustin@uw.edu)
 - <https://github.com/elaustin/Ag-Health-Indicators>
 - R code and visualization examples
- Brian High (high@uw.edu)
 - https://github.com/brianhigh/computing_bootcamp/tree/master/R#introduction-to-r-rstudio-markdown-and-git
 - Support with R, R Studio, and Git (Github)
- [UW DEOHS Coding Community of Practice](#)

Workshop

- What R is (and isn't)
- Why R is so popular
- What RStudio is and isn't
- Reasons to use RStudio
- How to use RStudio

What is R?

- R is a cross-platform software *application* for data analysis and visualization
- R is *free* to use, *free* to share, and *free* to modify
- R is a programming *language* with over 10,000 user-contributed packages
- R is an open source and *community*-driven software development *project*

What R isn't

- R is not a point-and-click software application (though some are available for R)
- R is not a proprietary commercial product (though some do sell it)
- R is not something you can master in a day (or a week, or a month)

Why R is so popular

- It is free
- Support from a very helpful community of thousands of users
- Available code or packages which are only available in R
- Ability to generate quality graphics for publication
- Supports data analysis “best practices”
- End-to-end solution for reproducible data analysis
- Capable of handling “Big Data”

What RStudio is and isn't

RStudio is:

- A full-featured, cross-platform, open source application for working with R
- A graphical user interface (GUI) for working with R

RStudio isn't:

- A point-and-click spreadsheet app (like Excel)
- A point-and-click plotting app (like Tableau)
- A text-only command-line utility (but it includes a text Console)
- An R language interpreter (as R is installed as a separate app)

Why use RStudio?

- It is a user-friendly way to use R
 - The interface feels familiar to many people
 - Integrates common data analysis workflows
- You can use it for free on most computer systems
- It is very popular, so your collaborators may already be using it
- Very few alternatives (R-GUI, JGR, Visual Studio) are as full-featured
- It performs well, is designed well, and is backed by a respected company

We are going to gear our instruction towards the use of RStudio and will not be covering the other alternatives.

Ways to use RStudio

RStudio Server accessed through a web browser

- Easier to learn and teach on because it's centrally managed by IT.
- SPH runs an RStudio Server on "rstudio.sph" for use by all UW SPH departments.
 - Link: <https://rstudio.sph.washington.edu>
 - Free for SPH affiliates (students, staff, faculty, postdocs, etc.) to use.
 - Requires UW NetID.
- DEOHS runs an RStudio Server on "Plasmid" for use by DEOHS.
 - Link: <https://plasmid.deohs.washington.edu>
 - Free for DEOHS affiliates (students, staff, faculty, postdocs, etc.) to use.
 - Requires UW NetID and DEOHS account.
 - Access directly from UW Campus or remotely through [Husky OnNet VPN](#).
 - Easily access your departmental storage (i.e., network "drives").
- This "onramp" is geared towards using RStudio Server, but any RStudio will work.

Ways to use RStudio

RStudio Cloud

Rstudio Cloud is a internet-based option to run Rstudio: <https://rstudio.cloud/>.

Eliminates hardware and software configuration and management required when running R & RStudio locally.

Requires

- Internet connection & browser
- Account sign-up

Free for individual use with some restrictions (e.g. number of projects, memory), and has paid subscription upgrade.

Ways to use RStudio

Download and run locally

- The RStudio Desktop application is available for free on the [internet](#).
- We will not focus on local installation or use during this introductory onramp, but some instructions are at the end of this presentation.

How to install R and RStudio Desktop

We will not be spending time on local installations of R and RStudio during this introductory onramp. These instructions are here for reference if needed:

1. [Download](#) the latest *installer* version of **R** available for your operating system.
 - Run the installer (usually by double-clicking on the installer's icon).
 - Click through the installer's prompts accordingly. The defaults are usually fine.
2. [Download](#) the latest *installer* version of **RStudio Desktop** available for your operating system.
 - Run the installer (usually by double-clicking on the installer's icon).
 - Click through the installer's prompts accordingly. The defaults are usually fine.
3. You may remove the installers when you have confirmed that RStudio is installed correctly and launches without error.