Intro into R workshop

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Overview of Day 1

- Objective-driven science
- What is R, RStudio [Git and Github]
- Getting & staying organized with data analysis in R: Best practices
- Basics of coding in R

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Working in RStudio

- Console (entire left)
- Environment/History (tabbed in upper right)
- Files/Plots/Packages/Help (tabbed in lower right)

Working directory

- getwd() / setwd()

R Projects

- File/New project/New directory

Benefits of project-oriented R analysis

- Keep everything related to your analysis (scripts, data, raw data…) in the same working directory
- uses “relative paths” "~/PSEC-R-workshops/hey.csv"
- vs “ absolute paths” "C:/Users/Ania/R_coding/PSEC-R-workshops/hey.csv"

More advice on this from Jenny Bryan @RStudio here (see Day 1 PDF slides)

https://github.com/jennybc/what-they-forgot#readme

Let’s practice some basic Commands

Create some objects. Recommended naming style:

- x, current_temp, i_rock_today
- NO numbers
- NO if, else, for….
- avoid : “.” eg. my.awesome.data
- avoid: mean, sd, srqt,....(these are built in R functions)

R script & annotate

Let’s practice some basic Commands

Create some objects (RULES)
R script & annotate

1. Write your script, piece by piece 
2. Test each piece before you move onto the next piece
3. Refresh R studio often
4. Close your R project now
5. Re-start, re-joice!

How to develop best practices for doing work with R

- Check out R scripts & R projects of experts in the field
- e.g. Hadley Wickham (https://github.com/hadley)
- Jenny Bryan (https://github.com/jennybc)
- Julia Silge (https://github.com/juliasilge).....list goes on
- Advice for code syntax: http://style.tidyverse.org/syntax.html

Allows hosting of your repository on a remote server (sharing R scripts online)

Atomic vector/data types

- Character , “name_1”,”name_2”
- LOGICAL, “TRUE” “FALSE”
- Numeric : int or dbl

```
d <- c(1,2,3,4) # creating a numeric vector for col 1
e <- c("red", "white", "red", NA) # creating characters for col 2
f <- c(TRUE,TRUE,TRUE,FALSE) # creating logical values for col3
```

Workflow advice: https://github.com/jennybc/what-they-forgot#readme

My workflow	Folder within R project
1. Import raw CSV file	Data/Raw data
2. Inspect how variables were imported	
3. Prep data for plotting with ggplot (exploratory)	Data/Wrangling
4. Plot the data	Figures
5. Do your stats	Statistics
6. Document/metadata	Docs

Figures

Fig1_ Bact-Cu-growth.R

Fig1_ Bact-Cu-growth.R

Fig2_Bact-CNSP-quotas.R

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Data

01_Bact-growth-rates-tidydata.csv

01_Bact-P-norm-metals-tidydata.csv

02_Bact-CNSP-tidydata.csv

R basics

- Objects vs variables
- Functions
- Vectors & data types
- Packages (R base and add on)