

Experimental Course Outline: Data Viz

Overview

The idea of the data viz course is to go through Ben Fry's data visualization pipeline:

aquire --> parse --> filter --> mine --> represent --> refine --> interact

The course focuses on each aspect of the pipeline, exposing the students to data viz **tools** (from parsing - R/Python, commandline tools - to interacting - Mapbox Studio/Leaflet) and basic user experience/interaction **design principles** (journal articles, readings and discussion).

Learning Objectives

The learning objectives of the course would be for students to:

1. To learn the fundamentals of effective visualization
2. To develop a critical eye for visualization - to appreciate the responsibility, power, and danger embedded in visualization
3. To develop problem solving skills
4. To gain an appreciation for code as a material to build effective visualization

Course Outcomes

The outcome of the course would be:

1. Assignments and workshops showing student exposure to the 7 stages of the visualization pipeline.
2. *Ideally*: Github repositories for the assignments showing their progress over the term.
3. Final research project demonstrating creative approach to answering a visualization question.

Topics Covered

Ideally each assignment would have a little bit of all of these covered...

1. Acquire:

- Geodata formats (not just shapefiles!) - OSM, APIs, Open Data, Gov Agencies, Web Scraping?
- The API !!! (<http://blog.blprnt.com/blog/blprnt/art-and-the-api>)
 - <http://api.dronestre.am/> (drone strikes)
 - <https://bookit.modo.coop/api?output=human> (modo)
- **Knowing your sources**

2. Parse:

- Geodata (contd.)
- Re-imagining GIS
- Data Wrangling 101
- **Knowing your data type**

3. Filter:

- Re-imagining GIS (contd.)
- Data Wrangling 101 (contd.)
- Automation and Iteration
- **Knowing what you do & don't know**

4. **Mine:**

- Automation and Iteration
- Basic statistics
- **Drawing connections**

5. **Represent:**

- Interactive Web Maps
- Infoviz
- Automation and Iteration
- **Charting Connections**

6. **Refine:**

- Everything except the chart (<https://dominikus.github.io/webvis-tutorial/www/#/>)
- Automation and Iteration
- Production / Staying organized:
 - Github (<https://github.com/>)
- **Multiple solutions to questions**

7. **Interact:**

- Interactive Web Maps
- Infoviz
- Production / Staying organized:
 - Github (<https://github.com/>)
- **Engaging with the viz / Communicating your work**

Schedule

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

...

Readings:

- Ben Fry, Visualizing Data
- Nathan Yau, Data Points
- Nathan Yau, Visualize This
- Edward Tufte, The Visual Display of Quantitative Information
- Alberto Cairo, The Functional Art
-

Recommended:

- Fry & Reas, Processing: A programming handbook for Artists and Designers
- Murray, Interactive Visualization for the Web (<http://chimera.labs.oreilly.com/books/12300000000345>)
- Wes McKinney, Python for Data Analysis

Supplementary:

- Datastori.es - Podcast with Moritz Stefaner & Enrico Bertini
- Mapbox Blog - <https://www.mapbox.com/blog/>
- Lyzi Diamond:
 - <http://lyzidiamond.com/posts/geographic-education/>
 - <http://lyzidiamond.com/posts/what-to-learn-first/>
 - <http://lyzidiamond.com/posts/what-to-learn-first-pt-2/>

Resources:

- Maptime Resources and Presentations:
 - <http://maptime.io/lessons-resources/>

Big questions:

- How to keep continuity?
- What is the time commitment?
-

Ideas:

Grade Weights by Project

Detailed descriptions of each project will be distributed in class.

5%	Discovery	Find five visualizations, and explain and critique each one.
10%	Perfection	Using the data provided, create "the perfect chart" that clearly and honestly communicates that data and its importance.
20%	Inequality	Choose a social inequality to research, find relevant datasets, and use a variety of tools to design a series of charts to tell the history of that inequality.
20%	Locality	Using data provided by the City of San Francisco, create a map or other visualization that illuminates a socially significant and otherwise unseen aspect of city life.
20%	Personality	Collect data about yourself and your own life, and then interpret it visually to discover and communicate patterns in your own behavior and experiences.
15%	Participation	Come to class well-prepared to present your projects, proposals, and ideas. Ask lots of questions, offer thoughtful, critical responses to the readings, and provide helpful, considered feedback during group critiques.
10%	Readings	Complete each assigned reading, and write thoughtful responses, engaging in a discussion of each text with your fellow classmates.