Geography 575

Lab #2: Coordinated Visualization w/ D3

Lab Objectives:

- Use the D3 library to coordinate interactions across multiple visualizations
- Learn about the GeoJSON and TopoJSON formats
- Implement *sequence* and *retrieve* for coordinated, multivariate visualization

Evaluation:

This lab is worth **50 points** toward the Lab Assignments evaluation item. A grading rubric is provided at the end of the lab to inform your work.

Schedule of Deliverables:

- **March 7:** Lab #2 Assigned //research begins
- **March 14:** Multivariate Dataset Due //Module #7
- **March 28:** Basemap Due //Module #8
- **April 4:** Full Map and Chart Due //Module #9
- **April 11:** Lab #2 Due //submission deadline

Challenge Description

You have decided to compete for an ENGAGE Innovation Award, a UW-Madison program run by DoIT promoting the use of technology for research and teaching (http://engage.wisc.edu/). This specific Innovation Award cycle addresses the use of information visualization for the purpose of scientific exploration. Parameters of the Innovation Award require you to work with a domain expert to develop a visualization of complex and multivariate information in order to facilitate the generation of new insights about your collaborator's core research interests. Given your expertise in engineering successful user experiences with map-based visualizations, you plan to team up with a colleague of yours in Geography to design a highly interactive and coordinated geovisualization application, with the goal of supporting hypothesis generation and knowledge construction about your colleague's spatial research. The visualization will load enumerated information, allowing for the interactive identification, comparison, ranking, association, and delineation of multiple attributes as they vary across space. The selection of winners is based on a proof-of-concept application allowing for exploration of a sample information set that you have assembled. The proof-of-concept application should reveal new insights regarding notable outliers, anomalies, patterns, trends, correlations, and clusters; submissions will be chosen based on the potential for expanding these proof-of-concept interfaces to unlock additional geographic insights.

Editor's Notes from ENGAGE

Your visualization must include a choropleth map with *at least 15* enumeration units and *at least 5* numerical variables collected for these units. The enumeration units cannot be at the same geographic location and/or cartographic scale as your Lab #1 application.

Evaluation Rubric: Interaction Challenge (50pts)

Delivery: You are required to commit your finished map to GitHub at least one hour before your lab on **April 11**.

Representation: Choropleth Map View (10)

(9-10 points) The basemap is appropriately designed for the map scenario with correct projection, level of generalization, visual hierarchy, etc.; the data is normalized; the choropleth has an appropriate color scheme and class structure.

(7-8 points) The basemap and/or color scheme have one or two minor design flaws.

(5-6 points) There are multiple design flaws with the basemap, color scheme, and class structure, or the data is not normalized.

(4 points or below) There are serious errors with the data and/or design scheme.

Representation: Coordinated View (10)

(9-10 points) The bar chart or other main data graphic draws correctly; visual elements (bars, etc.) are positioned logically to help the user create meaning from the data; explanatory elements (titles, labels, etc.) appear where they are necessary or appropriate.

(7-8 points) Visual elements could be more clearly positioned or labeled.

(5-6 points) The graphic is not overtly meaningful for the scenario, or there are multiple flaws with the positioning, styling, etc. of the visual and/or explanatory elements.

(4 points or below) The graphic fails to draw correctly, is buggy, and/or has several visual flaws.

Coordinated Interaction: *Sequence* (8)

(7-8 points) The map and additional data graphic(s) update correctly when sequencing by attribute; the user is given adequate visual affordances to show how to update the visualizations and feedback that the shows the update took place.

(5-6 points) Visual affordances and/or feedback are missing.

(4 points or below) There are bugs in the interaction that cause the visualizations not to update correctly.

(2 points or below) Attribute sequencing is not implemented.

Coordinated Interaction: *Retrieve* (8)

(7-8 points) Dynamic labels open on the map and additional data graphic(s); highlighting feedback is coordinated across views; the information window is well designed and contains information that supports the design scenario.

(5-6 points) Dynamic labels are not well designed or there are minor problems with how they display on the page.

(3-4 points) There are bugs in the dynamic labels and/or the feedback does not coordinate across views properly.

(2 points or below) The retrieve operator is not implemented.

Design for Scenario (8)

(6-8 points) The design is clear, creative, consistent across information views, and fits the scenario.

(5 points or below) There are inconsistencies in the design, a mismatch with the scenario, or it is bland.

Good Coding Practice (6)

(5-6 points) Your code follows practices introduced in class (variable names, elimination of redundancies, proper indentation). Your code has plenty of descriptive comments and is human readable. Your repository is properly pushed to GitHub with an informative description.

(3-4 points): Your coding practice needs improvement moving forward, including more descriptive variable names and proper indentation. Your code requires denser or more descriptive comments. Your repository is properly pushed to GitHub.

(2 point or less): Your code is mostly copied from the module examples and is uncommented.