

Co-lab Shiny Workshop

Hello World!

Normal Probability Density Histogram, Reactivity, Data Tables, ggplot

October 17, 2019

1 Overview

- Preliminaries
 - What is R?
 - What is Shiny?
 - What can Shiny do for you?
 - What are your expectations of this workshop?
- [Examples](#)
 - [Example visualizations](#)
 - [Example Shiny apps](#)
- [Resources](#)
- [Access workshop material](#)
 - From RStudio Cloud
 - From github (execute locally)
 - What is RStudio Cloud?
 - Create RStudio Cloud account
 - Access shared workshop scripts from within your account
- [First app - NPDHist](#)
 - Libraries required
 - Execute using `runApp()`
 - Examine R and Shiny instructions
 - Execute as `ui.r` and `server.r`
 - Reactivity
 - * What is reactivity?
 - * Using the `reactive()` function
 - * Using `isolate()` to disable reactivity
 - [Debugging](#)
- Data tables
 - Read source data
 - Construct table
 - Configure table controls (column sorting, filtering, paging)

- Trigger actions with row click
 - Embed HTML for url href linking
- Generate plot from data table row
 - Subset data using selected row values
 - Use tabs to isolate table from plot

2 Examples

2.1 Visualizations

- ggplot gallery: <https://www.r-graph-gallery.com/all-graphs.html>
- ggplot extensions: <https://www.ggplot2-exts.org/gallery/>

2.2 Shiny Apps

- Duke Data+ project, *Big Data for Reproductive Health*, <http://bd4rh.rc.duke.edu:3838>
- Duke Data+ project, *Water Quality Explorer*, <http://WaterQualityExplorer.rc.duke.edu:3838>

3 Resources

- R
 - Books
 - * Norm Matloff, *The Art of R Programming*, No Starch Press
 - * Wickham and Grolemund, *R for Data Science*, O'Reilly
 - * Andrews and Wainer, *The Great Migration: A Graphics Novel*, <https://rss.onlinelibrary.wiley.com/doi/pdf/10.1111/j.1740-9713.2017.01070.x>
 - * Friendly, *A Brief History of Data Visualization*, <http://datavis.ca/papers/hbook.pdf>
 - Reference cards
 - * R reference card: <https://cran.r-project.org/doc/contrib/Short-refcard.pdf>
 - * Base R: <https://rstudio.com/wp-content/uploads/2016/10/r-cheat-sheet-3.pdf>
 - * Shiny, ggplot, markdown, dplyr, tidy: <https://rstudio.com/resources/cheatsheets/>
- Shiny
 - Help
 - * `?shiny` from the R command line
 - * Click `shiny` in the `Packages` tab of RStudio
 - * <https://cran.r-project.org/web/packages/shiny/shiny.pdf>
 - Shiny gallery: <https://shiny.rstudio.com/gallery/>
- ggplot
 - Help
 - * `?ggplot2` from the R command line
 - * Click `ggplot2` in the `Packages` tab of RStudio
 - * <https://cran.r-project.org/web/packages/ggplot2/ggplot2.pdf>
 - R graph (ggplot) gallery: <https://www.r-graph-gallery.com/>
- Workshop material: <https://github.com/tbalmat/Duke-Co-lab/tree/master/Session-1>

4 Access Workshop Material

4.1 RStudio Cloud

- What is RStudio Cloud?
 - *We [RStudio] created RStudio Cloud to make it easy for professionals, hobbyists, trainers, teachers and students to do, share, teach and learn data science using R.*
- With RStudio Cloud
 - You do not need RStudio installed locally
 - Packages and data are available without installation and transfer
- Access workshop material
 - Create an Account: <https://rstudio.cloud>
 - Workshop project link: <https://rstudio.cloud/project/580472>

4.2 github Repo

Copy scripts and data from <https://github.com/tbalmat/Duke-Co-lab/tree/master/Session-1>

5 First App - NPDHist

Structure of a Shiny app (side bar, fluid page, columns, comma separation, “Warning: Error in tag: argument is missing, with no default”

Shell execution

Specify alternate port

6 Debugging

ERROR: argument is missing, with no default (comma remaining after removal of parameter)