Introduction to Interactive Data Visualization with d3.js

Schedule: Day 1

9:00am: Arrival and Check-In

9:15am: The Landscape of Data Visualization

- Overview of available tools and what will be covered in the next 2 days.

9:30am: Basic Visualization Concepts

- Learning some of the theory and vocabulary that pops up in visualizations, as well as some general guildelines for visual design.

10:00am: Narrative Structures

- Lecture and discussion. Analysis and breakdown of outstanding data visualizations.

Exercise:

1. What is the narrative structure?
2. How does the visualization lead you through the data?
3. What is the story being told?
4. How could this have been improved?

Examples:

- Where Does the Money Go?
- Word Frequency Between The Bible and the Quran
- Buy or Rent Calculator
- Poverty Tracker
- The Refugee Project

11:15am: Interrogating the Data

- Crime Data per State (2005)

Exercise:

1. Come up with three questions to ask the data
2. Sketch two visualization types to explore each question

12:00pm: Break for Lunch

1:00pm: Build an Interactive Data Visualization

- Work with CSV file to build a visualization. Data binding, scales, axes, user interaction with d3.js.

4:00pm: Conclusion and Short Review

Schedule: Day 2

9:00am: Arrival and Check In

9:15am: Making Understandable Visualizations

- Making the narrative of data storytelling understandable to the user using principles from UX and interaction deisgn. When and how to include instructions with your visualization, common UX pitfalls, and a close reading of successful visualizaitons.

Exercise

1. What sort of UI elements are present?
2. Is there a key?
3. How does the visualization instruct the viewer to use it?
4. How could it be improved?

Examples:

- House Hunting
- Four Ways to Slice Obama's Budget Proposal
- Selfiexploratory
- The Death of Afgans
- How Recession Shaped the Economy

10:00am: d3.js vs. CSS

- When to use d3.js and when to use CSS in your visualization. We'll cover this topic both from a visual design and a user interaction perspective.

11:00am: Let's make a map!

12:00pm: Break for Lunch

1:00pm: Animation in Data Visualization

- Understanding when and how to use animation in your visualization. Going through the d3 transition() API, and building multi-step animations.

2:30pm: Continuing Our Map Exercise

4:00pm: Review and Additional Resources

Resources

Resources, Day 1

The d3.js Environment

- d3 Show Real
- d3 Layouts
- NVD3
- Rickshaw
- Crossfilter
- dc.js

- RAW

Basic Visualization Concepts

- Chart Suggestions, A Thought Starter
- d3.js Gallery
- Attribute Encoding
- Preattentive Processing
- Find the Un-bump
- Cartogram Types
- Electoral Vote Maps: 1 2 3 4
- Color Theory Tutorial
- ColorBrewer Scales

Narrative Structure

- Narrative Categories
- Author Driven
  - Refugees by Country
  - The Facebook Offering
- Viewer Driven
  - Crimespotting
  - Paths to the White House
- Martini Glass
  - Out of Sight, Out of Mind
  - US Gun Deaths
- Facebook Friendships

d3.js Time!

- Protovis, an Interactive Toolkit for Visualization
- An SVG Primer
- Binding Data Tutorial
- Scales Tutorial
- Axes Tutorial
- SVG Transform Attribute

Resources Day 2

UI Design Principles

- Bootstrap Components
- Animatable

Animation

- Piecewise Animations (Graphic)
- Piecewise Animations (Movie)
- d3 Transition API
- Easing Equations
- Motion Studies Video
- d3 Easing Equations, Visualized

General Resources

- Let's Make A Map — d3.geo() Tutorial
- Infochimps — Free Datasets
- A Tour Through the Visualization Zoo
- Mind-Hacking Visual Transitions