MATH 230 Final Project: Website & Virtual Art Gallery

Overview. Your final course project will consist of six parts that will serve as an ultimate culmination of your semester in Data Visualization & Computing. The end product will be a personal website that hosts a virtual exhibit of your data visualizations (some old, some new).

Summary of Project Components.

- Part 0: Download and Install `R` & `RStudio` on your personal computer
- Part 1: Create a personal `Distill` website
- Part 2: Create a page with past course visualizations
- Part 3: Create a page in which you tell the story of a data set through visualization and narrative
- Part 4: Create infographic/scrollstory for your virtual art exhibit
- Part 5: Host website on Github
- Part 6: Project/course reflection

Due Dates.

Whenever something is due on the calendar below, it is a complete *draft* that is due at the start of class on that day (with the exception of Part 0).

Monday	Wednesday	Friday
April 21	**April 23**	**April 25**
Class: Project Roll Out	Class: Workday	Class: Workday
	Due: Part 0	Due: Final Data Set
April 28	**April 30**	**May 2**
Class: Evals & Work Day	Class: Work Day	Class: Storyboarding
Due: Part 1	Due: Part 2	Due: Initial Visualizations (printed)
May 5		
Class: Peer Review		
Due:		

Ultimately your final website, infographic, and project/course reflection are due at the end time of our final exam: **Thursday, May 8 @ 10:30 pm**.

More Details of Project Components.

Part 0: Download and Install `R` & `RStudio` on your personal computer

Please follow the additional document titled Getting R and RStudio Installed to complete this step.

Part 1: Create a personal `Distill` webpage

You will create a personal website using `RStudio` that will host your final project and start your online professional data presence.

For your final website, you will be expected to have a homepage with at least two other pages related to Parts 2 and 3 of the project and unique customization. For now, everything will be done locally on your laptop.

PART 2: Create a page with past course visualizations

You will use this page on your website to display the visualizations that you have made so far this semester. The page must include

- Your generative art work.
- At least one plot from your `ggplot` extension project.
- Your intro stat dashboard.
- You Pick 2 - Panera Style (any other two pieces from the semester that you are proud of and would like to display).

In line with a typical art exhibit, each piece will require a "placard" description. Each "placard" will need a title, a description of the data set and variables used, and what the visualization shows. For your generative artwork, all you need is a title for each piece.

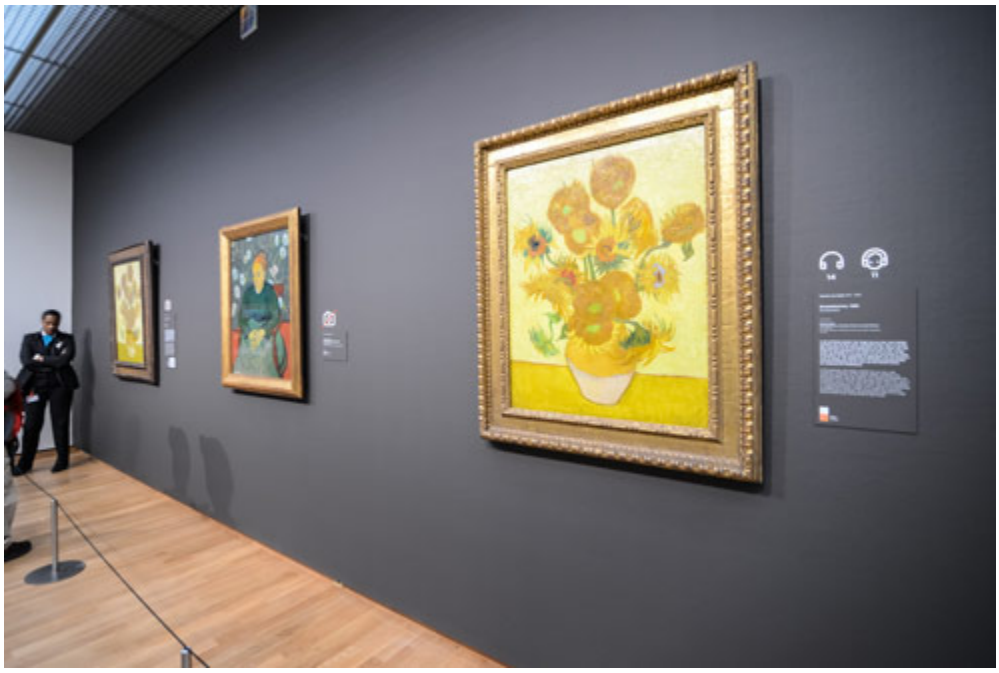

Figure 1: Van Gogh Museum in Amsterdam

PART 3: Create a page in which you tell the story of a data set through visualization and narrative

This portion of the project will carry the most weight in your final project grade. You must individually chose a data set of interest and tell the story of the data set through a series of creative and interesting visualizations on a second page of your website.

You should think about this as a coherent and complete virtual art exhibit with the same "placard" requirements as above and some additional narrative.

Data Selection

When choosing a data set, you want to make sure it comes from a reputable source without apparent bias. You need to have a full understanding of where the data is coming from and make sure you choose something that you are interested in. This page of your website will begin with an overall title for your exhibit and a complete written introduction to the data. Some suggestions for places to look for interesting data sets include:

- `https://www.kaggle.com/datasets?fileType=csv`
- `https://www.data-is-plural.com/archive/`

- https://github.com/rfordatascience/tidytuesday/tree/main/data
- https://cmustatistics.github.io/data-repository/

You **cannot** use a data set that is already cleaned and built into R. You need to choose a real world data set from an external source that will require some cleaning/plumbing before you are able to create meaningful visualizations. Each student must select a unique data set.

Data Requirements

You will need to tell the story of *at least 5 variables* from your selected data set and you must have *at least 200 observations*. For the storyboarding activity on May 2nd, you will need *at least 20 different visualizations* showing the relationships between your variables. After that activity, you will need to narrow things down to 5 - 10 different visualizations. At least one of these visualizations needs to be a type of visualization we have not yet done in class and at least one of these visualizations needs to be interactive (e.g. plotly, shiny, flexdashboard, etc.). After your peer review on May 5th, you will include one additional visualization bringing the total to at least 6.

Similar to your exams, every graph that you make will be evaluated on:

1. Appropriateness for the stated variable(s) and/or relationship(s).
2. Informative axes labels, legend (if appropriate), and graph title.
3. Proper use of Gestalt, Tufte, and accessibility principles.
4. The "it factor" (i.e. extra aesthetics that make your graph more interpretable/readable/pleasing, etc.).
5. Creativeness and appropriateness in conveying your intended data story.

Color Palette

Artists are often known for using a particular color palette for their work. You are to create your own color palette that you will use for all of the visualization on this page of your website and in Part 4. These links will be helpful:

- http://www.cookbook-r.com/Graphs/Colors_(ggplot2)/
- https://bookdown.org/hneth/ds4psy/D-5-apx-colors-define-use-custom.html
- https://www.jumpingrivers.com/blog/custom-colour-palettes-for-ggplot2/

Part 4: Create infographic/scrollstory for your virtual art exhibit

This will be an advertisement for your art exhibit that you will include either on the homepage of your website or on its own page. This does not need to be interactive, but should entice readers to want to "go to" your exhibit and should feature your color palette. Here are some example infographics:

- https://public.tableau.com/app/profile/ken.flerlage/viz/TheQuokka/Quokka
- https://public.tableau.com/views/TheKillingFields3/KillingFields?:showVizHome=no
- https://public.tableau.com/app/profile/ken.flerlage/viz/CongressionalDiversityWIP/Diversity
- https://rforpoliticalscience.com/2023/03/20/download-irish-leader-dataset/
- https://rstudio-pubs-static.s3.amazonaws.com/702513_030b24b89e7341b39935a157fc80cccd.html

Part 5: Host Website on Github

This part takes your local website and hosts it on Github so that it will be publicly available. *More information on this process will be provided in a separate document.* If you have a different place that you would like to host your website, you are welcome to use that, but I may not be able to help with the process. If for any reason you are not comfortable hosting a public website, please reach out to me as soon as possible.

Part 6: Project/Course Reflection

You will complete a short project description/reflection with tentative requirements below. The requirements for this part may be adjusted up to May 2nd. This document should be a maximum of 2 pages double spaced and is to be uploaded on Gradescope. You should also write your responses in paragraph form.

- **Website URL**
  Include a link to your website here and also DM `@Prof.Flynt` on Slack.
- **Class Visualizations**
  Which of your class visualizations from Part 2 do you like the most and why?
- **Your Color Palette**
  What is the name of your color palette and how did you go about choosing your colors?
- **Your Data**
  Why were you interested in working with your chosen data set? What was the most difficult part of working with these data?
- **Your Visualizations**
  Pick 2 of your visualizations from Part 3 and discuss some of the decisions you made in creating those visualizations. Which visualization was added after your peer review? How did that visualization complete/round out/add to your data story.
  Be sure to reference the visualizations by name so that they are easy to find on your webpage.
- **MATH 230**
  Reflect on your semester in MATH 230. This is mostly open ended, but be sure to mention how you now feel about programming in `RStudio` and `RMarkdown` and what you've learned about data visualization and computing that you plan to implement in your future courses, careers, interests, etc.