

## Assignment 4: Using visualization(s) to tell a story with data

The task in this assignment is to use an existing visualization tool to formulate and answer a series of specific questions about a data set of your choice and to then tell a story about the data. After answering the questions using the data, you should create a final visualization that tells the story of the data to others.

*The goal of this assignment is not to develop a new visualization tool, but to understand better the process of using visualizations to tell a story about a data set.*

Here is one way to start.

### **Step 1. Pick a domain and data set that you are interested in.**

Peruse the provided data sets:

<http://nixdell.com/classes/HCI-and-Design-Spring-2016/Resources.html>.

Choose the one of greatest interest to you. If you would like to explore a different data set, you are free to do so but be aware of how much work might be needed to clean the data and get it into a usable format.

### **Step 2. Explore the data. Find a story. Ask questions.**

Start by asking questions. For example: Is there a relationship between melting point and atomic number? Are the brightness and color of stars correlated? Are there different patterns of nucleotides in different regions in human DNA?

### **Step 3. Assess the fitness of the data for answering your question.**

Inspect the data -- it is invariably helpful to first look at the raw values. Does the data seem appropriate for answering your question? If not, you may need to start the process over. If so, does the data need to be reformatted or cleaned prior to analysis? Perform any steps necessary to get the data into shape prior to visual analysis.

### **Step 4. Create the visualization(s) that tell a story about the data.**

You will likely need to create several and see what works best. Keep a record of things you tried and discarded.

## Exploratory Analysis Process

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After you have an initial question and a dataset, construct a visualization (or set of visualizations) that provides an answer to your question by telling a story about the data. As you construct the visualization you will find that your question and story evolves - often it will become more specific and/or focused.

Once you have answered all the questions to your satisfaction, think of a way to present the data and the answers to your questions in a way that makes the story interesting and appealing to an audience. In this assignment, you should use existing visualization software tools. You may find it beneficial to use more than one tool.

As you go, maintain a Google Doc of what you had to do to construct the visualizations and how the questions evolved. Include in the document which data set you chose and describe any transformations or rearrangements of the dataset that you needed to perform. In particular, describe how you got the data into the format needed by the visualization system. Keep copies of any intermediate visualizations that helped you refine your question.

After you have constructed the final visualization, write a couple of paragraphs telling the story, describing the visualization, and saying how it answers the questions you posed.

## What you will turn in

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Create a Google Doc that contains the following information:

1. Describe the data set you chose and why?
2. What were the question(s) that you set out to answer?
3. What visualization tool(s) did you use?
4. Describe any transformations of the dataset that you needed to perform to get the data into the format needed by the visualization tool(s).
5. Write a couple of paragraphs telling the story, describing the visualization, and saying how it answers the questions you posed.

**(Questions 1-5 should be approximately 1-2 pages of text)**

6. Appendix: Include screenshots and brief explanations of some of your draft work to show your process and how you got to your final visualization (no page limit ...be reasonable).

Paste a link to (1) your visualization and (2) your Google Doc report into this spreadsheet:

[https://docs.google.com/spreadsheets/d/1G3\\_XEZABPySY3VyzJ6lqg50nkxDG0VrhE2C-YfYIx8A/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1G3_XEZABPySY3VyzJ6lqg50nkxDG0VrhE2C-YfYIx8A/edit?usp=sharing)

## Grading

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The points for this assignment would be divided between the visualization and the paper (Google Doc) that describes your story and work process.

**Visualization** – 15 points. Can the graders understand what the visualization is trying to convey, *without* reading the paper? Are there enough labels/captions to understand what the data represents? Do the charts/graphs look visually appealing? How insightful is the information provided in the visualization?

*Note – no points will be given on tools used, whether your visualizations were coded with a framework vs. designed with some other tool. Feel free to use anything you need to show your data in the most compelling manner.*

**Paper** (Google Doc) – 10 points. Does the paper communicate the process clearly? Does it have screenshots of your path and intermediate steps you went through? Does it note which tool or tools were used? Does it show that you put in sufficient effort to learn something useful? Does your story make sense? Is it compelling? ***Did you follow instructions?***