

# INFO4310: HW2 - Interactive Visualization Design

**DUE BEFORE: February 24, 2020 at 12:00PM (noon) eastern time**

In this assignment, you will work **independently or with a partner of your choosing** (1-2 people) to develop an *interactive* visualization for a dataset of your choosing and explain the design choices you made during its development. Theoretically you should be able to explain why every single pixel of the display looks the way it does and how it relates to the goal you have in your particular visualization. As this assignment is focused on interaction, you should consider how terms from your course readings apply to the interactions you design, and how you can integrate concepts from the readings into your work.

You must use HTML, Javascript, and D3 to complete this assignment. While you may use any programming language you like to pre-process the data, your visualization must not make use of any other external libraries without instructor permission. My aim in constraining the specification is to force you to focus on the specific design elements of your visualization.

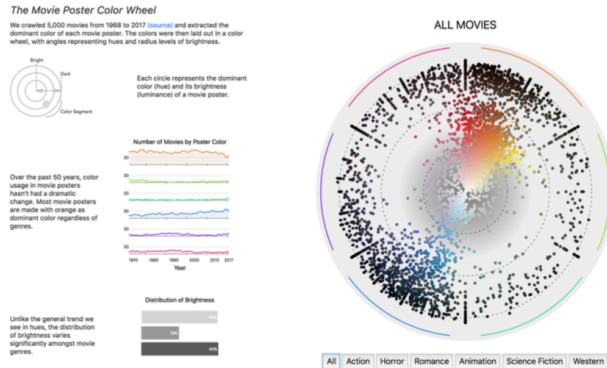
This assignment is 2 weeks in duration. Please be sure to create a submission that reflects at least two weeks of work on the prototype and design rationale document. Try to scope your project down so that you can deliver something that is *thoughtfully designed* in the time that you have. Two weeks for 1-2 people is not a huge amount of time. Even if you don't cover a massive scope of data, if your interactions are cleverly constructed and the entire submission leads to a deeper understanding of data then you will have succeeded. Successful submissions will consider visual design, user flow through the page, signaling users about interactive elements (discoverability), helping users receive both an overview and detail view, and providing responsive feedback.

## Dataset

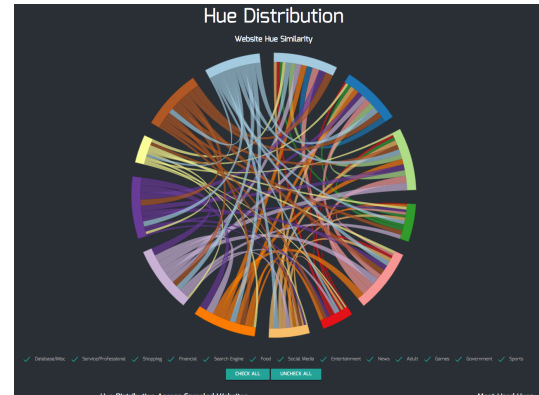
In this assignment you will choose your own dataset. The [class dataset list](#), Piazza, and repositories such as Kaggle will prove helpful in your search. Find a dataset that is manageable and avoid data that are trivial (e.g. 2 attributes over 20 points). Choose datasets that are complex enough to require visualization. Ideally, they have enough complexity that one visualization wouldn't cut it, and interaction is needed in order to unpack or reveal details in the data. Make sure that you organize your data such that they load responsively in a browser. If necessary, curate and pre-process your data. Note, **we have a moratorium on COVID-19 visualizations**. Otherwise, there aren't limits on the kind of data you pick, as long as they load over the web and are appropriate for general audiences.

## Examples of successful past HW2 submissions

An interactive tool that allowed users to explore the average colors of movie posters by genre using a color wheel metaphor. Additional statistics views provided context to the visualization. The authors made a custom scale for color wheels.



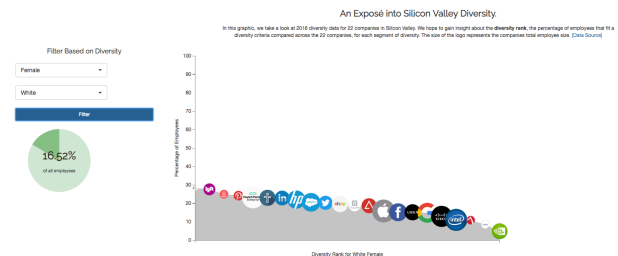
Students gathered their own data about average web site colors, making several successful (and less successful) visualizations to triangulate on trends. The choropleth was less successful, but interactions helped make it a bit more usable.



An editorial visualization of lost baggage that used animation and interactive customization to show just how much is lost by airlines. Scrolling shows new kinds of details and comparisons. While less interactive, the editorial content and visual design worked to amplify the intended message.



A configurable visualization helped users explore how diversity is lacking in Silicon Valley companies. Responsive animations as the user customized helped build a connection, though they should have removed their filter button and incorporated direct manipulation instead.



**Please keep in mind that these examples were done in teams of 2-3. I am expecting slightly less ambitious projects from individuals and pairs.**

Also note that there are no “time slider” projects in that table. While there have been a few successful interactive projects that deal with time as a dimension, think very carefully about how your users will interact with a time slider and how it will (or won’t) support comparisons across time.

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# Task

## **Pick some data and storyboard interactions for your visualization**

Choose a dataset, then think about what you want to visualize and how you will help users to interact with the data. Think about why the data and the techniques are a good match for one another. At this stage, write a description of how you chose your data domain, **develop a storyboard for your interface/interactions**, and describe the particular features of your visualization. These will later come in handy for your write-up. Most importantly you should contemplate why the interaction techniques you will implement will be effective in the context of your data and insights you want users to have. The goal of this exercise is to think through the various trade-offs that will eventually go into the final design and software implementation. As part of your prototyping, you may find it helpful to use existing tools (e.g., Tableau or R) to explore the data and test multiple visualization strategies.

## **Implement your design**

After doing some design work, implement your design using the d3 library and JS/HTML/CSS.

Note: while you are free to use non-programming tools (e.g., Tableau or ggplot) to explore your data set and try out design ideas, you must program the final application by yourselves.

## **Generate your final report**

Your final report should:

- Describe the data you chose and identify specific insights/use cases for that data that will align with your chosen interactions (done in step 1)
- Provide storyboards that outline the interactions you will design for your dataset and justify why you are using those particular interactions (done in step 1)
- Briefly describe your final interactive visualization application, including a screenshot
- Step back and think about issues or trade-offs associated with the interactions you developed, and how you might alleviate those (or whether they are unavoidable).
- Briefly outline the development process of your tool. Explain how your visualization/interactions changed between storyboarding and final implementation. Comment on any trade-offs or design choices you had to make while developing.
- Identify how work was broken down in the group and explain each group member's contributions to the project. Give a rough breakdown of how much time you spent developing and which parts of the project took the most time.

There is no specific length requirement for the report. Please cover all of the above bullet points.

## Deliverable

Before the deadline, please submit to CMS a ZIP file containing:

- The working source code for your visualization
- Your write-up in PDF form

Late assignments will not be accepted. Upload early and then re-download to verify.

## Preparing for In-class Critique

In addition to posting on CMS, you must also make your project publicly available so that others can access it during in-class critique. I suggest that you make use of a simple Heroku Flask server, as outlined in class.

Once you have made your project accessible to the public, please submit a link to your project using this Google Form: <https://forms.gle/9XBmih4KLu1Yqmie7>

You must submit a link before the homework deadline in order to receive credit for this portion of the assignment.

## Grading

This assignment will be graded both on the soundness of your design and the quality of your write-up. I will also be looking for how you think about your audience, the story you are telling, and how your design choices align with those two factors. Some examples for point deductions include misleading, unmotivated, or unnecessary graphic elements; poorly thought out or non-responsive interactions; incomplete write-ups; poor choices for encoding data dimensions; choices that don't align with your intended message; and not adding your submission to the form for critique.