GENERATING REPORTS AND WEB APPS

There are four rules that apply to all projects so far:

a) Follow instructions *precisely*. If I do not tell you what to write on a particular line, leave it blank.

b) Do not use any functions or approaches to problems that we have not yet learned in this course.

c) All code must be *scalable by sample size* unless specifically noted otherwise.

d) Any code using *magrittr* should contain a max of one verb per line.

Part 1 – Set up a new R Studio Project with one R script called week10.R

1. Also create a new subfolder called *markdown*. Inside this markdown folder, create two files: **week10-pdfgen.Rmd** (which will be a PDF) and **week10-shiny.Rmd** (which will be a Shiny app)

Part 2 – Data Import, Cleaning, Analysis, and Visualization

2. Same dataset as last time. You can still find a [description here](#) and a link to [download here](#) the *National Longitudinal Study of Adolescent to Adult Health (Add Health), Wave IV, 2008*. Download it as a **tab-delimited file**. Be sure the [codebook](#) is in an appropriate location.

3. **week10.R:** Using these sections labeled with comments (**R Studio API Code**, **Libraries**, **Data Import and Cleaning**, **Analysis**, **Visualization**), set an appropriate wd, import needed libraries, clean data as appropriate, and conduct a single regression of number of pregnancies (**H4TR9**) on self-evaluation of attractiveness (**H4MH8**), self-reported gender (**BIO_SEX4**), and their interaction, displaying summary model information. Remember to conduct and interpret assumption checks first. Visualize this relationship as a scatterplot with superimposed regression lines (to visualize the interaction) using **ggplot()**.

Part 3 – Report Generation

4. **week10-pdfgen.Rmd:** Copy-paste your code from **week10.R** into this file in an appropriate location. Reformat it so that the **Data Import and Cleaning, Analysis,** and **Visualization** comments become headings. Remove the **R Studio API Code** heading and **setwd()** call. Suppress all output and do not display code from anything within the **Libraries** heading. Do not display any output from the **Data Import and Cleaning** headings. Add text before each block of code (within heading) to explain what you did. Add text after the **Analysis** block of code (within heading) to interpret your results. Thus, the final PDF should contain 3 headings that each contain: intro text, code, results. The **Analysis** heading should also contain explanation text at the end. Generate this PDF and save it to an appropriate location.

Part 4 – Web App Creation

5. **week10-shiny.Rmd**: Create an app that displays the final plot, but allow users to display men only, women only, or the full interaction plot, based on whatever they specify in a dropdown menu. In other words, users should be able to choose one of three generated plots based upon their selection in the dropdown menu. Ensure that the dataset used as input for *shiny* is as small as possible.

6. **shinyapps.io:** Publish your app online and paste a link to it in a comment in the final line of **week10.R**