

# CPSC 436V, Foundations 2

Out: Thu Jan 17 2020. Due: Wed Jan 22 2020, 6pm.  
Submit through Canvas, as a file in PDF format.

## 1 Two Numbers (5%)

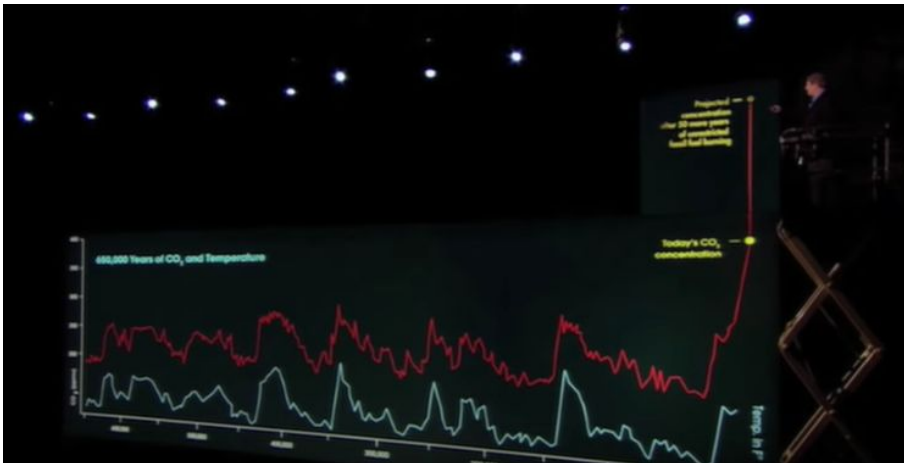
Sketch six different ways to show the two numbers 9 and 26, with each sketch using a different combination of marks and channels.

(If you sketch on paper, snap a photo with your phone and include that. Very rough sketches are fine, the point is to show the design idea not to make something polished.)

## 2 Name Those Channels (5%)

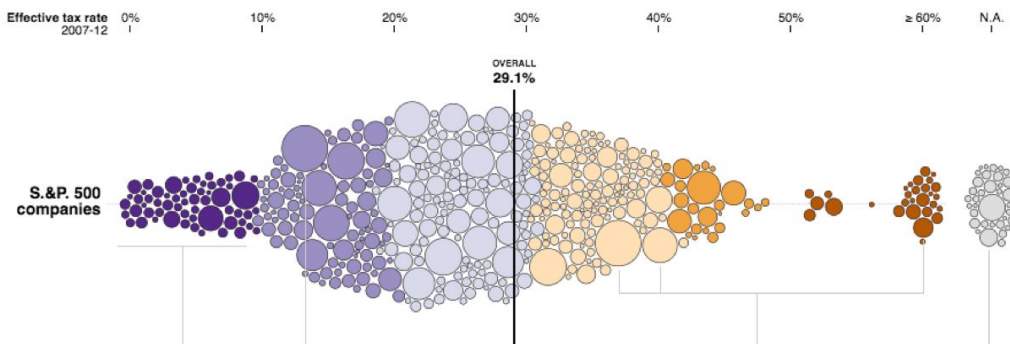
State which visual channels are used in each case below.

### 2.1 Inconvenient truth



More info: <https://www.youtube.com/watch?v=9tkDK2mZIOo>

### 2.2 Tax rates

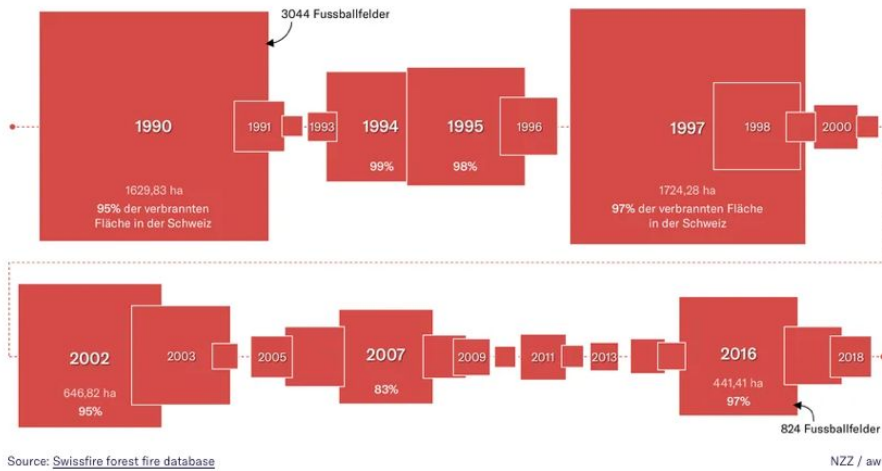


More info:

<https://archive.nytimes.com/www.nytimes.com/interactive/2013/05/25/sunday-review/corporate-taxes.html>

## 2.3 Alpen Forest Fires

Burned area in hectares on the southern side of the Alps



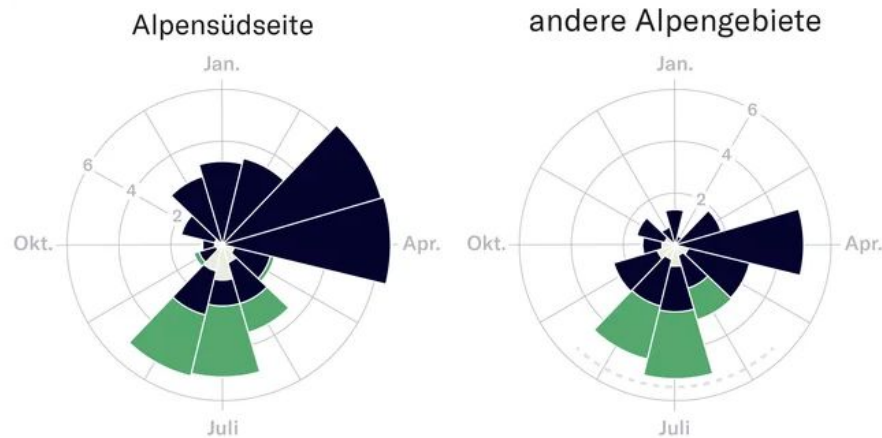
More info:

<https://www.nzz.ch/wissenschaft/waldbraende-erklaert-in-der-schweiz-und-in-europa-ld.1483688>

## 2.4 More Alpen Forest Fires

Monthly distribution of forest fires in the Alpine regions caused by . . .

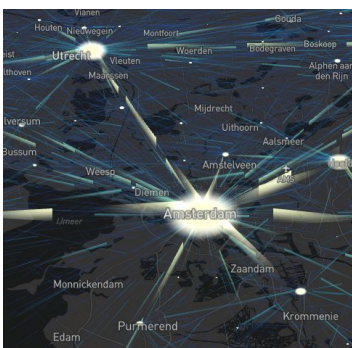
● den Menschen ● Blitzschläge ● unbekannt



More info:

<https://www.nzz.ch/wissenschaft/waldbraende-erklaert-in-der-schweiz-und-in-europa-ld.1483688>

## 2.5

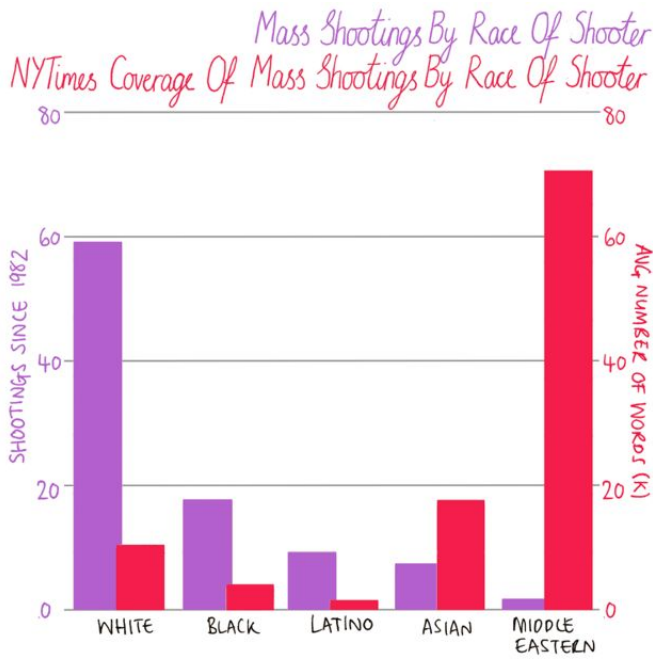


<https://observablehq.com/@ilyabo/animated-flow-map-of-commuters-in-the-netherlands-in-2016>

Do click through to see the complete version of this example.

### 3 Name That Mark (5%)

#### 3.1 Shooting Media Coverage



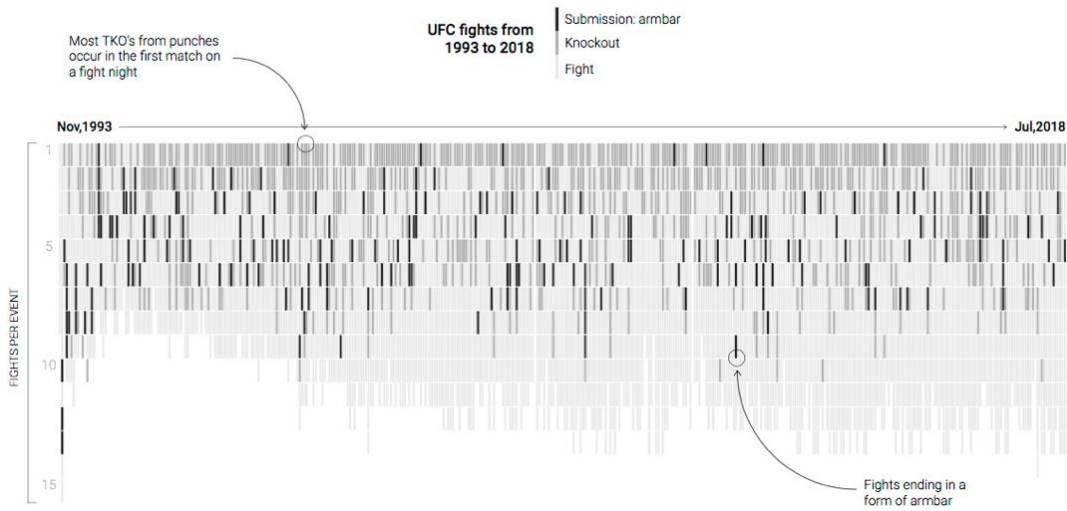
More info: <https://twitter.com/MonaChalabi/status/1158779046693679106?s=20>

#### 3.2 Sunsquatch



More info: <https://flowingdata.com/2017/08/20/sunsquatch-the-only-eclipse-map-you-need/>

### 3.3 UFC Fights



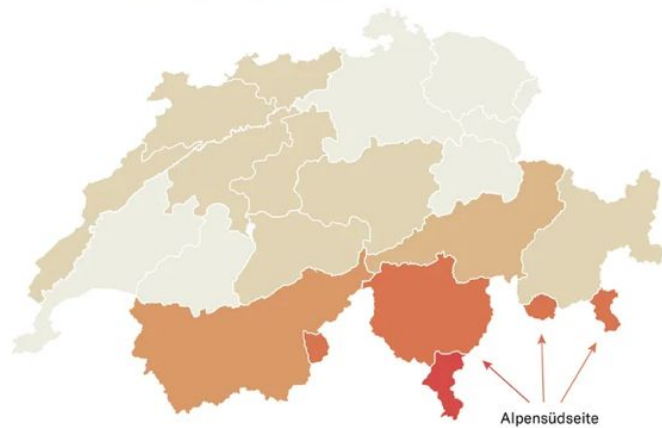
<https://multimedia.scmp.com/infographics/sport/article/3010883/bruce-lee-and-mixed-martial-arts>

### 3.4 Yet More Alpen Forest Fires

Most forest fires in Switzerland occur on the southern side of the Alps. , ,

Annual number of forest fires between 1990 and 2014

< 1 Waldbrand 1-2 2-3 3-5 5-15 > 15



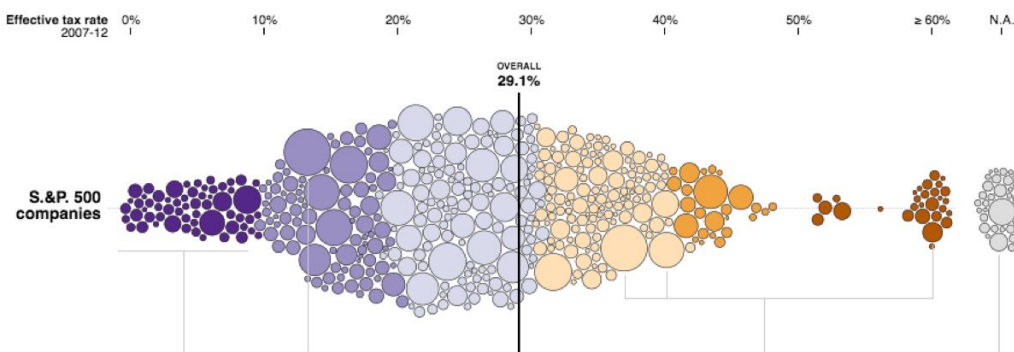
Source: Climate Change Forest. Piuss et al., 2016

NZZ / awi.

More info:

<https://www.nzz.ch/wissenschaft/waldbraende-erklaert-in-der-schweiz-und-in-europa-ld.1483688>

### 3.5 Tax Rates

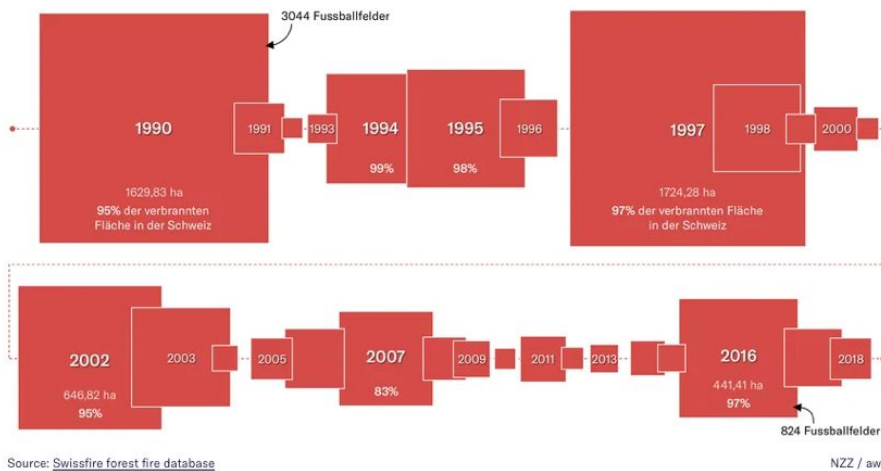


More info:

<https://archive.nytimes.com/www.nytimes.com/interactive/2013/05/25/sunday-review/corporate-taxes.html>

### 3.6 Alpen Forest Fires

Burned area in hectares on the southern side of the Alps



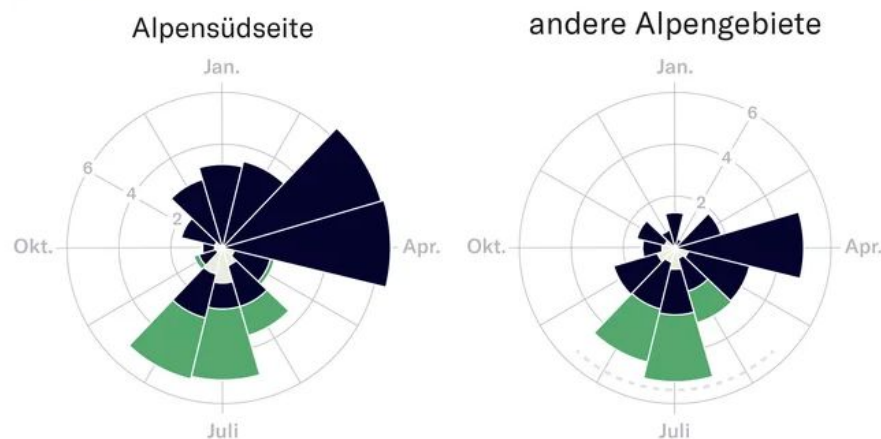
More info:

<https://www.nzz.ch/wissenschaft/waldbraende-erklaert-in-der-schweiz-und-in-europa-ld.1483688>

### 3.7 More Alpen Forest Fires

Monthly distribution of forest fires in the Alpine regions caused by . . .

● den Menschen ● Blitzschläge ● unbekannt



Average numbers in the period 2000-2018  
Source: [Swissfire forest fire database](https://www.nzz.ch/wissenschaft/waldbraende-erklaert-in-der-schweiz-und-in-europa-ld.1483688)

NZZ / awi.

More info:

<https://www.nzz.ch/wissenschaft/waldbraende-erklaert-in-der-schweiz-und-in-europa-ld.1483688>

## 4 Decoding Marks & Channels (85%)

**Learning Goal:** Train yourself in decoding charts so that you can better understand how visual representations can be described using the language and rules of visual encoding and decomposed into low-level graphical components.

**Instructions:** For each of the 5 charts following, you will identify data **items** and the **marks** used to encode them, and data **attributes** and the **channels** used to encode them. For each chart, fill in

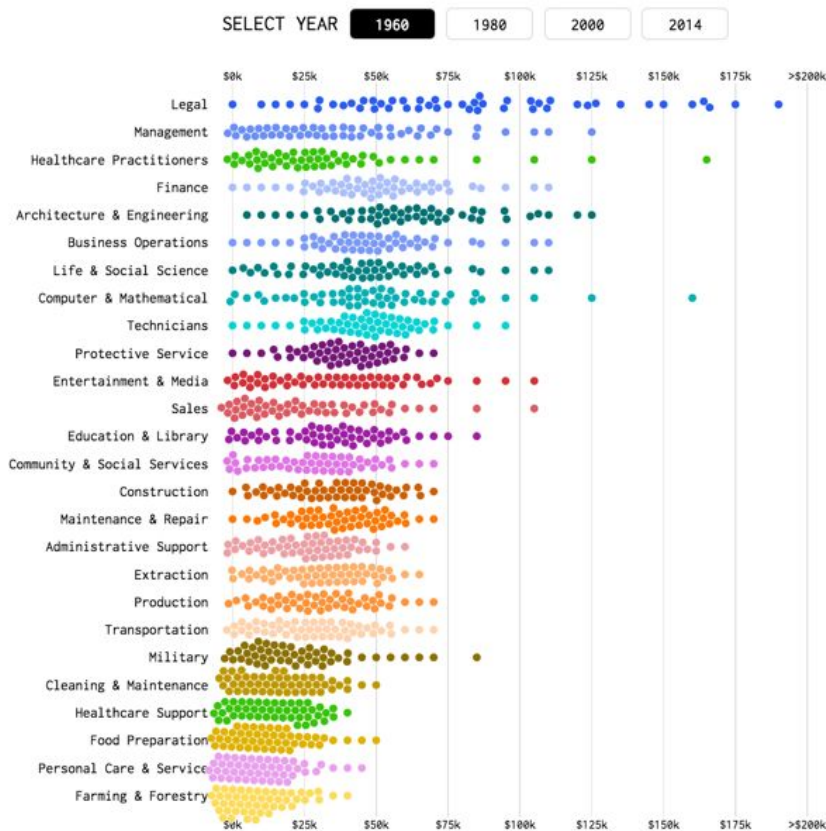
- Visual channels used?
  - Channel X encodes attribute Y

- Channel X encodes attribute Y
- ....
- Marks used?
  - Mark of type X encodes item Y
  - Mark of type X encodes item Y
  - ....

Note that underneath each chart there is a link to a web page providing details about the project, including information about the data and in many cases supporting interactivity. For now just encode what you see in the static image in this document; you might notice that interactivity is being used a lot for emphasis (hover highlight, animated transitions, reordering, details popups, small multiples zooming).

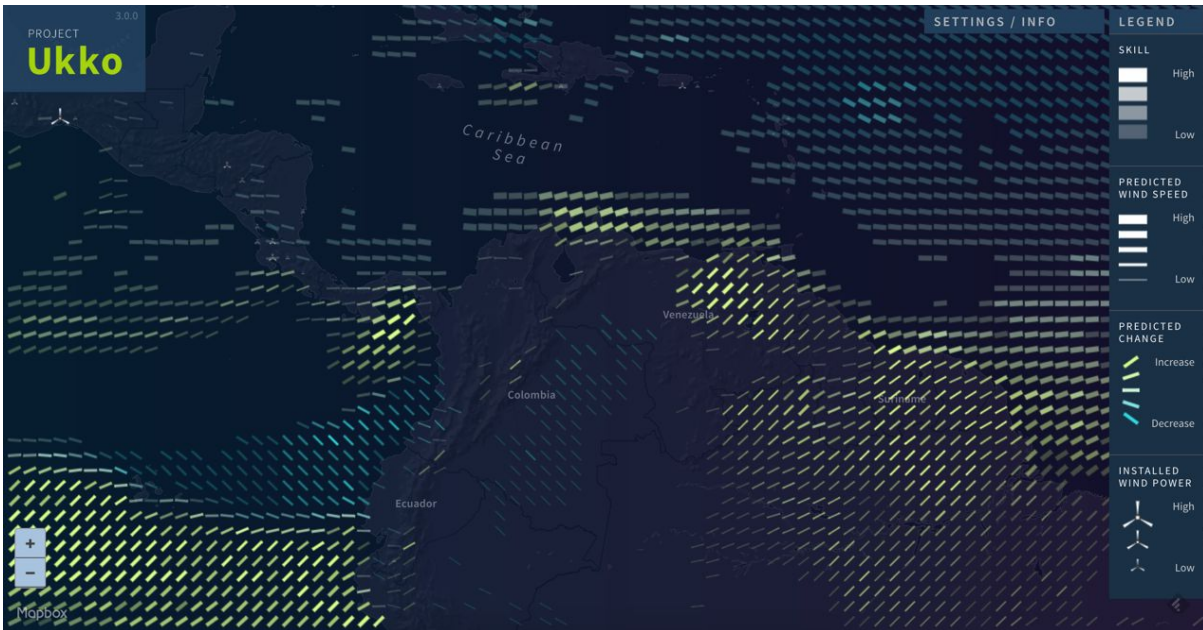
Think about how you would reconstruct the dataset underlying this picture. Assume one mark per item, think of items as rows of a table (or nodes in a network). Assume each channel is showing an attribute, where channel is a column in a simple data table or network. Remember that multiple channels could redundantly encode the same attribute. Notice that a mark is not every single bit of ink on the page - for example, labels and annotations are not marks in the sense that we're doing this analysis!

#### 4.1



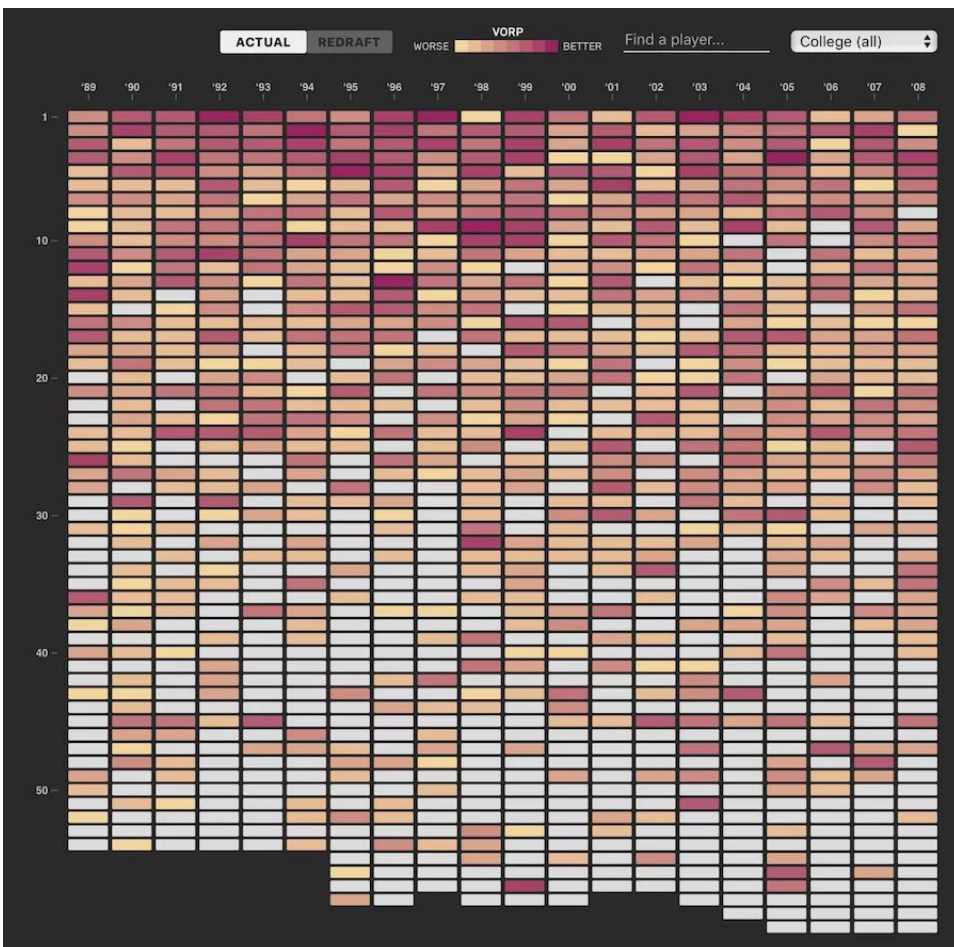
<https://flowingdata.com/2016/06/28/distributions-of-annual-income/>

## 4.2



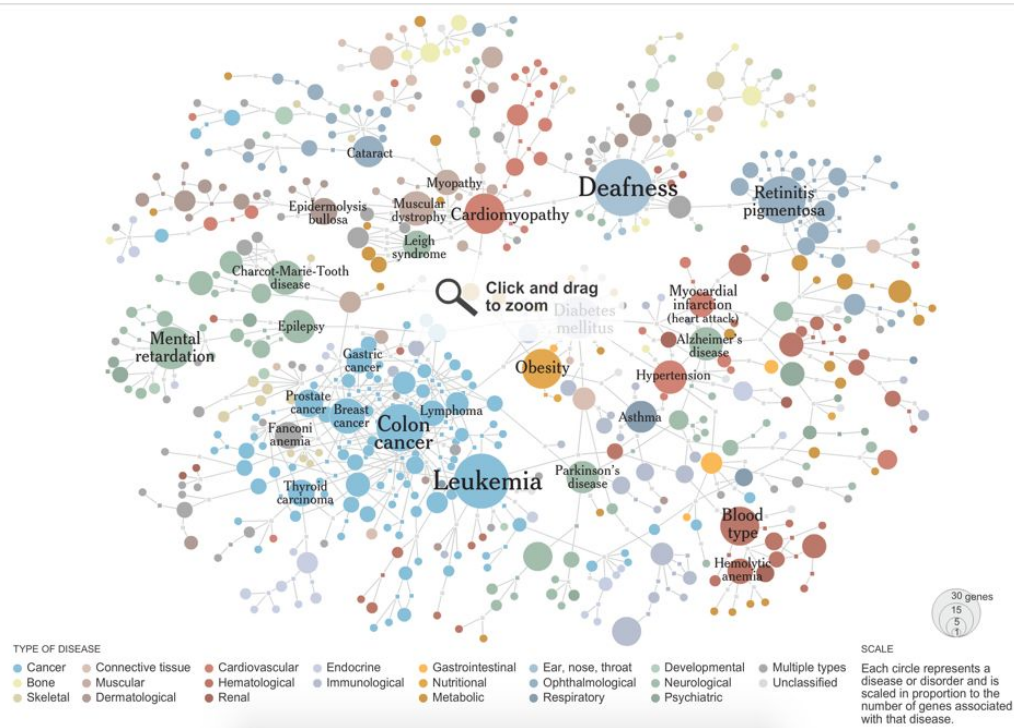
<http://project-ukko.net/>

## 4.3



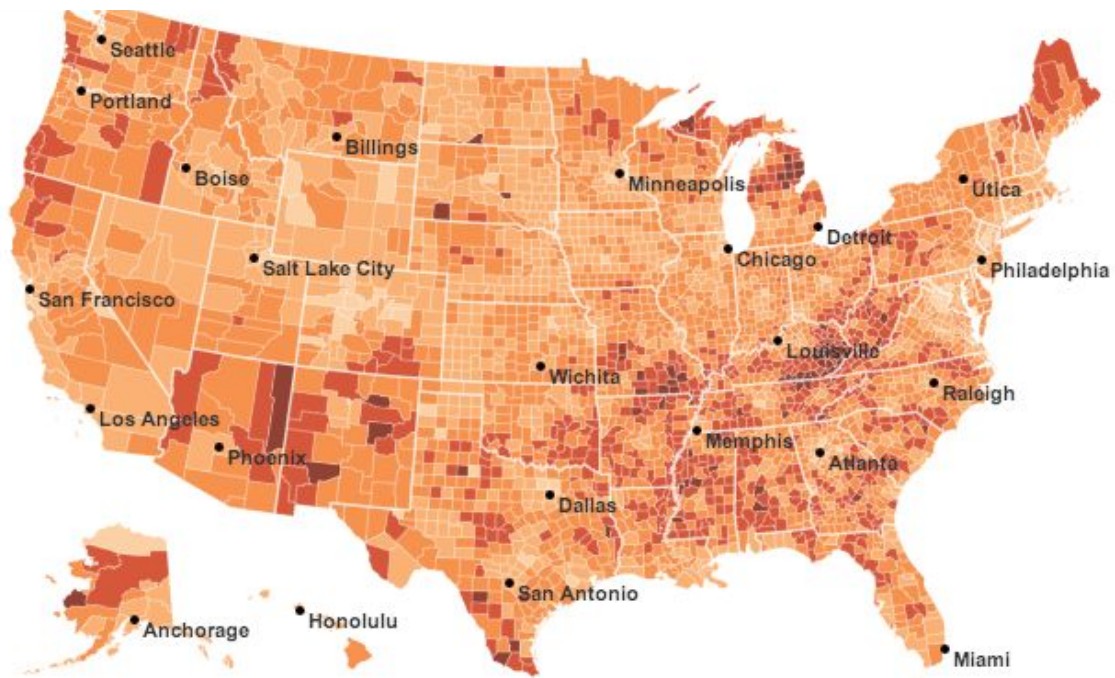
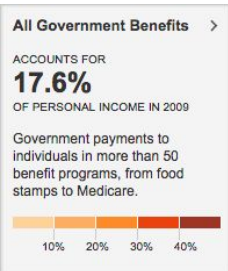
<http://polygraph.cool/redraft/>

#### 4.4



[http://www.nytimes.com/interactive/2008/05/05/science/20080506\\_DISEASE.html](http://www.nytimes.com/interactive/2008/05/05/science/20080506_DISEASE.html)

#### 4.5



<http://www.nytimes.com/interactive/2012/02/12/us/entitlement-map.html>

Exercise Credit: adapted from [Bertini](#), NYU Tandon