Problem Set 4

Version Tracking in GitHub

Prof. Jack Reilly

F2025

Before attempting this assignment, be sure to follow the instructions noted in Week 3 page under "Course Content".

Data Work

Setup

1. Create a GitHub repository for this assignment. (Don't forget a readme file and a .gitignore file!) It's OK if it is a private repository.
2. Generate a Quarto document (like last week). Title it `DWV Assignment 4.qmd`. Answer all questions for this assignment in this quarto document.
3. Practice good file management: keep all documents for this assignment in your assignment folder (github repo) dedicated to just this assignment. It is OK - it's advisable, actually - to have the datasets themselves in a separate folder.[1]

Part 1. Lines

1. Draw a y=4x+3 on a plot that ranges from -20 to +20 on both x and y.
2. Label the line appropriately next to itself.
3. Color the line in an interesting color! And make it dashed.
4. **Bonus** Use a combination of the above options (plus others, if you feel like looking them up) to create the wildest looking series of lines on a graph that you can. (Remember, you can overplot lines!)

---

[1] I recommend that you have a folder on your computer where all of your assignments for the class are kept. Inside this folder, you should have a folder for each assignment; you can also have a folder that stores the data. The data folder should not be entered into a github repo; the individual assignments folders can be (or need to be, depending on the assignment.)

Part 2. Protected Lands

Consider the `protected_lands.csv` dataset. This dataset contains information about a sample of countries sourced from the World Bank. `Protected Lands` represents the terrestrial protected land of a country as a percentage of total land area. GDP is represented in the dataset on a per capita (`gdp_percap`) as well as total basis (with total being measured in billions - `tot_gdp_billions`).

1. Find the mean, standard deviation, and range of each of the three variables: protected lands, GDP per capita, and total GDP.
2. Create a scatterplot where "protected lands" is on the Y axis and GDP per capita is on the X axis. Place a title on the graph and labels on the X and Y axis appropriately.
3. Create a scatterplot where "protected lands" is on the Y axis and total GDP is on the X axis. Place a title on the graph and labels on the X and Y axis appropriately.
4. Regress "protected lands" on GDP per capita.
5. Creat a scatterplot where "protected lands" is on the Y axis and GDP per capita is on the X axis. Then, overlay the plot with a best fit line.
6. Regress "protected land" on total GDP.
7. Creat a scatterplot where "protected lands" is on the Y axis and total is on the X axis. Then, overlay the plot with a best fit line.

Submission

1. Render your quarto file to .html and .docx.
2. **Push** your completed assignment, including your .html and .docx files, to your GitHub repo.
3. Either:

   - Ensure the repo is public, or
   - If it is private, share the repo with me (I'm `@jacklreilly` on GitHub).

4. On Blackboard, under assignment 4, place a link to the repo so that I can click straight through to it.