HOMEWORK 2: SHINY PORTFOLIO PROJECT

Instructions

1. Upload your write-up as a PDF document.
2. Include a link to an R script that allows us to rerun your Shiny app. You can host your script through UW Madison Box, UW Madison Drive, or GitHub, for example. Details are given below.
3. Simultaneously attach your PDF within the portfolio folder on Piazza. This is how submissions will be shared for peer reviews.
4. Write-ups should not exceed 750 words.

Description

The portfolio exercises are opportunities for you to design and share visualization without the constraints of in-class exercises. In this portfolio assignment, we will use `shiny` to create an interactive visualization and prepare a brief discussion on a topic that is interesting to you. For datasets, you may find it useful to browse TidyTuesdays, Data is Plural, Kaggle Datasets, Google Dataset Search, Data.gov, Madison Open Data, Bioconductor Datasets, Awesome Public Data (if you have other favorite sources, please share on Piazza!). Alternatively, you may generate and download data about your own life, taken from an app that you use regularly.

Once you have identified a dataset, you will use the `shiny` package to create a publication-quality interactive visualization. The application should implement at least two types of dynamic queries, either through UI or graphical inputs. The application should be annotated with text to provide context, so that the application is understandable to users who are not necessarily familiar with the dataset. If the interface's inputs are not immediately intuitive, instructions should be given. Code implementing this application should be modular, with reactive expressions used to minimize duplication and functions defined to externalize complex logic.

Prepare a discussion of your visualization and the process used to create it. You should address the following components,
- What are some interesting facts that you learned through the visualization. Provide at least one unexpected finding.
- How did you create the interface? Were there any data preparation steps? What guided the style customizations and interface layout that you used.
- What is the reactive graph structure of your application?

To allow us to rerun your app, write your entire app as a single R file. Host any datasets using public links, like what is done in the in-class demos. We should be able to run your app without any modification to your code. Alternatively, if you wish, you may host your application online, using shinyapps.io, for example.

At the end of the course, I will ask you to choose your favorite submission from the portfolio exercises to include within a publicly visible end-of-course book / website. You will have a chance to revise your submission based on peer reviews before it is included in these. Examples from previous years' submissions can be found here.

Rubric

Discussion Quality [5 pts]: The write-up is precise, well-developed, and engagingly written. Paragraphs and / or headers are used to organize the text, and superfluous code outputs are suppressed.

Design Choices [6 points]: The visual interface is easy to use, appropriately annotated, and supports meaningful dynamic queries. Data are not unnecessarily summarized, and the views have high information density. The design does not rely on visualization defaults and demonstrates attention-to-detail. Though it may build from or synthesize course examples, the submission demonstrates independent and creative visual design thinking.

Problem Formulation [5 points]: The focus of the application is on a broader, independently interesting problem domain. All data are reported within context, rather than assuming prior familiarity (with specific variable names or data collection methods, for example). The questions asked do not have obvious answers, and the visualization could potentially find an audience beyond the course.

Code Useability [4 points]: The code to generate the figures is readable and can be run easily.