

CPSC 436V, Foundations 4

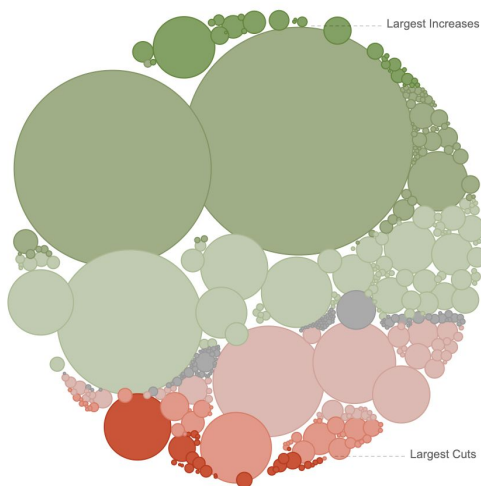
Out: Thu Feb 13 2020. Due: Wed Feb 26 2020, 11:59pm.
Submit through Canvas, as a file in PDF format.

1 Interactive Transitions (6%)

This interactive visualization by the New York Times lets you explore Obama's 2013 Budget Proposal:

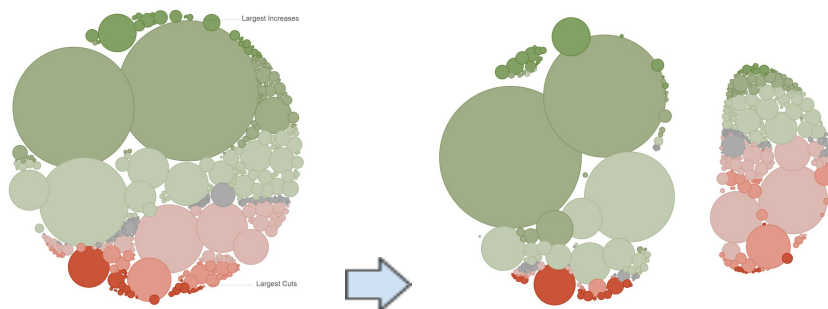
<https://archive.nytimes.com/www.nytimes.com/interactive/2012/02/13/us/politics/2013-budget-proposal-graphic.html>

Initially, the visualization shows a bubble chart of *All Spendings*. Circles are sized according to the proposed spending and colors encode the amount of cut or increase from 2012.

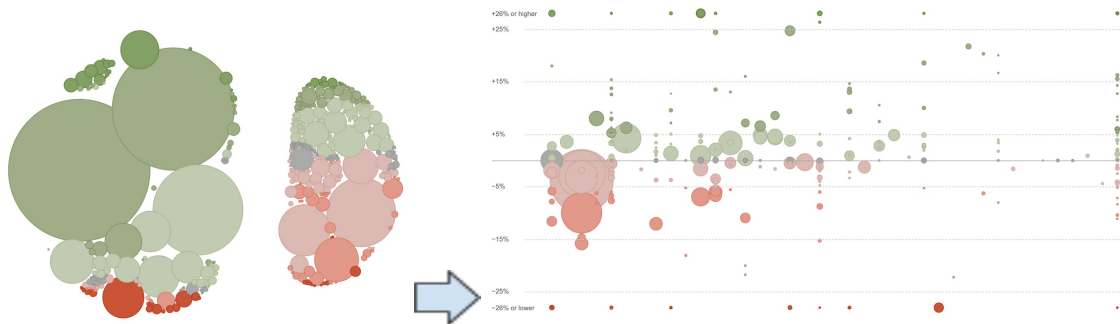


Users can choose different facets to slice the budget proposal: *Types of Spending*, *Changes*, and *Department Totals*.

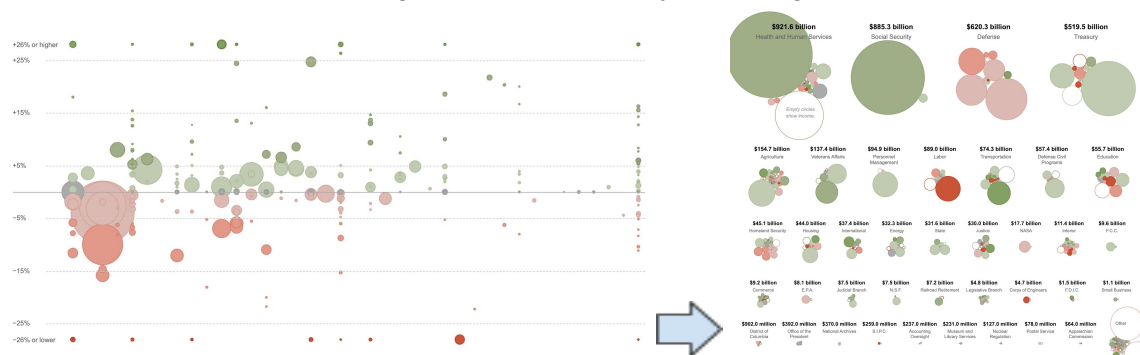
1.1. Describe the changes in terms of marks & channels (for each mark type, which channels are used to encode what attribute), and views (single or which type of multiple), after the transition from “All Spendings” → “Types of Spendings”



1.2. Describe the changes in terms of marks & channels (for each mark type, which channels are used to encode what attribute), and views (single or which type of multiple), after the transition from “Types of Spendings” → “Changes” (to Discretionary Spending)



1.3. Describe the changes in terms of marks & channels (for each mark type, which channels are used to encode what attribute), and views (single or which type of multiple), after the transition from “Changes” (to Discretionary Spending) → “Department Totals”

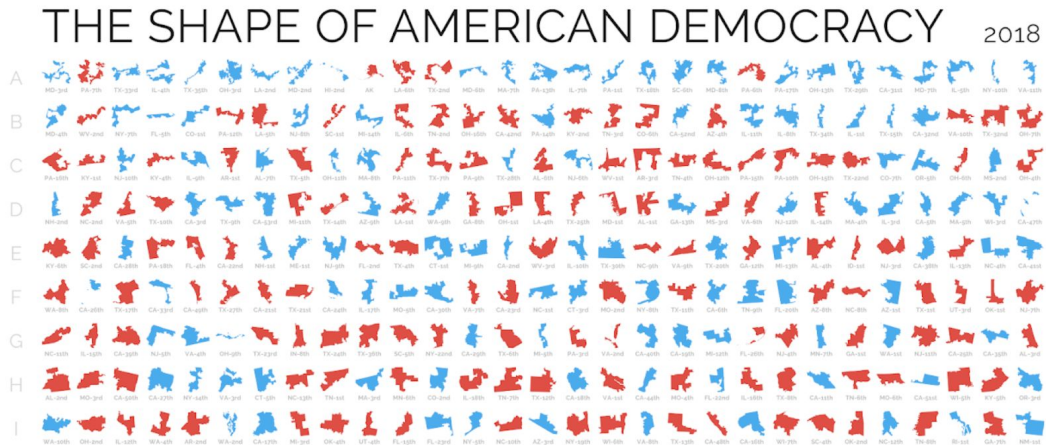


2 Multiple Views (10%)

For each of the multi-view visualizations below, answer the following question:

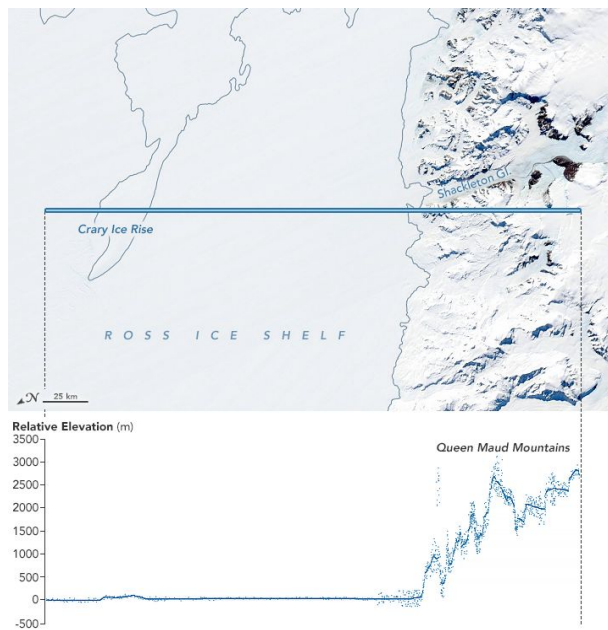
- What type of view coordination is used? Justify your choice very briefly, according to the criteria of whether the views share the same visual encoding, and whether they show the same data or a subset of the data or disjoint data.
 - Same form, Overview/Detail
 - Small Multiples
 - Multiform
 - Multiform, Overview/Detail
 - No linkage

2.1 Gerrymandering



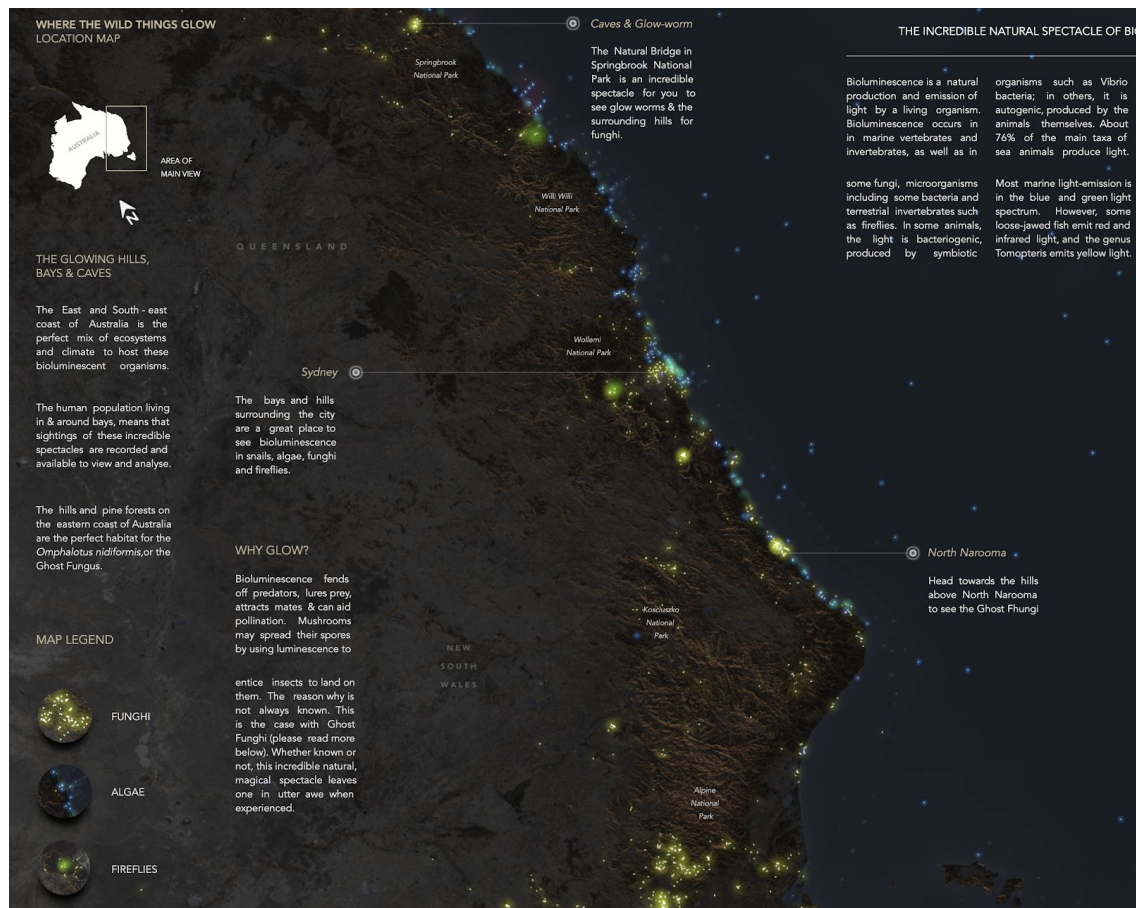
statsmapsnpix.com/2018/05/the-shape-of-american-democracy-v10.html

2.2 Taking Measure of Antarctic Terrain



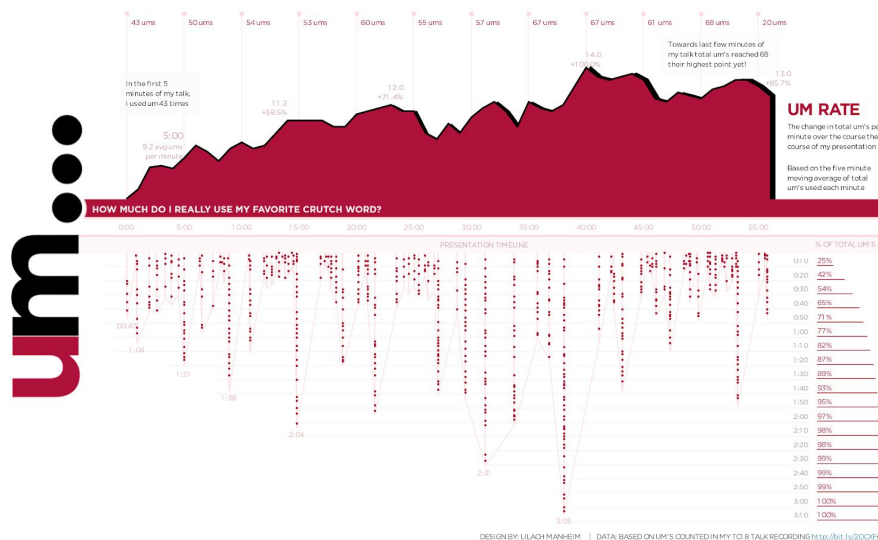
<https://earthobservatory.nasa.gov/images/144367/taking-measure-of-antarctic-terrain>

2.3 Where the Wild Things Glow



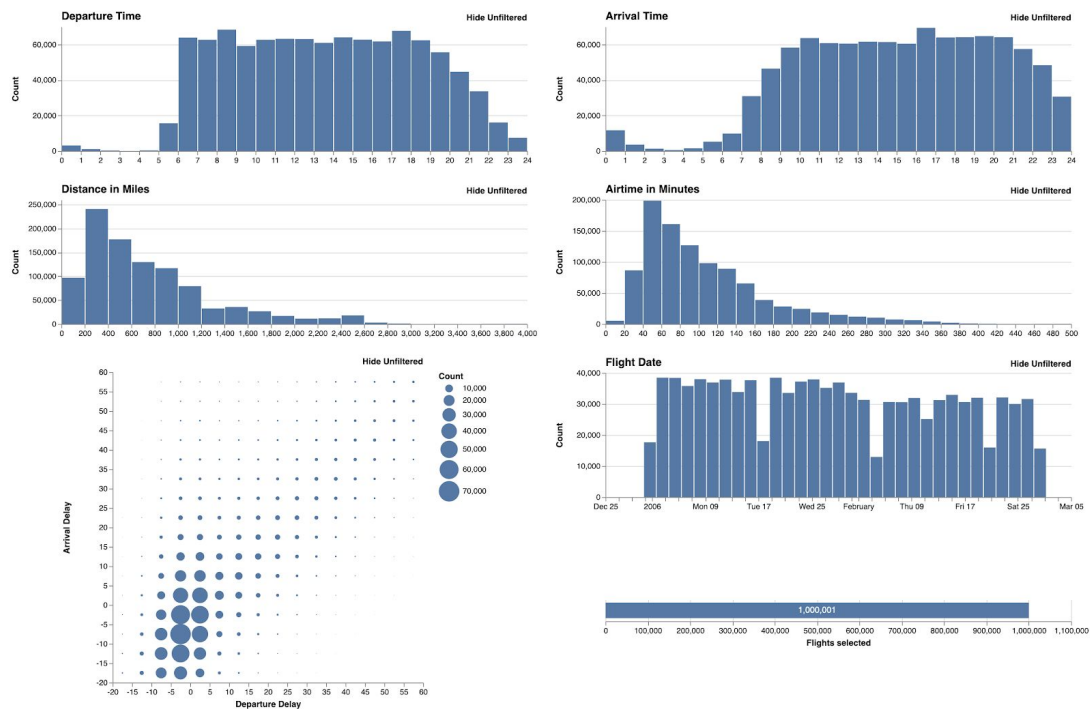
<https://public.tableau.com/profile/jonni.walker#!/vizhome/WhereTheWildThingsGlow/Tester>

2.4 Um... How Much Do I Really Use My Favorite Crutch Word



<https://www.informationisbeautifulawards.com/showcase/3927-um-how-much-do-i-really-use-my-favorite-crutch-word>

2.5 Interactive Flight Time Analysis



<https://uwdata.github.io/falcon/flights/>

3 Sketching Geographic Data (9%)

For each state in the U.S., you are given an obesity rate (between 20% and 35%). Sketch (really only sketch) **three** very different ideas how you would encode that information geographically.

Describe each sketch briefly and state at least one advantage and one disadvantage of your approach.

4 Twitter Monitoring Application (59%)

Problem: You work in a design agency which needs to develop a Twitter Monitoring application for the “Country X” presidential elections. The goal of the application is to show, at any given time, what is the current sentiment about each candidate in each Country X’s state and how did it change over the last 24 hours.

Data: You are provided with data extracted by a data processing engine which monitors Twitter and produces at regular intervals the following information: Time (every minute), Candidate (only 2 candidates), State, Avg. Sentiment values between $[-1, 1]$, Volume (# of tweets).

Instructions

Step 1: Data abstraction on the described data set

- Write down the dataset type(s)
- Write down the number of fields/attributes
- Determine rough cardinalities/ranges for each attribute.

Step 2: Design a visualization that shows all of this information on one screen.

The visualization can be interactive and will probably contain multiple views. It should allow the viewer to answer the following questions about each candidate:

- 1) How is the overall sentiment for a candidate?
- 2) In which states is the sentiment positive/negative?
- 3) In which states has the sentiment recently changed?
- 4) How does the volume of tweets distribute across the states?

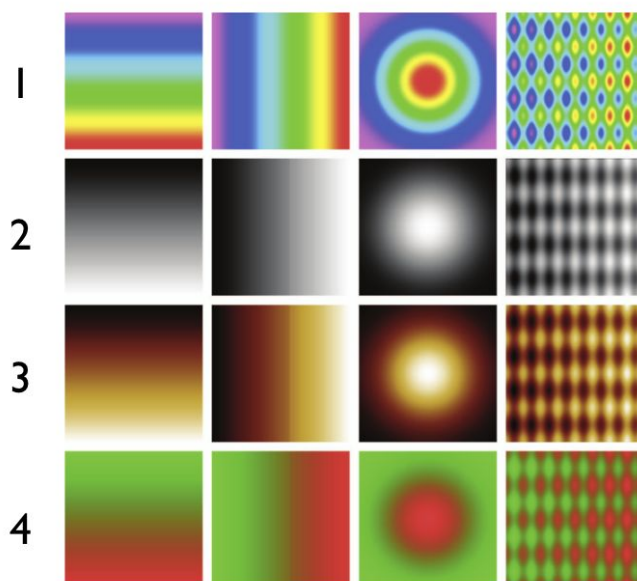
Do not forget to include titles, axis labels or legends as needed! Your sketch can be hand-drawn or mocked up using Powerpoint, a graphics editor, or wireframe tools, such as [Balsamiq](#).

Step 3: Rationale for your design choices

Provide a rigorous rationale for your design decisions. Document the visual encodings you used and why they are appropriate for the data and tasks that the visualization should support.

5 Color Channels (4%)

What color channels are used for each row?



6 Design Color Palettes (12%)

Please generate a color palette for each of the following cases, in the format of a legend in a chart. Assume that the attribute must be encoded with color. Please choose the best possible palette. You do not need to think about interactions with other channels or background contrast. If you generate the palette with a specific tool, please name the tool or include an URL. Provide a brief rationale for your choice.

An example legend for a sequential color palette:



6.1 Population by provinces of a country. Assume that the population ranges from 0.5 million to 30 million, and there are 35 provinces.

6.2 The altitude of the basements of 10,000 buildings in a province. It ranges from -100 meters to 2000 meters.

6.3 The top 5 industry sectors in a country: energy, telecommunications, retail, life sciences, automotive.