Computing Assignment 3

Due Monday, February 6, before class.

A Prerequisite

You should have done the following as part of Computing Assignment 2, but just in case, I'm including it here. I strongly recommend that your capitalization, spelling, and punctuation match mine, so if it doesn't, now would be a good time to fix it. For example, `POLS 209` is different from `pols-209` and `Data` is different from `data`.

1. Create a `pols-209` folder on your computer, this can be wherever you like (e.g., Desktop, Dropbox).
2. In that folder, create a `data` subfolder.

The Assignment

Go to the course webpage and save the `state-legislators` data file to your `data` folder. You may choose whichever file type you prefer. This data set contains an ideology score for each member of each state House of Representatives from 1993 to 2014. It also contains variables that indicate the year, the state, and the legislator's party.

Write an R script that does the following, thoroughly commenting your code along the way:

1. Sets the working directory to your `pols-209` folder.
2. Loads any packages necessary for the later steps.
3. Loads the `state-legislators` data file.
4. Uses `glimpse()` to get a quick look at the data set and make sure everything loaded correctly. This also allows you to see the names of the variables in your data set.
5. Uses `subset()` to create a new data frame with only observations from the year 2014.
6. Uses `ggplot()` and **the 2014 data** to create **a single figure**–a density plot of the ideology score with the following modifications:
   - party indicated by fill (separate densities for Republicans and Democrats)
   - alpha transparency in the fill, so that the densities do not completely obscure each other.
   - faceting by state (separate plots for each state)
   - improved labels for the x-axis, y-axis, and fill legend
   - a nice title and subtitle (you choose, be creative)
   - a caption that states "Data from https://americanlegislatures.com".
   - a different theme than the default (again, be creative)
7. In a comment, write 3-5 sentences discussing **one** interesting pattern in shown in the figure. You should experiment with highlighting your entire comment and clicking *Code*, *Reflow Comment*.

Note: Once you compile your script into a notebook (see below), your figure dimmensions might be off (i.e., your figure might seem squished). That's okay. RStudio tries to choose a good height and width, but it sometimes chooses poorly. For your papers, you'll want beautiful figures, but for this assignment, the squished figure is fine.

Once the script is written, you should **save it** to a convenient spot on your computer. (I suggest a folder `R` inside your `pols-209` folder.) Remember that you'll be writing several scripts this semester, so keep them organized.

Comments on Grading

We grade the assignments using the following rubric:

1. Specification (40%): The code correctly performs all desired actions.
2. Comments (40%): The code is thoroughly and neatly commented.
3. Readability (20%): The code is neatly written and includes appropriate use of white space to make the code easily readable.

Here are some other suggestions:

- We recommend that you use comments to number the questions. This helps us understand what question you are trying to answer when the code differs from our expectation.
- You should usually exclude unnecessary code. For example, you should avoid loading unneeded packages and including lines of code that performs actions the assignment does not ask for.

Submitting Your Work[1]

1. With your R script open, click "File", "Compile Notebook..." Or just click the little white notebook icon.
2. Under "Notebook Output Format," select HTML or MS Work. HTML displays nicely on eCampus, so choose HTML if it works smoothly for you. See footnote 1.
3. In a web browser, go to the eCampus page for POLS 209.
4. Click "Submit Computing Assignments" in the left sidebar. Click "Computing Assignment 3."
5. To the right of "Attach File," click "Browse My Computer."
6. Navigate to the file containing your R script and you'll find a file with the same name but the extension ".html" or ".docx" rather than ".R". Select the ".html" or ".docx".
7. Click "Submit." If this doesn't work, see footnote 1.

I expect you to submit the assignment on eCampus *before* class. However, I have given you until noon in case you encounter technical difficulties, but see footnote 1.

Troubleshooting

If your code does work when you run it, but does not work when compiling it into a notebook, please check the following:

1. You set your working directory *in the script*. To do this, simply set the working directory to `pols-209` via point-and-click (by clicking *Session*, *Set Working Directory*, *Choose Directory...*). R runs a command in the console, something like `setwd("~/Dropbox/classes/pols-209")`. Copy this command onto the top of your script.
2. You load all necessary packages *in the script*. RStudio begins a new R session to compile a notebook, so even if you have all packages loaded in your current session, compiling a notebook will fail if all necessary packages are not loaded in the script.

I expect you to submit the assignment on eCampus *before* class. However, I have given you until noon in case you encounter technical difficulties.

[1] In case of technical difficulties, I don't want you to spend a lot of time figuring out how to submit your work. If you can't figure it out, just bring a hard copy to class. We'll sit down and work through the process so it's smooth and easy next time.