

Design & Presentation

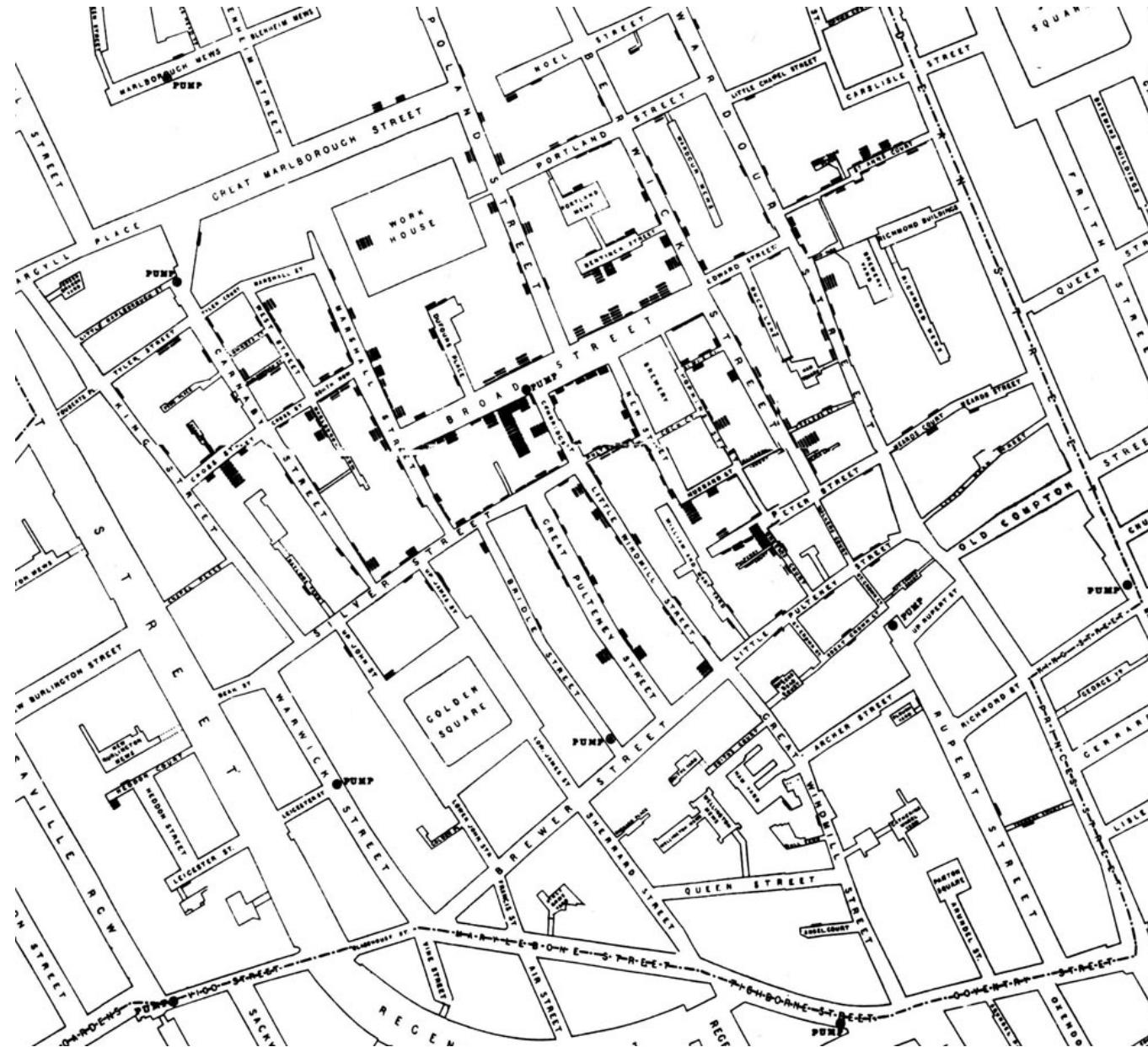
Information graphics & data visualization

Why visualize?

- Show patterns
- Identify trends and outliers
- Communicate relationships
- Allow readers to discover for themselves or to search for interesting or specific data points in a larger field
- Get a better understanding of data & inspire new questions for further exploration

Via Designing Data Visualization

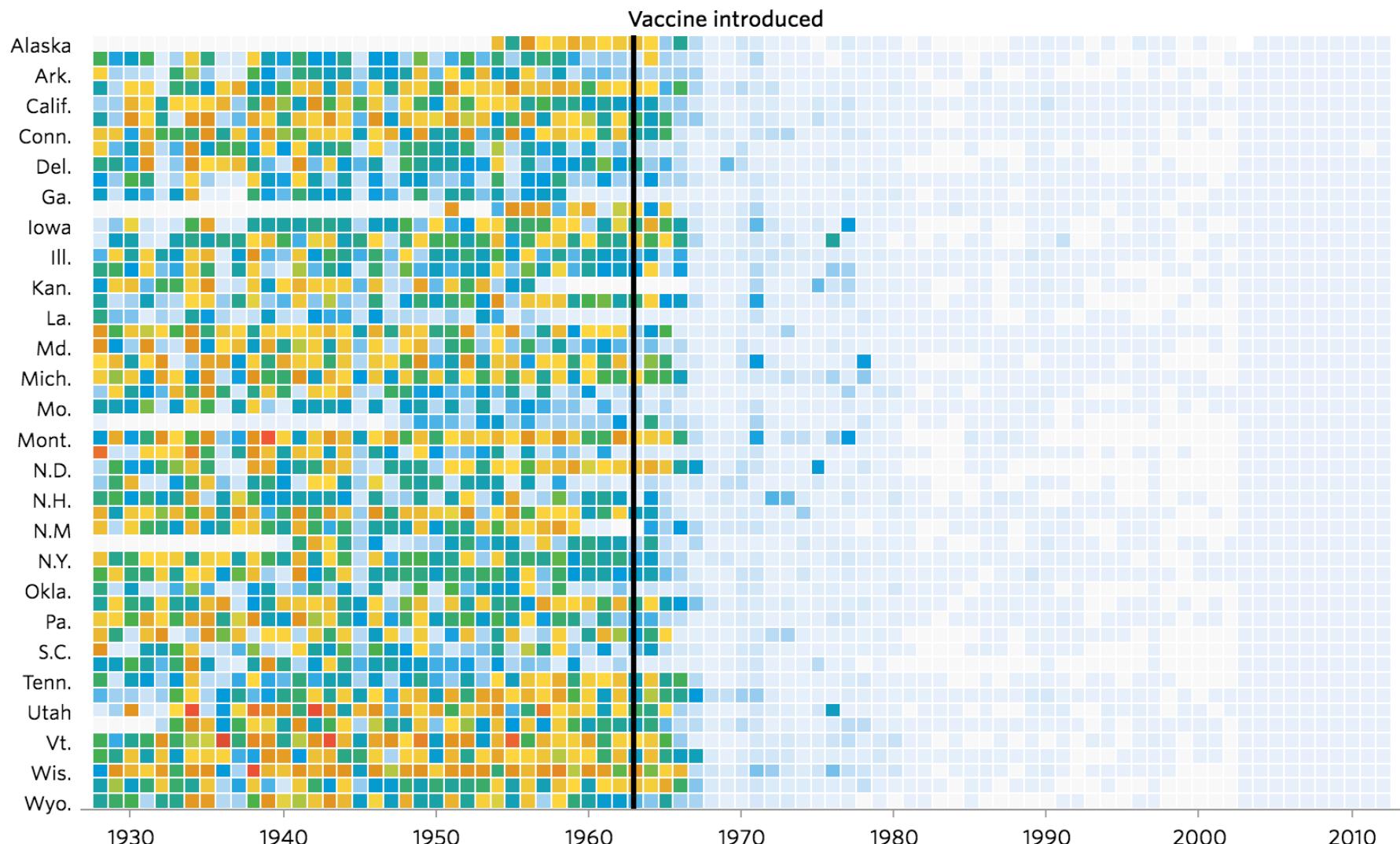
John Snow's map of London cholera deaths, 1854



Via University of York

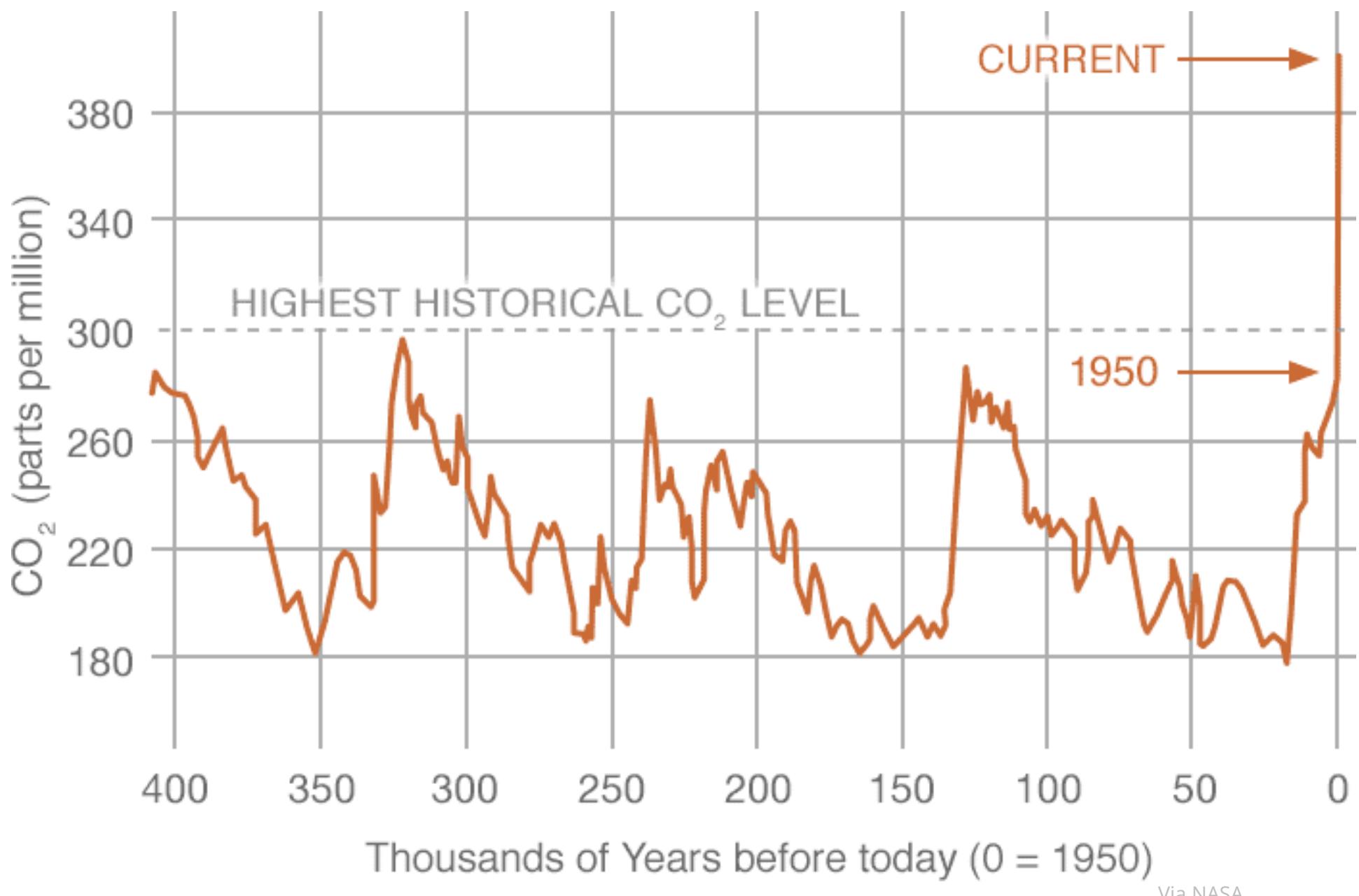
Show patterns

Measles



Via Wall Street Journal

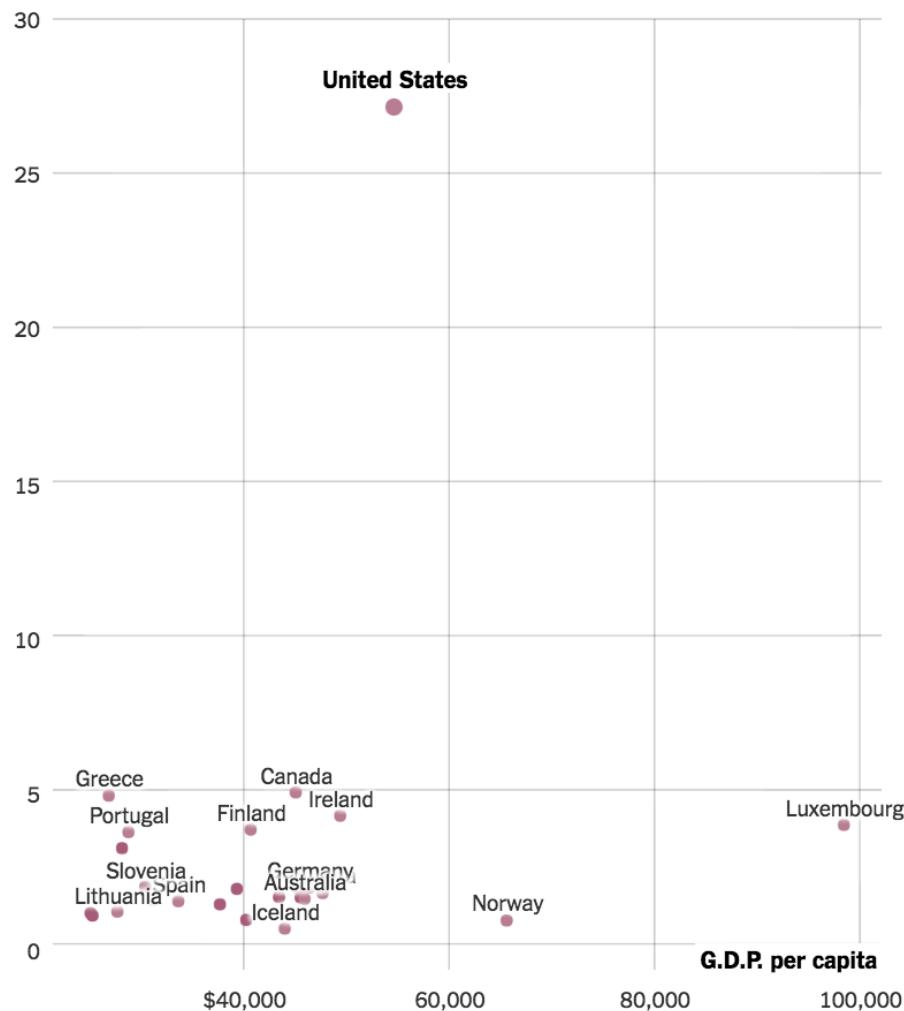
Identify trends ...



... and outliers

No Other Rich Western Country Comes Close

Gun homicides per day if each country had the same population as the U.S.

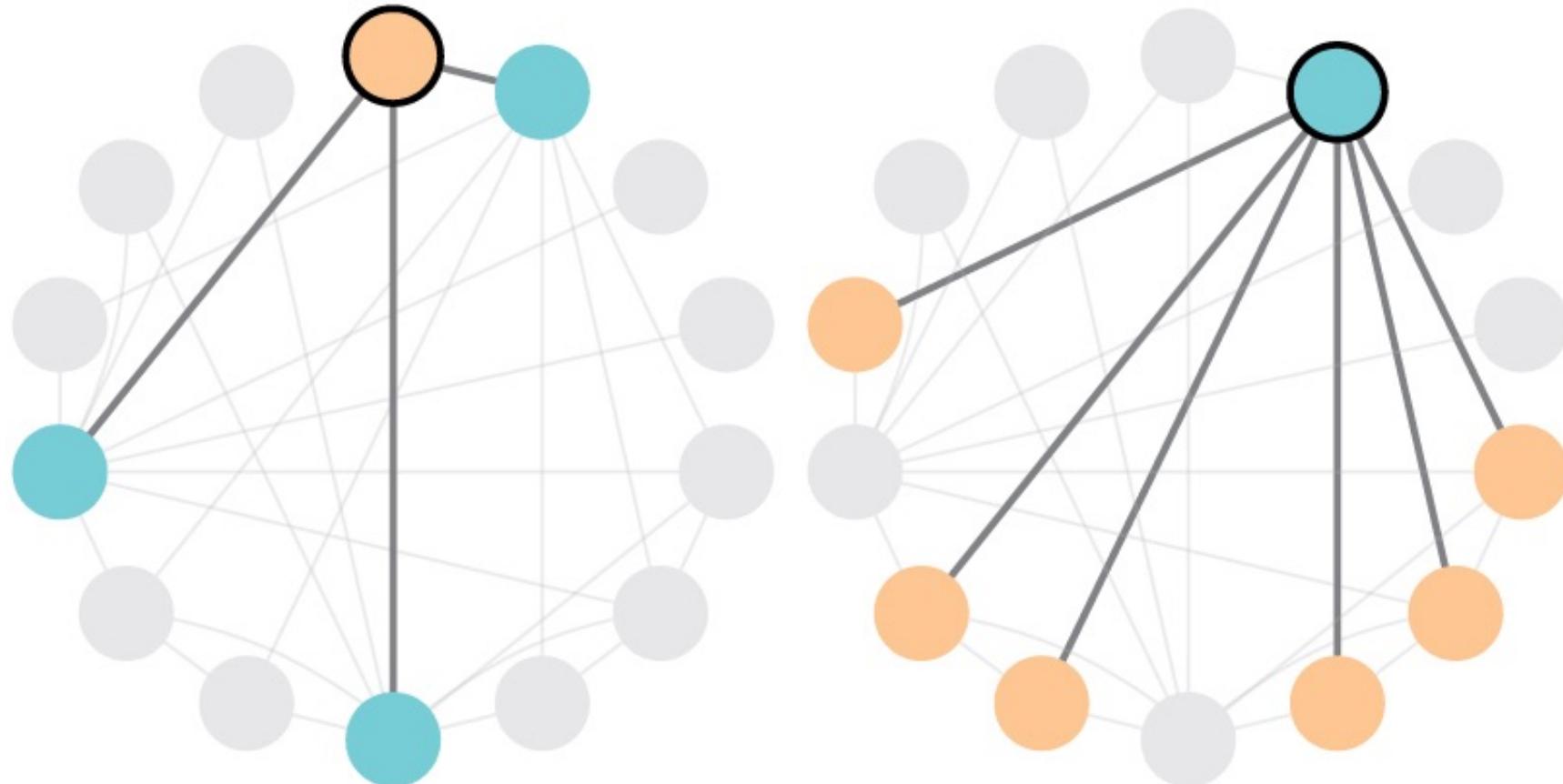


Via New York Times

Communicate relationships

100% of this person's friends
think baseball caps are trendy.

0% of this person's friends
think baseball caps are trendy.



Via Washington Post

Let the reader discover the point ...

If you are Female Male and Hispanic Black Asian White* Native American and LGB Heterosexual and under 45 45-64 over 64

and have not attended college some college associate's degree bachelor's degree higher degree

There are **104** people in congress like you [Twitter icon](#) [Facebook icon](#)

(Does not include one open seat, up for special election)



Via The Guardian

... or let them explore



Search for a Ship

TO SEE ITS HEALTH AND SAFETY RECORD

 Search

Image credit: VesselFinder

Norwegian Gem

CRUISE LINE: [NORWEGIAN](#) »

NOTABLE EVENT: DROWNING

On May 17, 2015 a 10-year-old girl drowned in a swimming pool aboard the Norwegian Gem while the cruise ship was 75 miles east of Myrtle Beach, South Carolina, headed from New York to the Bahamas.

YEAR BUILT

2007

CAPACITY

2,400
passengers

REGISTERED IN

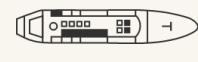
 **Bahamas**

[What's This Flag?](#)

CURRENT POSITION

[DETAILS & REVIEWS](#)

[DECK PLAN](#)



OTHER SHIPS FROM
[Norwegian](#) »



Via ProPublica

Terminology

Infographics v. data visualization

Infographics are ...

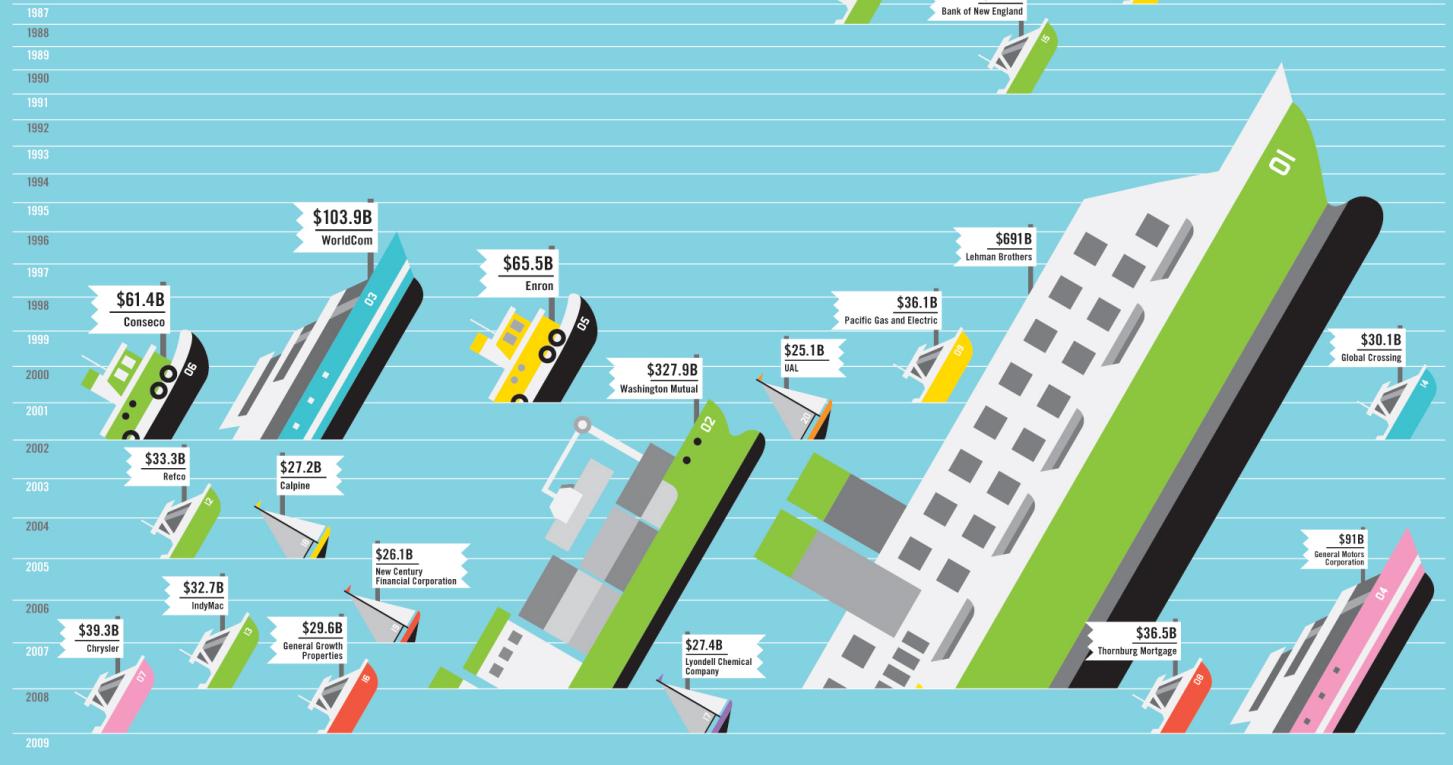
- manually drawn (more like illustrations)
- aesthetically rich (strong visual content meant to draw the eye and hold interest)
- relatively data-poor (because all info must be manually encoded)

Via Designing Data Visualization



LARGEST BANKRUPTCIES IN HISTORY

Last week, General Motors began the fourth largest bankruptcy proceedings in history, joining the many other large and venerable companies that have sunk to the bottom during this economic crisis. In fact, eight of the 20 largest bankruptcies have happened during the last two years of crisis. Here is a look at the biggest sinking ships in business history.



BOAT TO PRE-BANKRUPTCY ASSETS (in billions)



SECTOR



PRE-BANKRUPTCY ASSETS (in billions) / Company



SOURCE BankruptcyData.com

Via GOOD magazine

Data visualizations are ...

- algorithmically drawn (may have custom touches but is largely rendered with the help of a computer)
- often less decorative
- relatively data-rich (large volumes of data are welcome and viable)

Via Designing Data Visualization

Scale states equally

Scale states by population

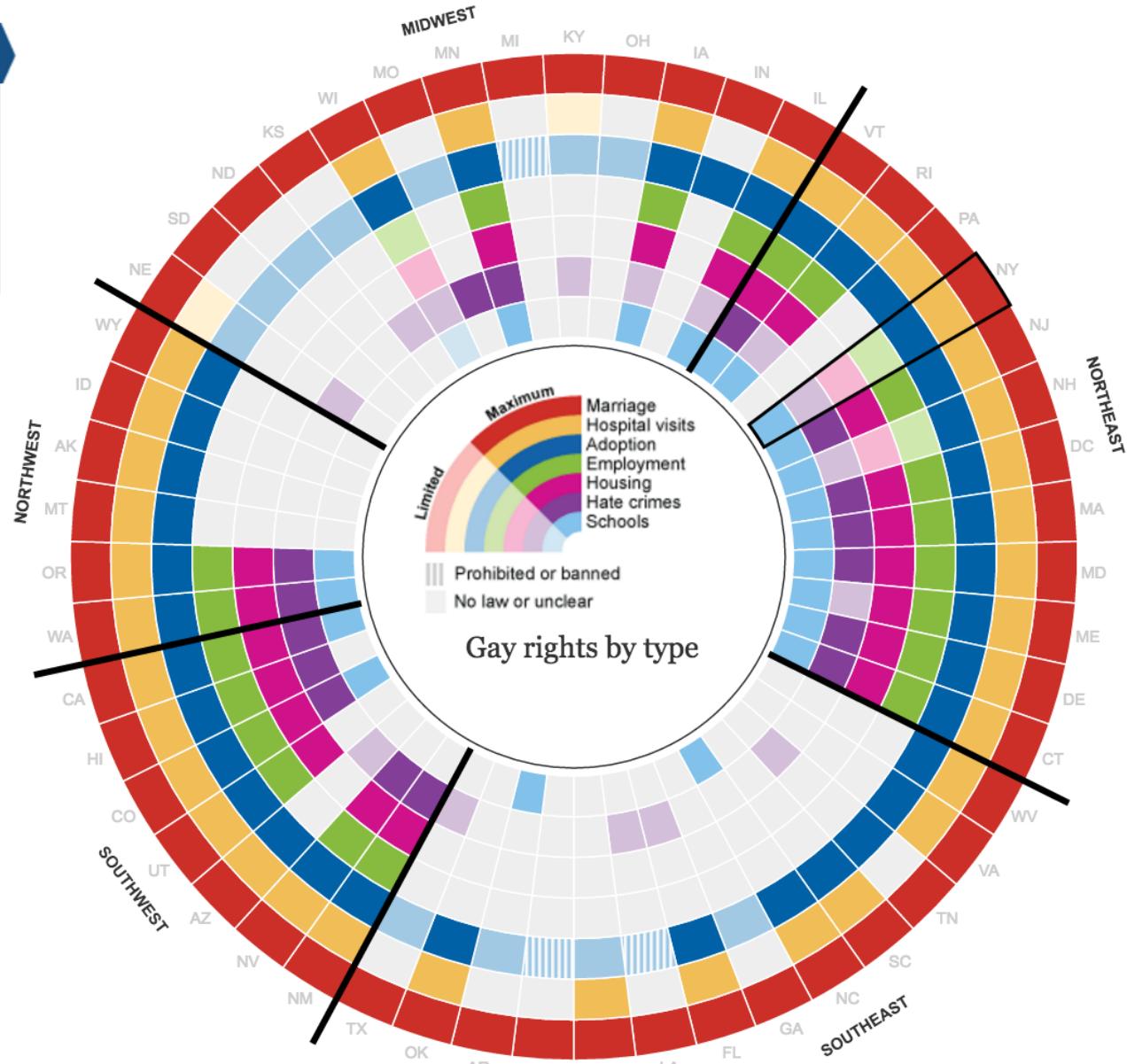
f Where your friends live
Connect to Facebook to see the rights of states where your friends live. Your information will not be saved. 

f Share your state on Facebook

New York

2010 population: 19,378,102

- **Marriage:** Allows same-sex marriage.
- **Hospital visitation:** Allows visitation by same-sex partners or spouses.
- **Adoption:** Allows adoption by a single person and joint adoption by same-sex couples.
- **Employment:** Prohibits discrimination based on sexual orientation.
- **Housing:** Prohibits discrimination based on sexual orientation.
- **Hate crimes:** Law addresses hate crimes related to sexual orientation.
- **Schools:** Prohibits harassment based on gender identity and sexual orientation.



But many interactive projects
and graphics are somewhere in
between! (Or outside this
categorization entirely)

Three degrees of separation

by Kenton Powell and Greg Chen



Number of friends:

50



Login to Facebook



1ST DEGREE:
FRIENDS

50

or more than all U.S. presidents



ACTUAL: 43



2ND DEGREE:
FRIENDS OF FRIENDS

8,170

or more than the capacity of the
Metropolitan Opera House



ACTUAL: 3,975



3RD DEGREE:
FRIENDS OF FRIENDS OF FRIENDS

1,334,978

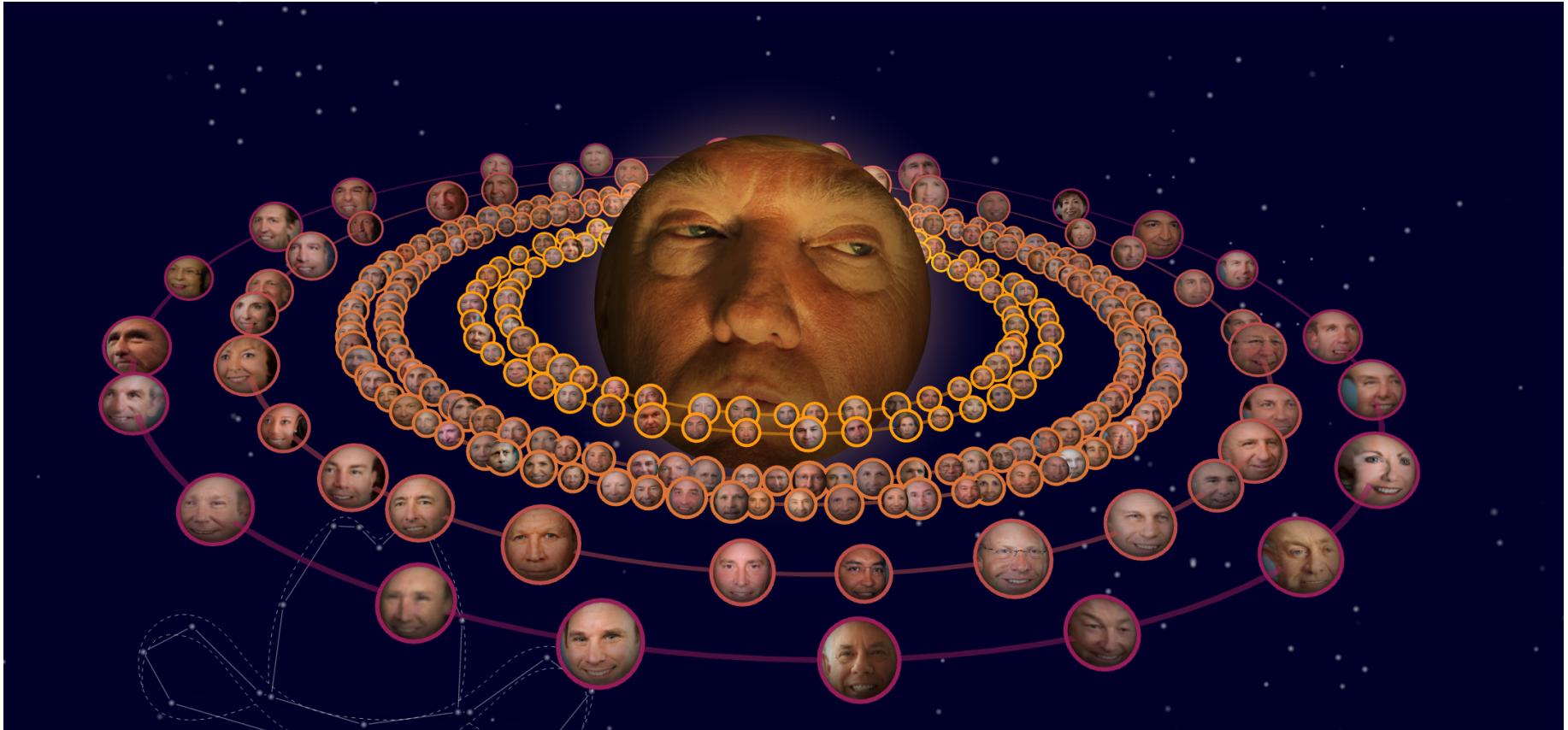
or more than the population of Maine



ACTUAL: 1,328,361

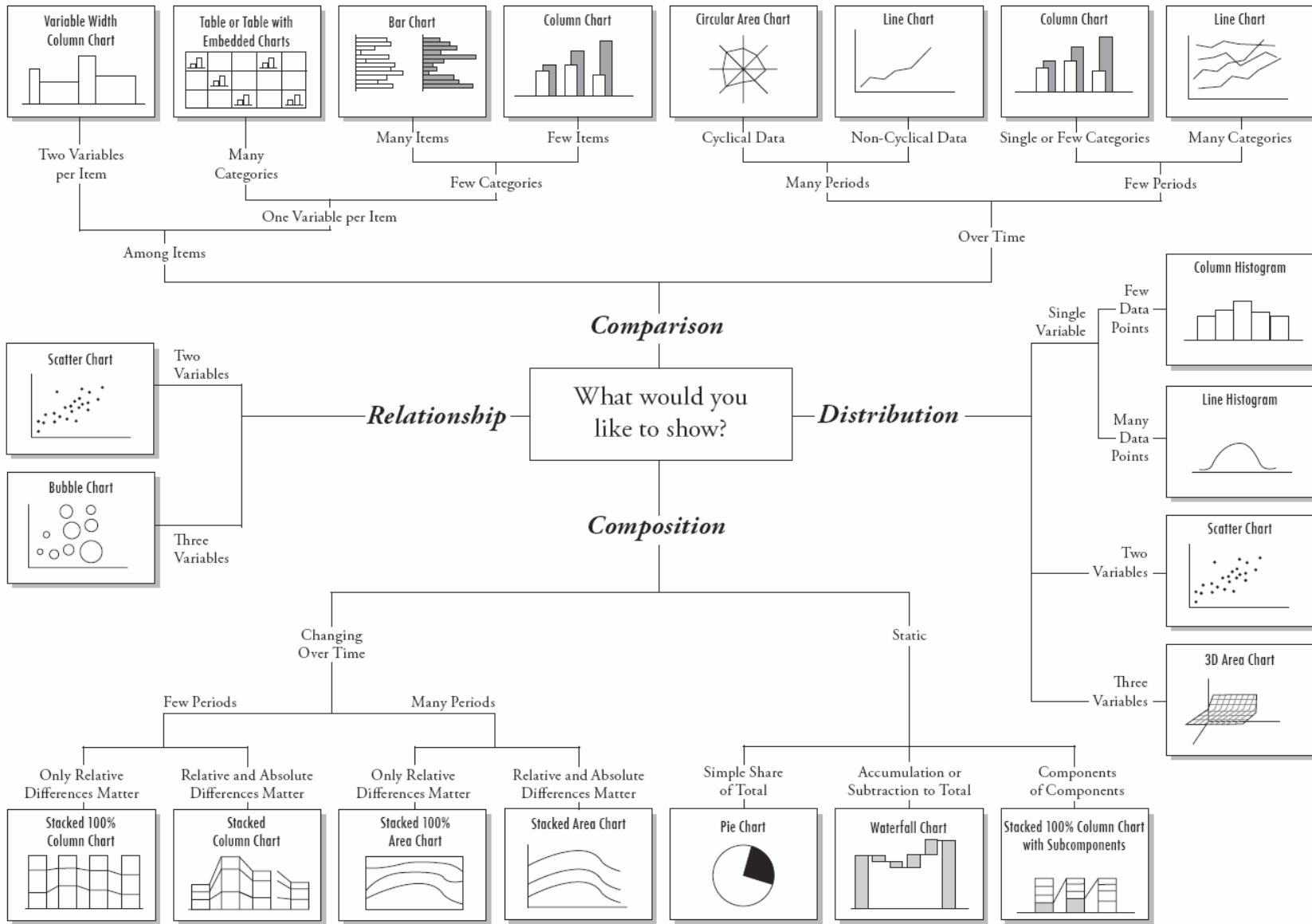
Calculations are based on [an analysis of Facebook](#) that reports a typical user has an average of 190 friends and 14% of those friends are friends with each other.

Via The Guardian

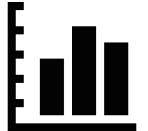


Via The Guardian

**So you want to
visualize some
data?**

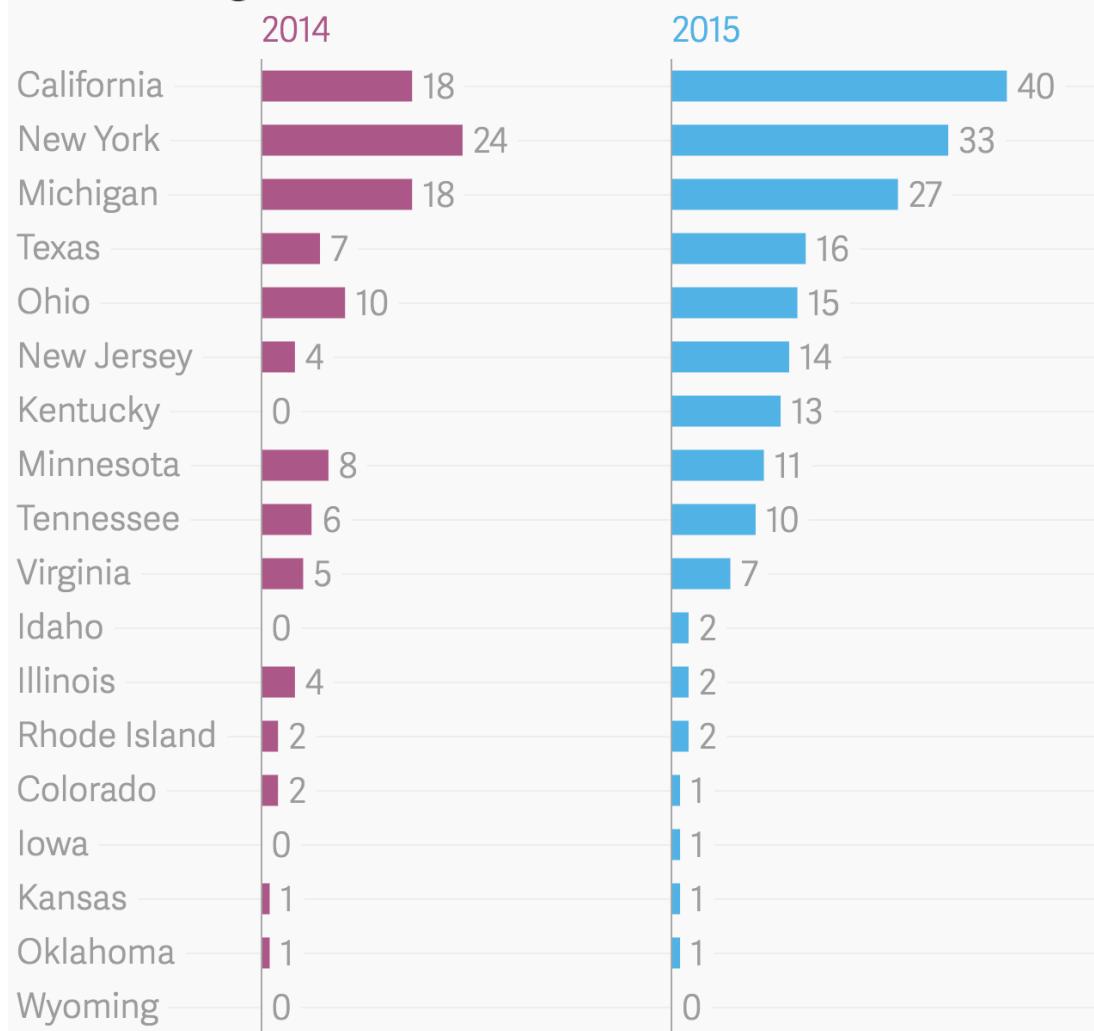


Basic charts types

-  Bar/column
-  Line
-  Pie

Bar chart

Hate crimes against Muslims in 18 US states

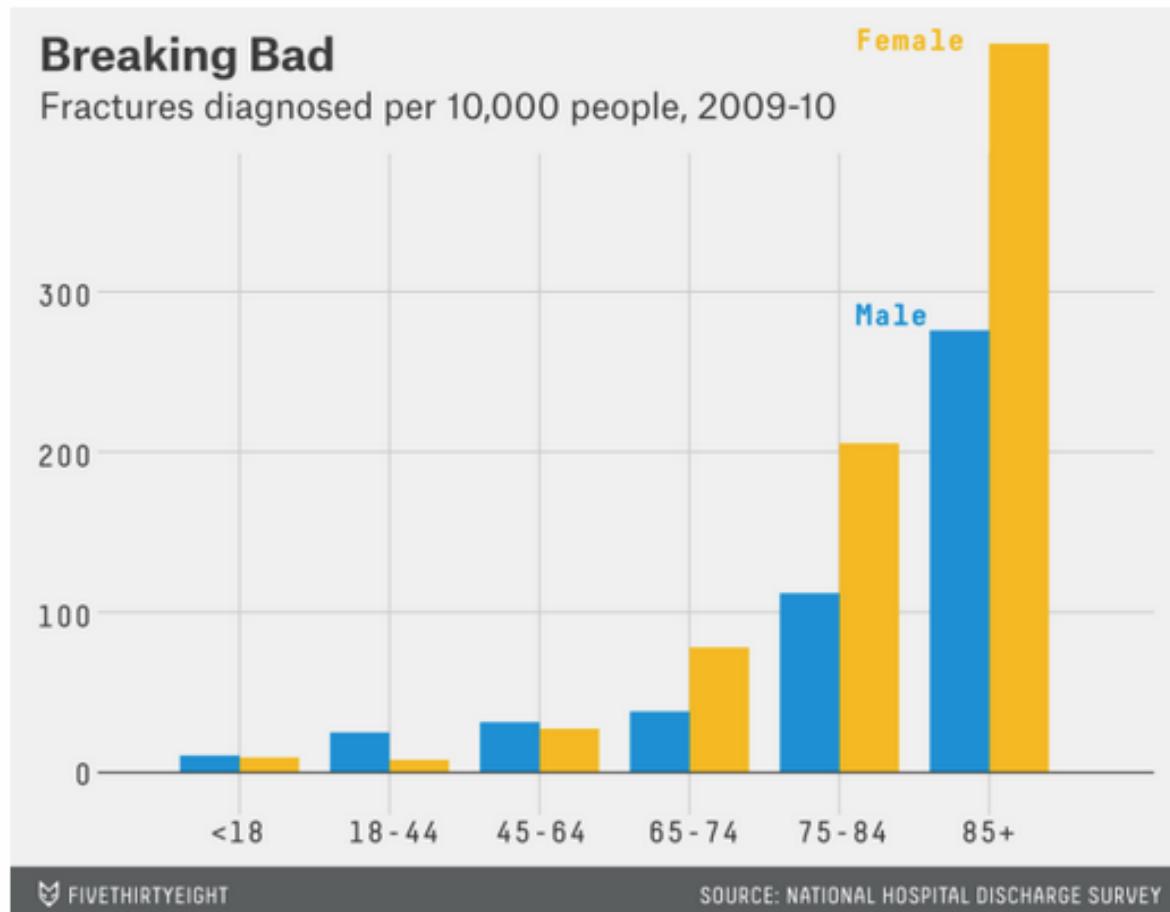


△ T L △ S | Data: Center for the Study of Hate and Extremism

Via Quartz

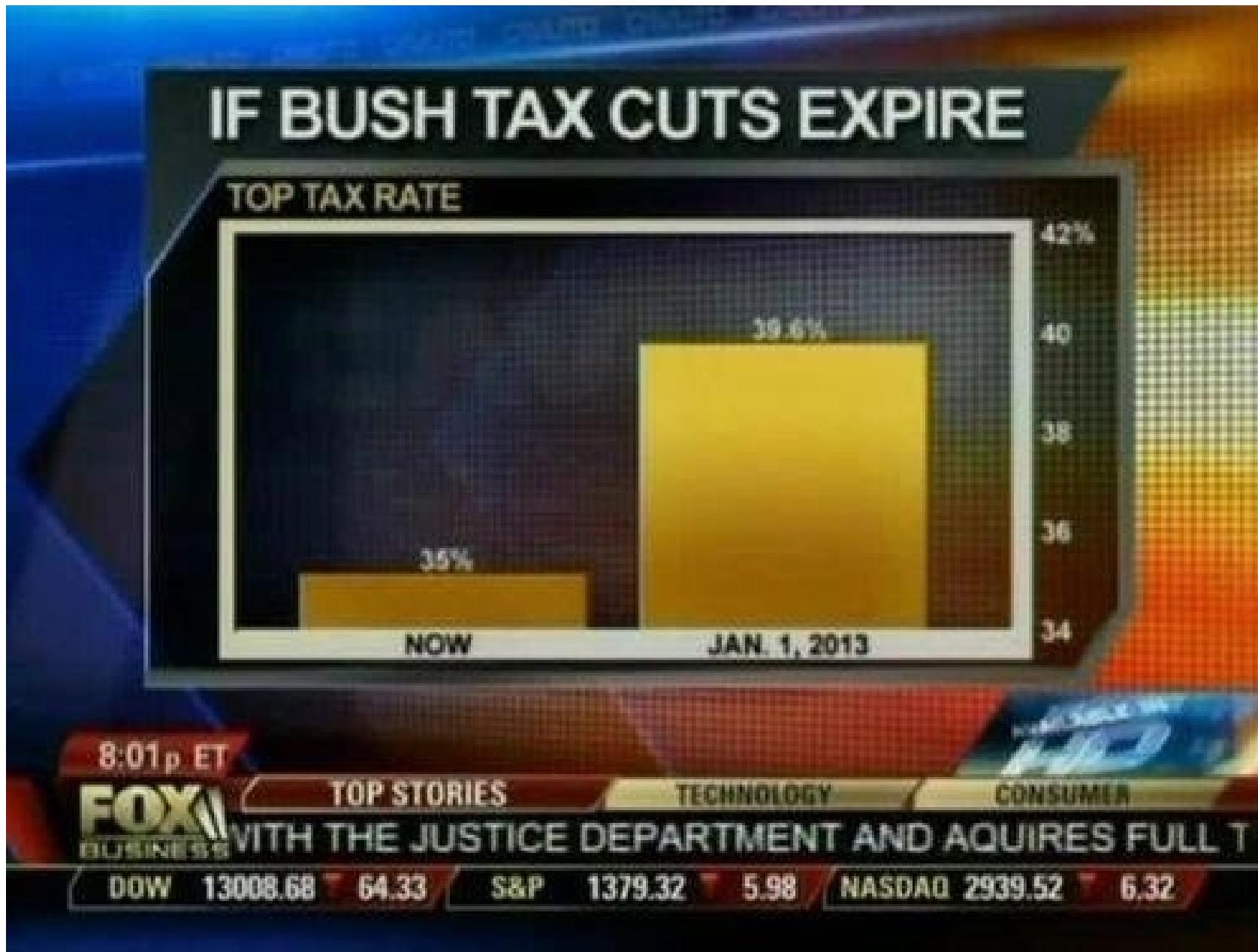
Save

Column chart



Via FiveThirtyEight

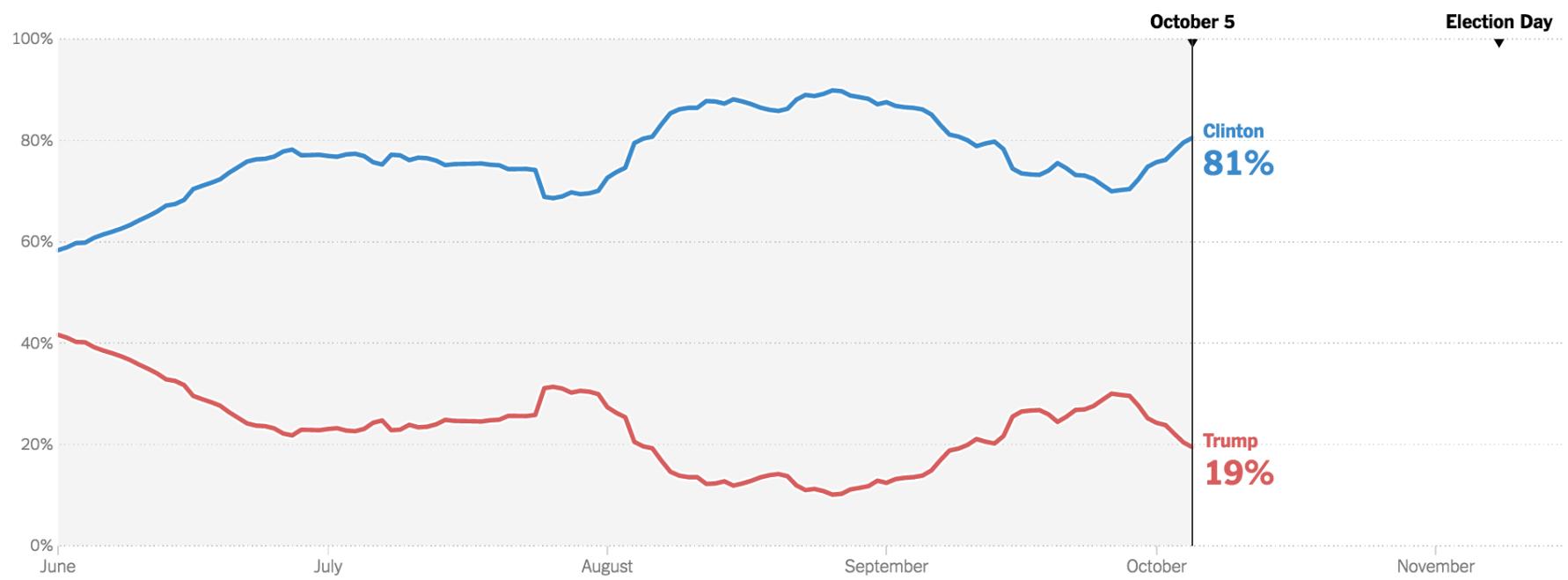
Pro-tip: don't truncate your y-axis!



Via Heap Analytics

Line chart

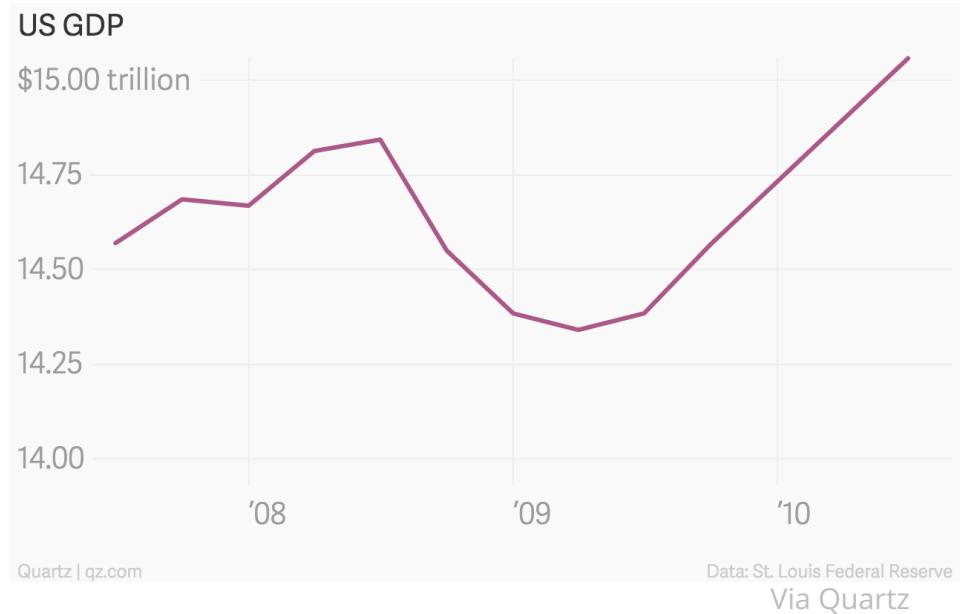
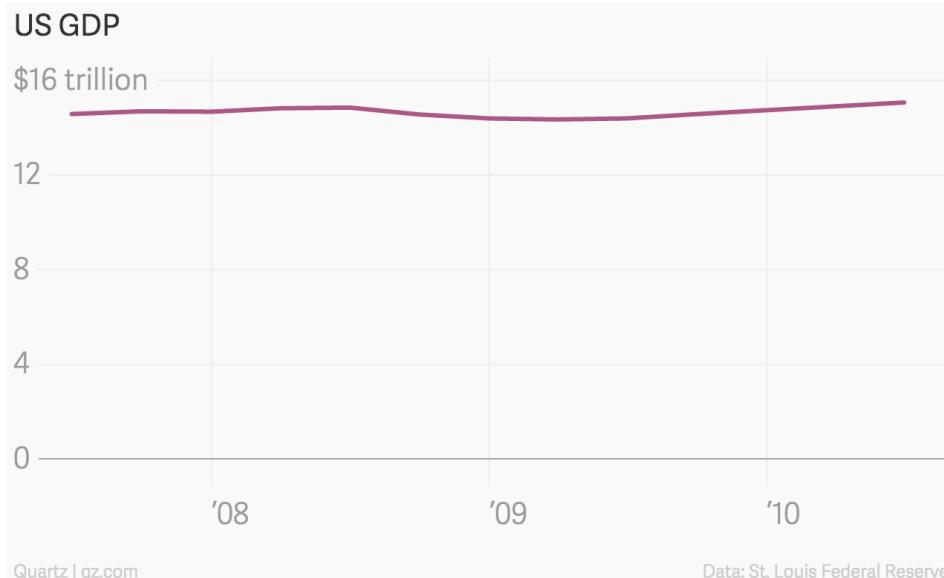




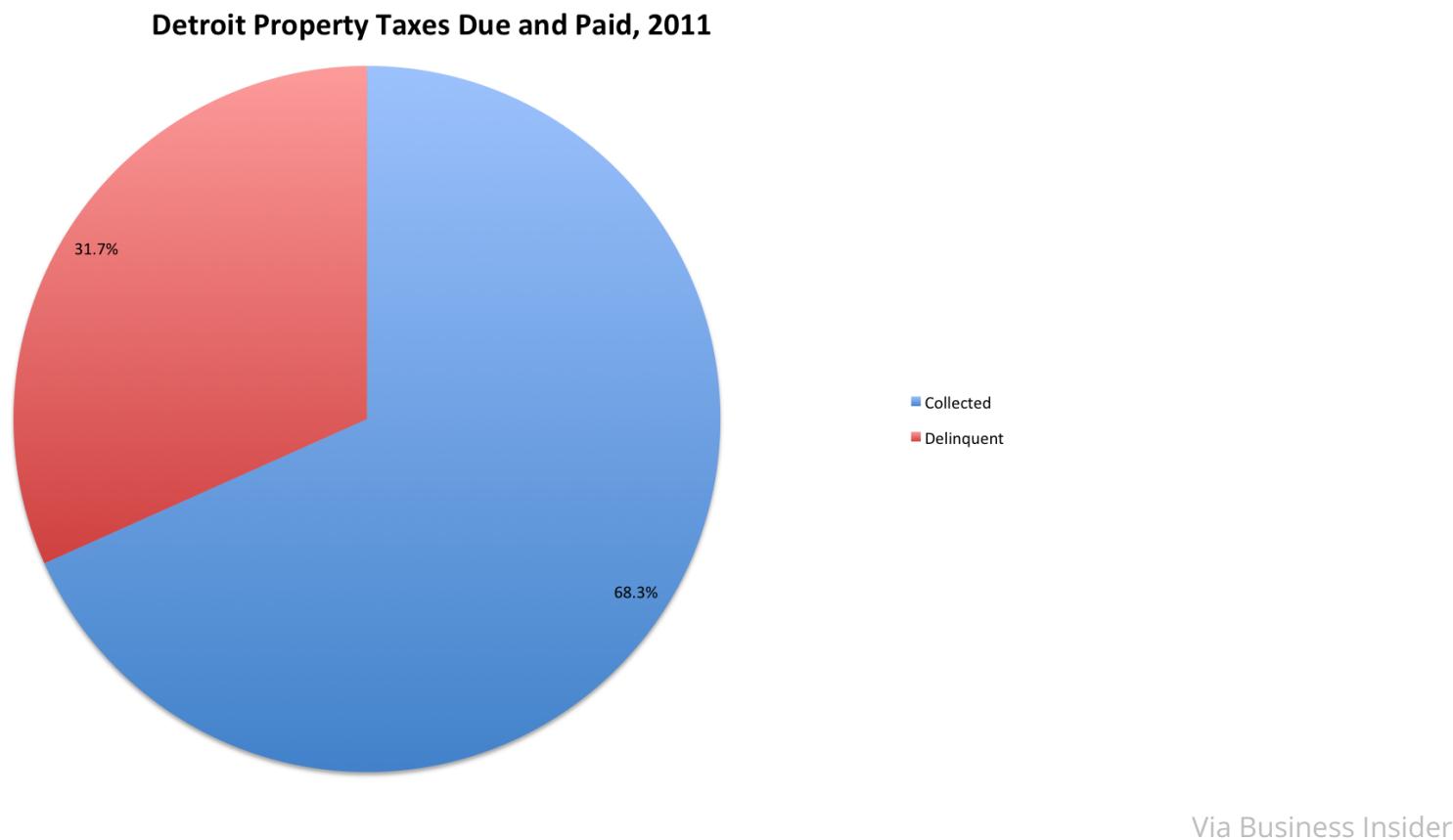
Via New York Times

Pro-tip: you might want to truncate your y-axis*

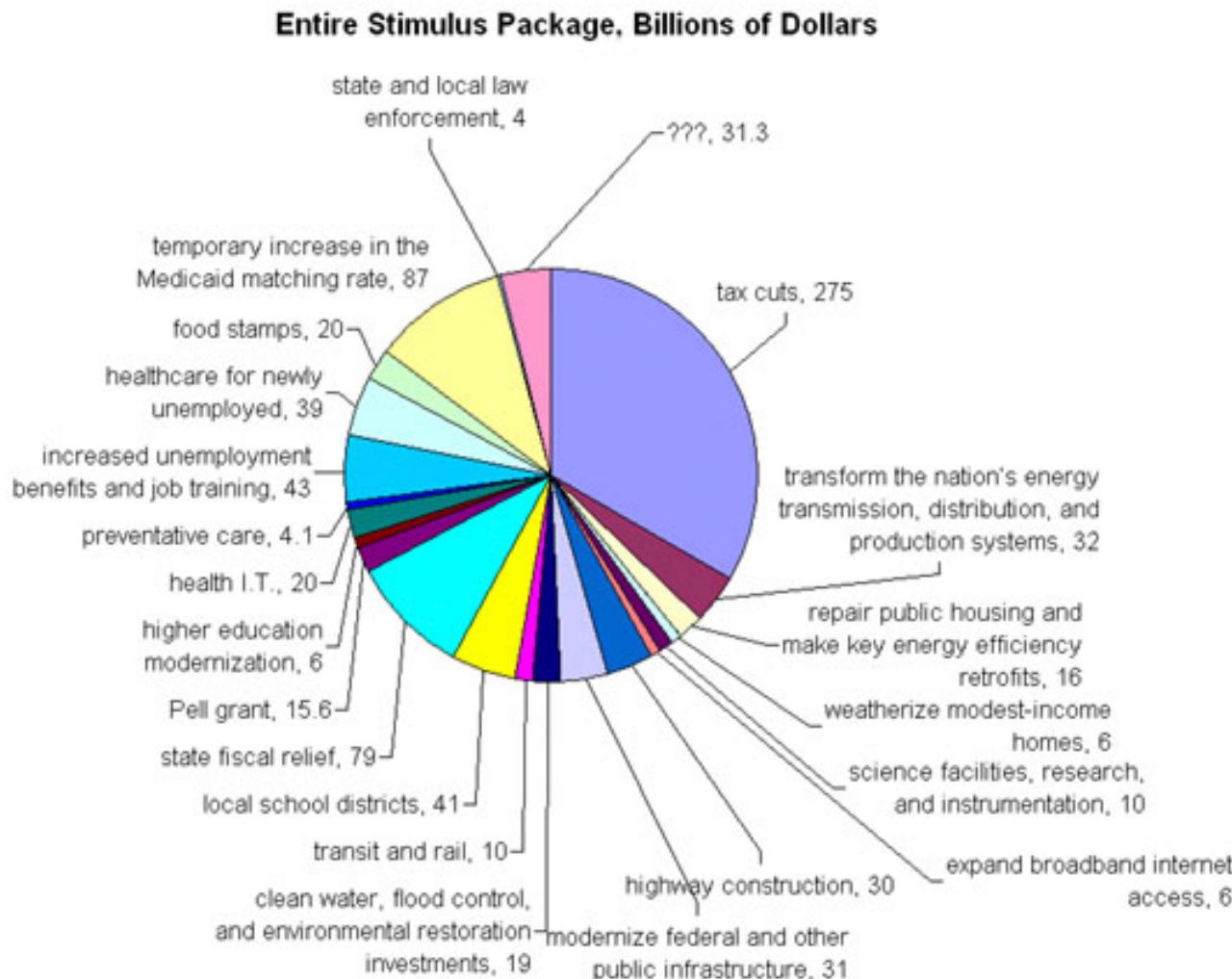
**(a contentious subject)*



Pie chart



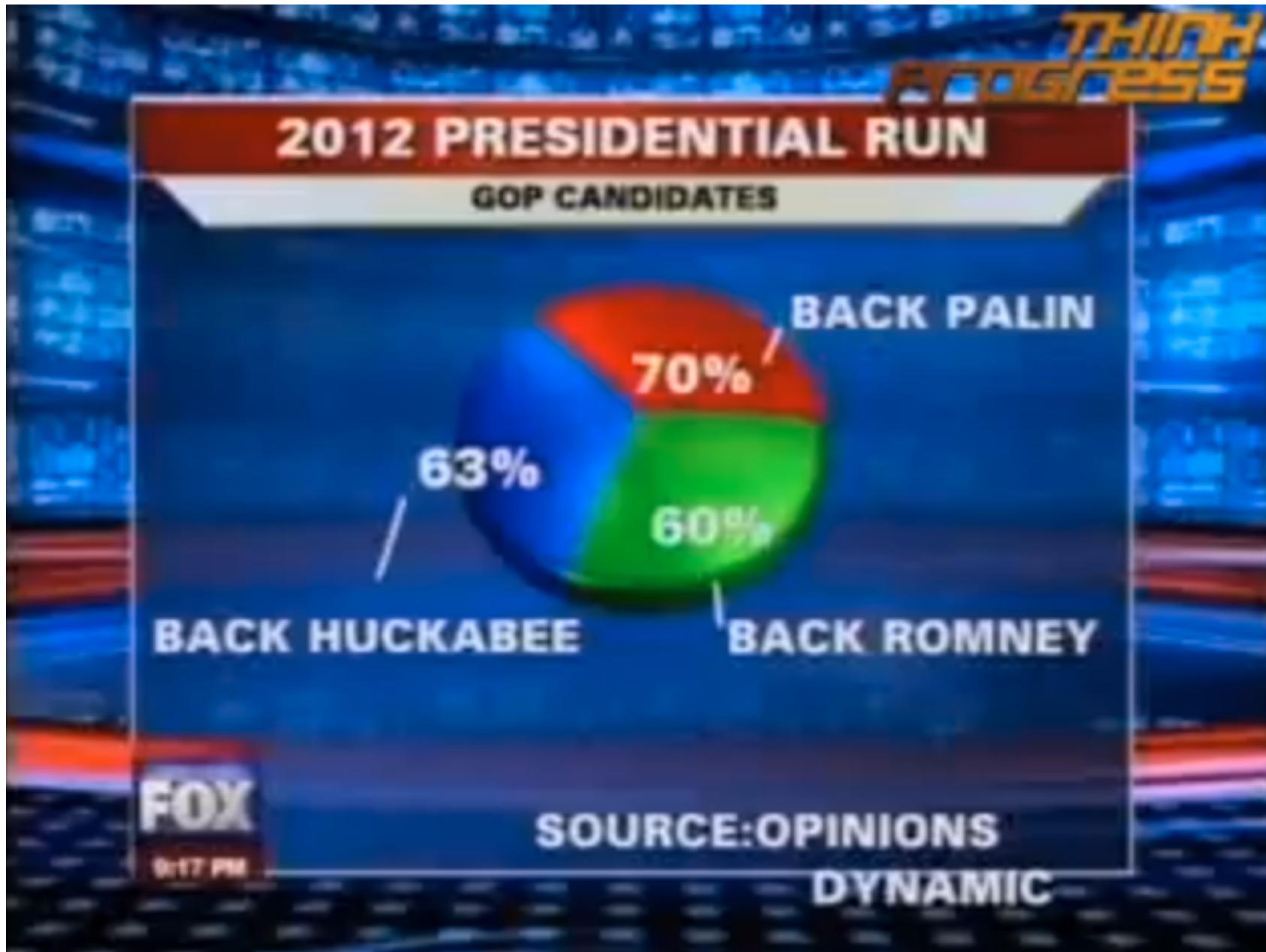
Pro-tip: too many slices will make your stomach hurt



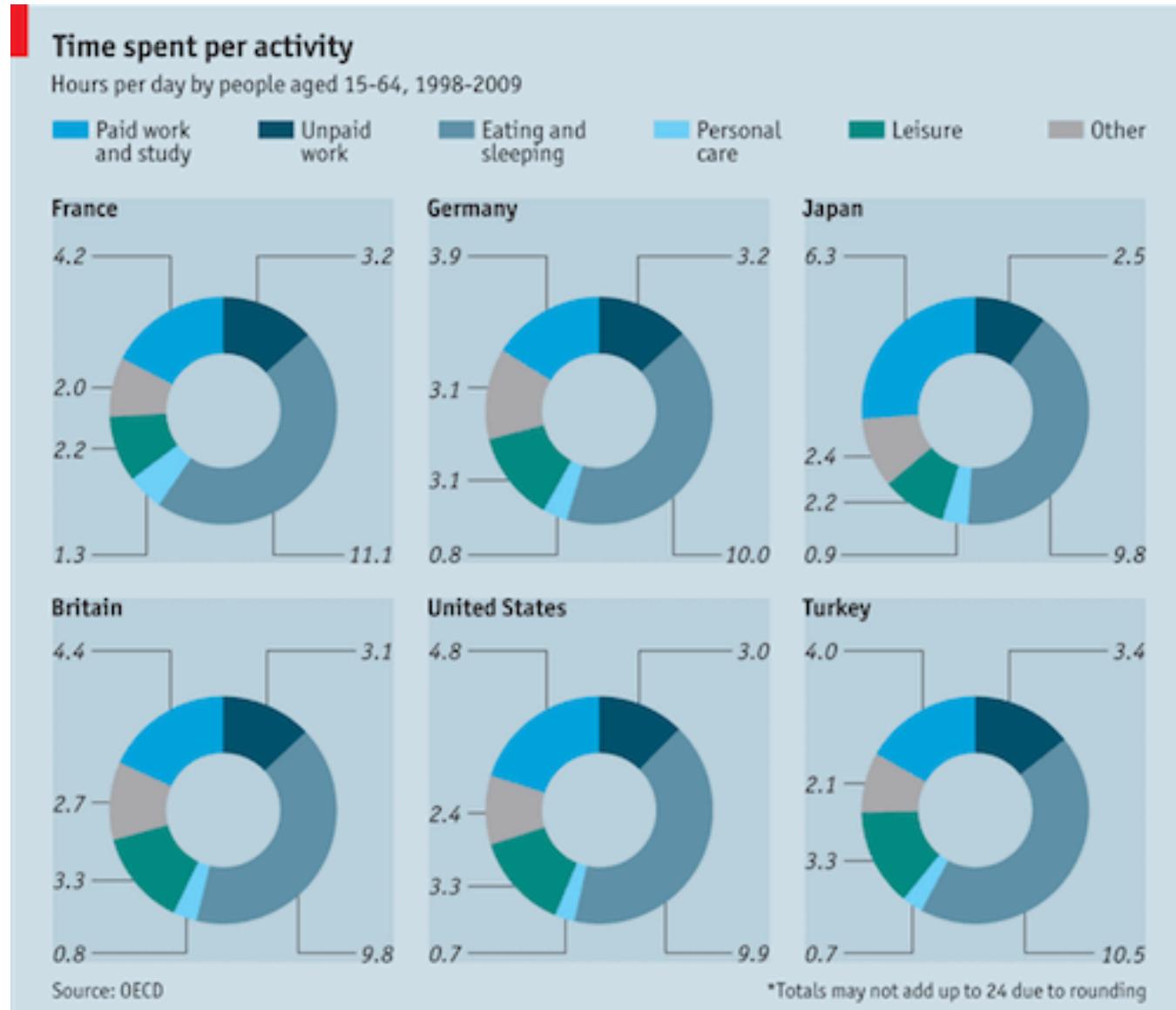
Source: [House Committee on Appropriations](#)

Via New York Times

Pro-tip: you can't have more than 100% of a pie



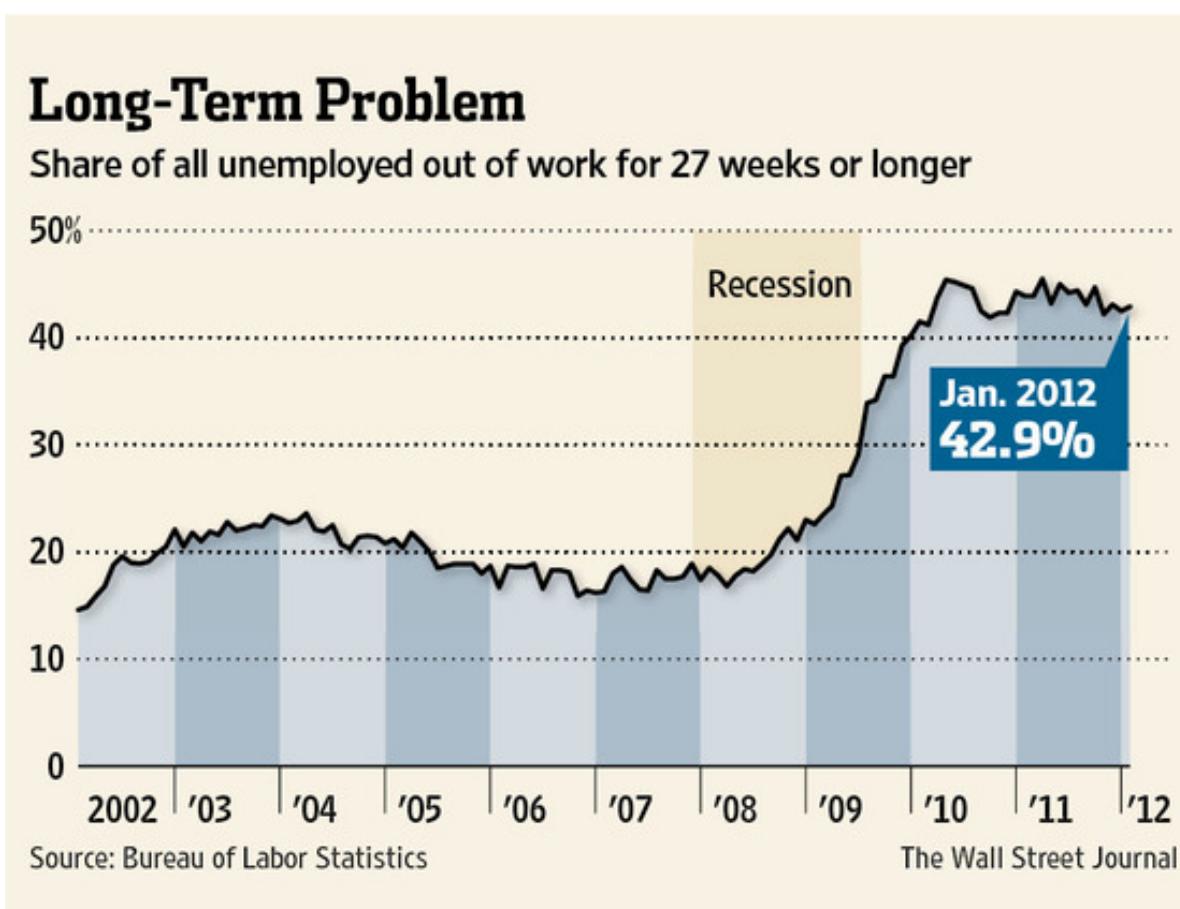
Pro-tip: people are bad at comparing areas



Via The Economist

Other chart types to keep in mind ...

Area chart



Via WSJ

How the Speed of Response Defined the Ebola Crisis

By ALBERT SUN and HANNAH FAIRFIELD NOV. 3, 2014

As the Ebola crisis unfolded in West Africa over the spring and summer, public health experts began calling for speedy international intervention to stop the spread of the disease.

The crucial factor in containing Ebola, these experts say, is to keep infected patients isolated to reduce transmission. If that does not happen, the number of cases shoots up rapidly.

These charts are based on an epidemiological model created by the Centers for Disease Control and Prevention, using figures from Liberia and Sierra Leone, two of the countries hit hardest by the epidemic. In the third, Guinea, case counts have been unreliable.

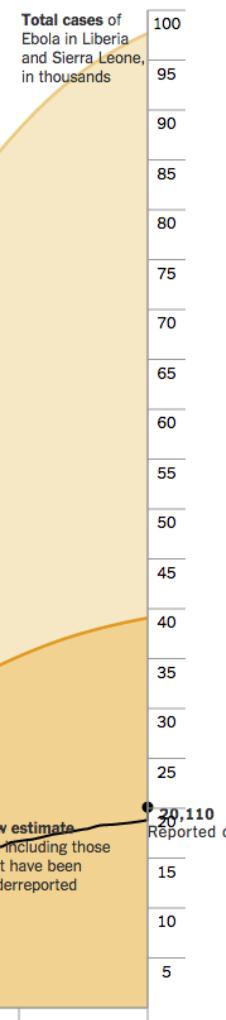
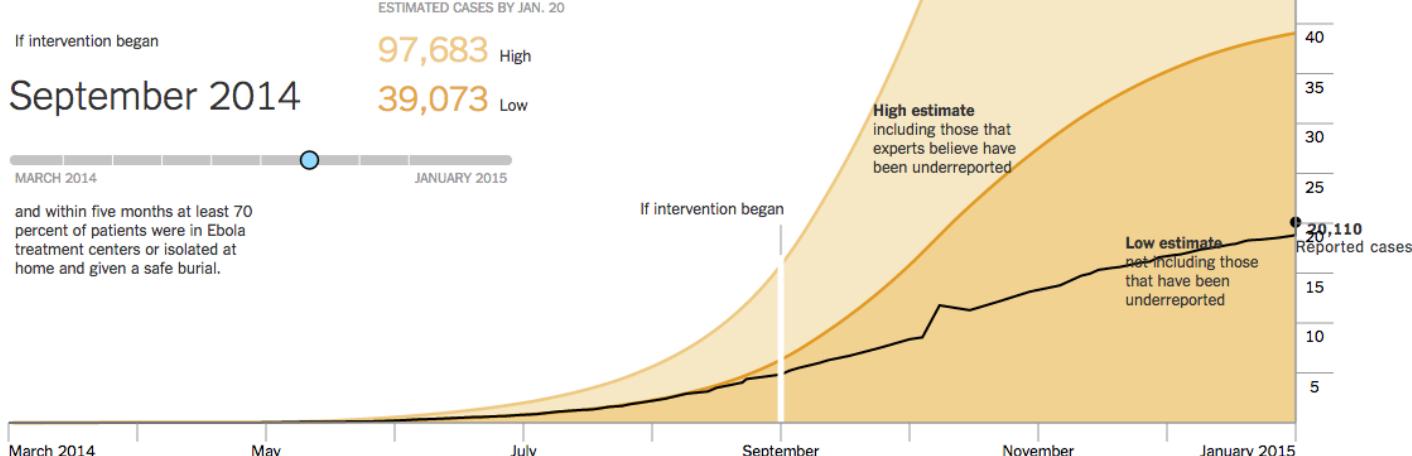
Large-scale intervention did not begin until late August and early September, and the C.D.C. model suggests that was too late to stop the epidemic from killing tens of thousands of people — and perhaps many more — by the end of the year. Had successful interventions been started much earlier, the total

number of cases would have remained below 5,000.

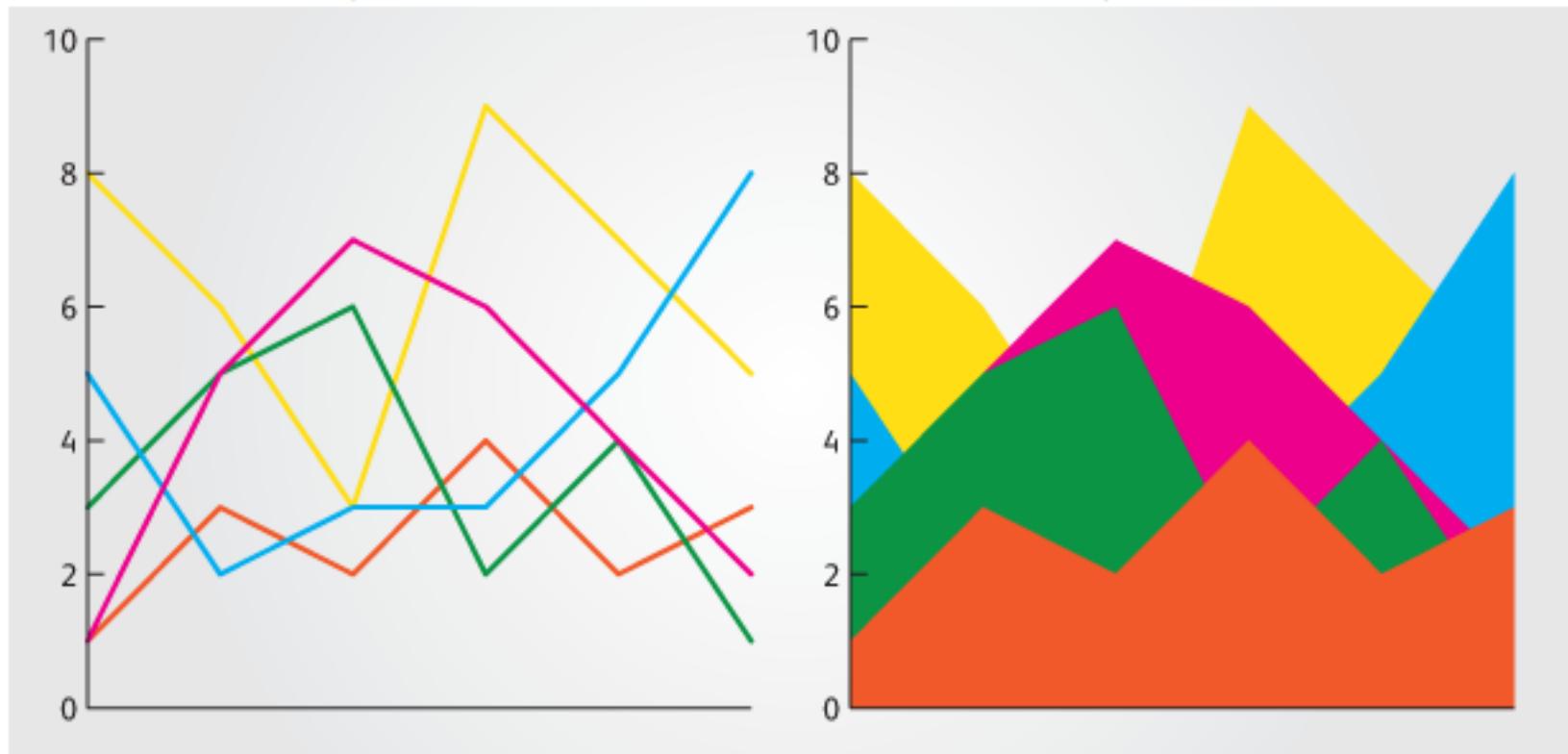
"In this case, lack of speed kills," said Martin Meltzer, the lead author of the C.D.C.'s paper.

At the end of August, the World Health Organization set out an "Ebola Response Roadmap," with a goal of isolating 70 percent of patients within two months after the start of intervention. The C.D.C. model uses a less ambitious timeline of five months. (Isolation means being treated safely in a hospital, Ebola treatment unit, or home or community setting; it also requires that the dead be given a safe burial.) For intervention that began in August, the predicted current rate of safe treatment in isolation is between 40 and 50 percent.

Because the situation in the three affected countries has been difficult to assess, the model, which was first published on Sept. 26, continues to be updated as new information is gathered. The C.D.C. estimates that the true number of cases may be more than twice the reported counts.

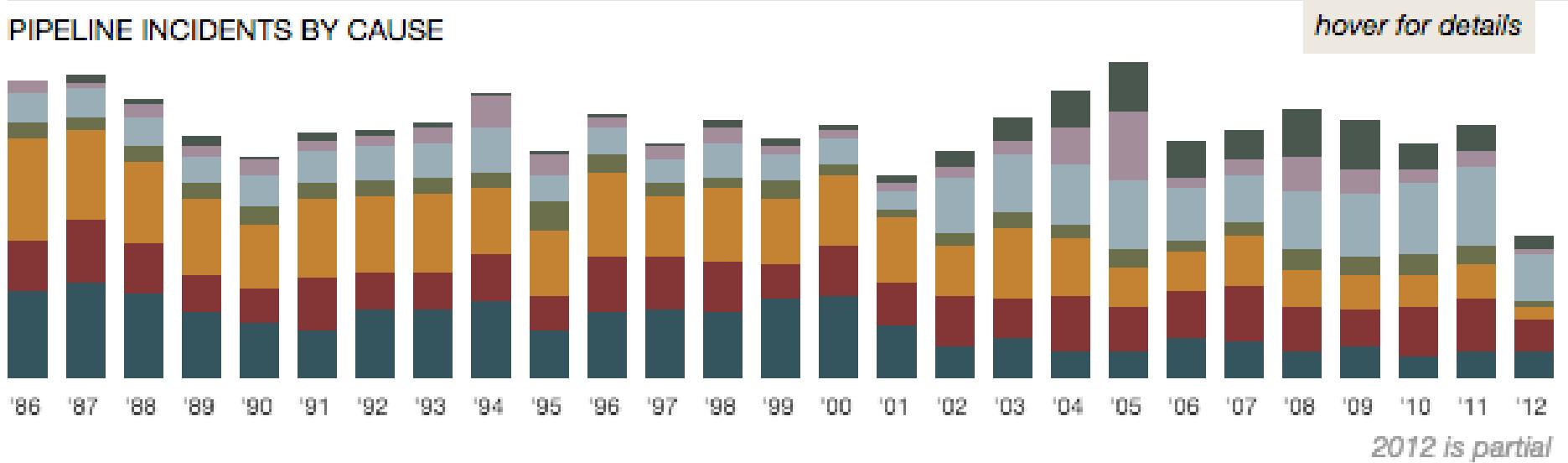


Pro-tip: area v. line



Via Visual.ly

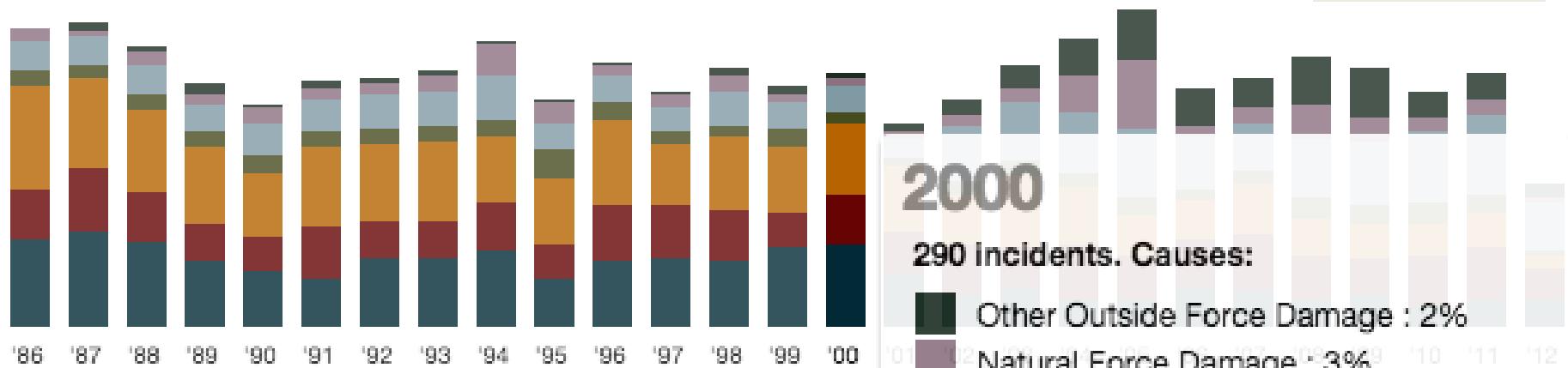
Stacked bar chart



Via ProPublica

Pipeline Incidents by Cause

hover for details



2000

290 Incidents. Causes:

- Other Outside Force Damage : 2%
- Natural Force Damage : 3%
- Material Weld Equipment Failure : 10%
- Incorrect Operation : 5%
- Excavation Damage : 28%
- Corrosion : 20%
- All Other Causes : 32%

Pipeline Incidents by the Numbers

7,763 **\$536** **\$2,366** **\$6.75B**

Incidents

Fatalities

Injuries

Property Damages

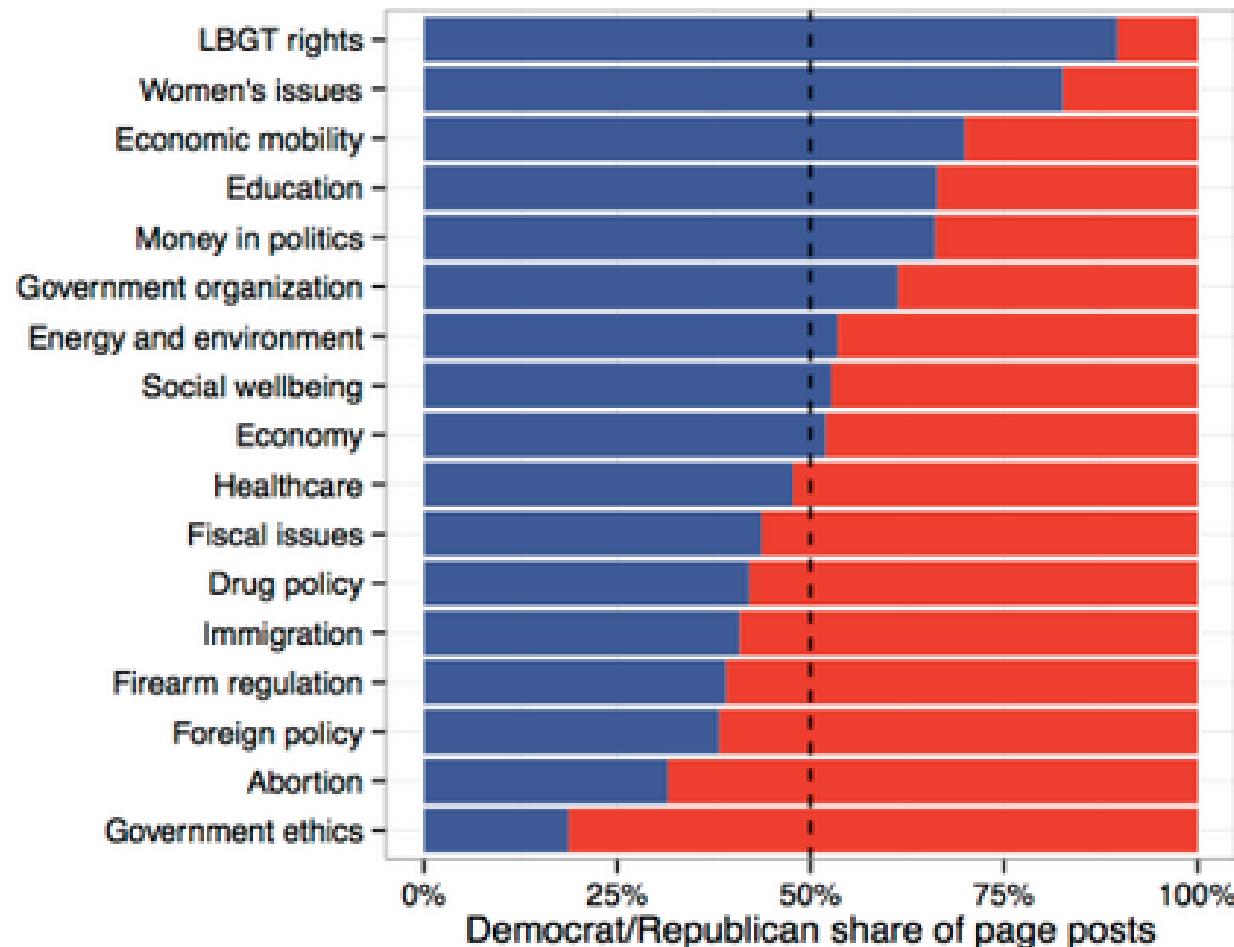
3,918

Gas Incidents

Hazardous Liquid Incidents

Via ProPublica

Political Issues Discussed by Party

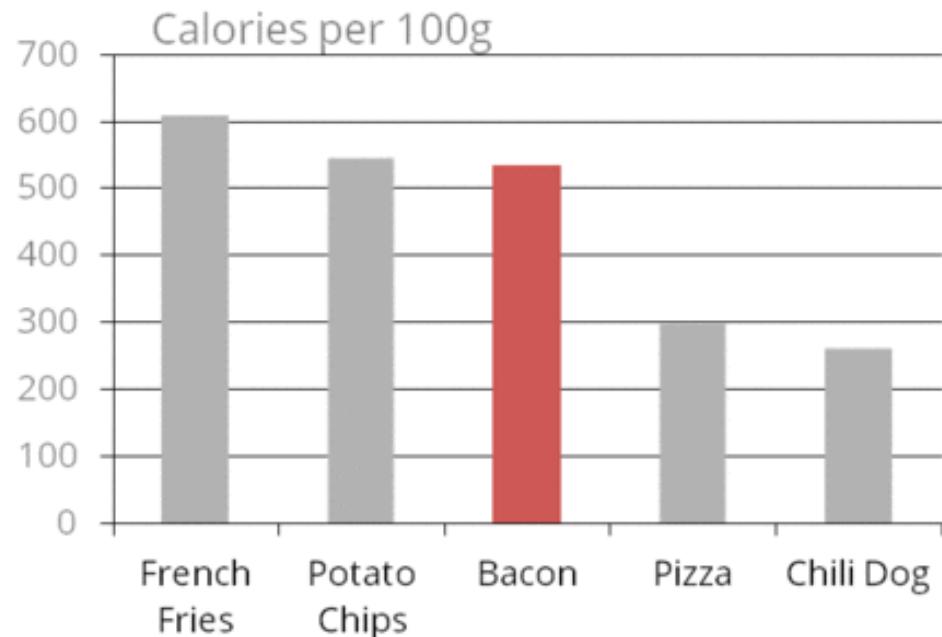


Via R Bloggers

Chart-design basics

- Labels and alignment
- Color

Lighten labels



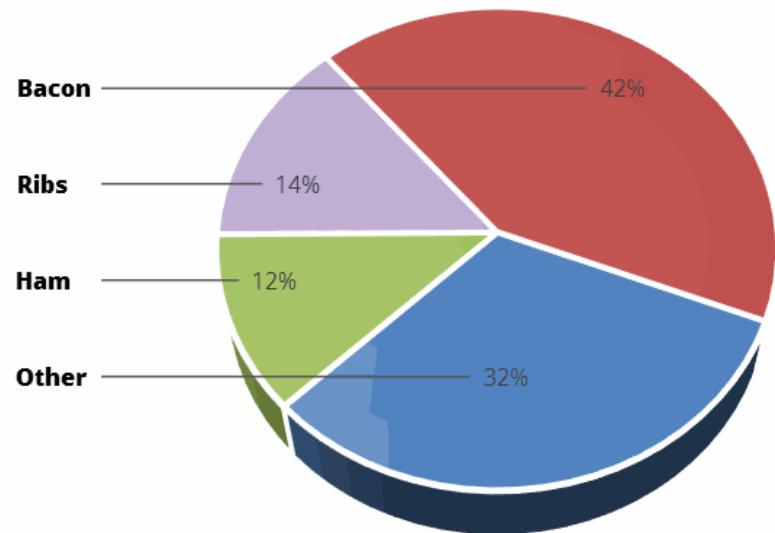
Created by Darkhorse Analytics

www.darkhorseanalytics.com

Link for gif

Remove 3D

Pig Meat Preferences



Created by Darkhorse Analytics

www.darkhorseanalytics.com

Link for gif

Remove Gridlines

Role	Name	Year of the...	Debut	Number of Fans	Takedown Rate
Face (The Hero)	The Ultimate Warrior	Tiger	May-2011	97320.00	86.2
Face (The Hero)	Hulk Hogan	Oxen	Jan-2008	988551.00	61.978
Face (The Hero)	Macho Man Randy Savage	Monkey	Feb-2008	157618.00	59.29
Face (The Hero)	Hacksaw Jim Duggan	Pig	Mar-2008	30300.00	53.4332
Face (The Hero)	Superfly Jimmy Snuka	Dragon	Mar-2008	12341.00	52.7
Heel (The Bad Guy)	Rowdy Roddy Piper	Rooster	Jun-1968	71645.00	45.4
Heel (The Bad Guy)	The Million Dollar Man Ted DiBiase	Rat	Apr-1975	449342.00	43.7689
Heel (The Bad Guy)	Mr. Perfect Curt Henning	Rat	May-1980	13773.00	38
Heel (The Bad Guy)	Jake the Snake Roberts	Snake	Jul-1975	5609.00	37.99
Jobber (The Unknown)	Brad Smith	Sheep	Aug-2008	1103.00	36.316
Jobber (The Unknown)	Ted Duncan	Sheep	Aug-2008	200.00	33.61
Jobber (The Unknown)	Joey the Uber Nerd Cherdarchuk	Snake	Aug-2008	5.00	21.0196

Created by Darkhorse Analytics

www.darkhorseanalytics.com

Link for gif

Tools:

Chartbuilder

<https://quartz.github.io/Chartbuilder/>

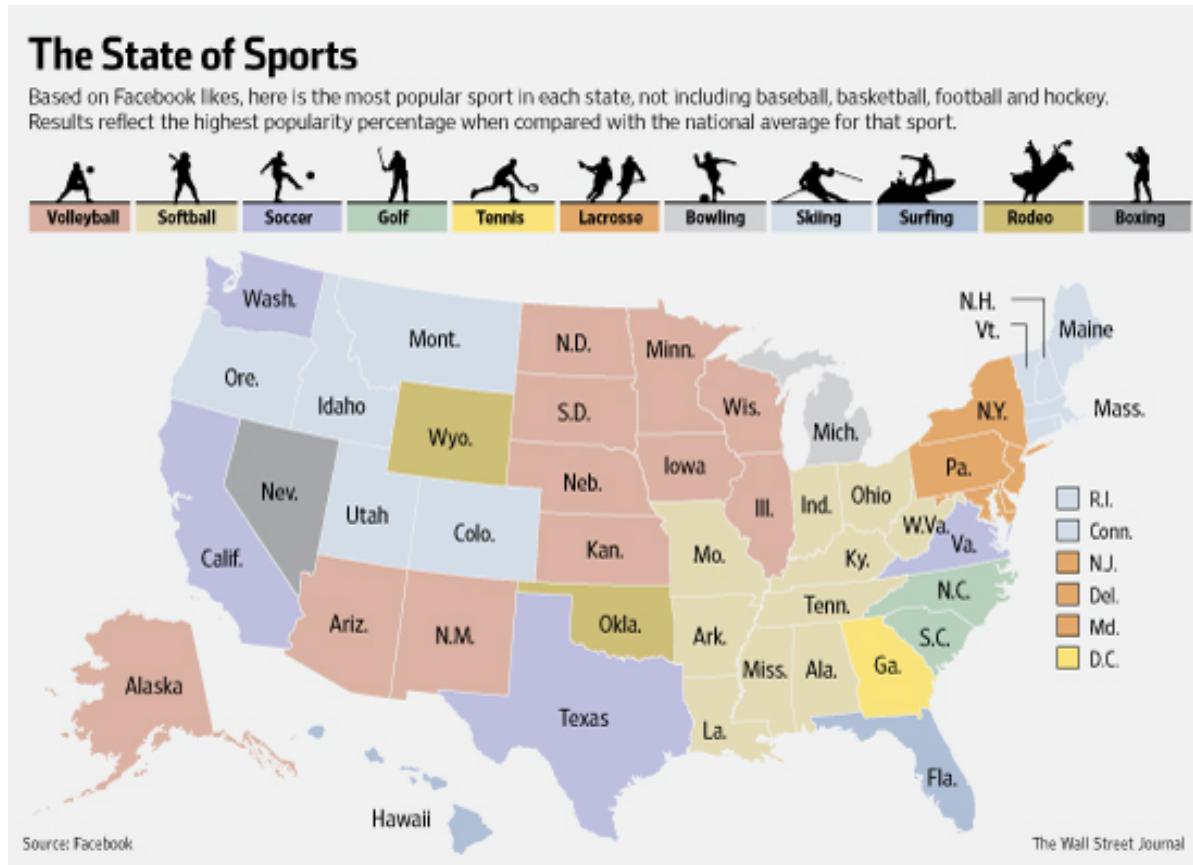
Highcharts

<http://www.highcharts.com/>

Basic map types

- categorical
- choropleth
- dot density

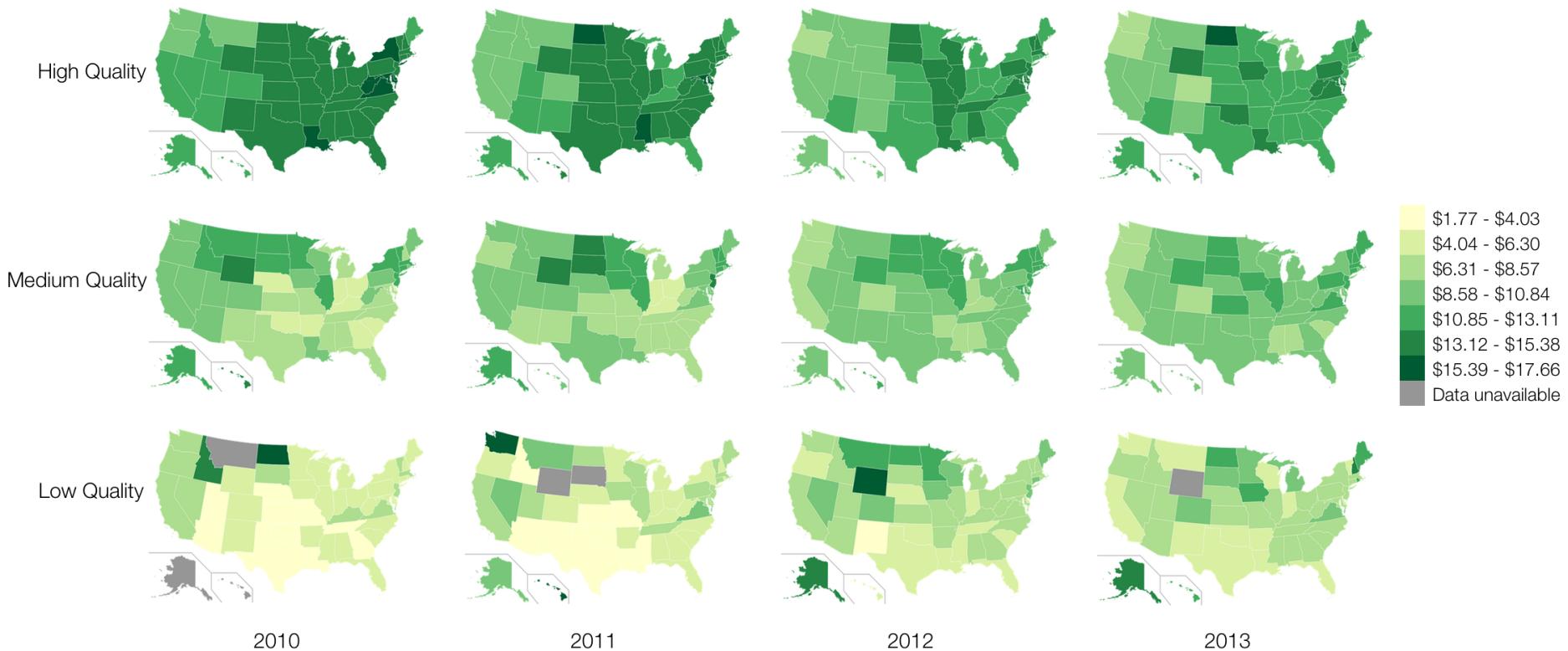
Categorical map



Via Wall Street Journal

Choropleth map(s)

U.S. Price per gram of Marijuana by Quality and Year



Data: priceofweed.com via github.com/zmjones/priceofweed
Author: Renzo Lucioni (renzolucioni.com, @RenzoLucioni)

Via Washington Post

Pro-tip: use choropleth for standardized data

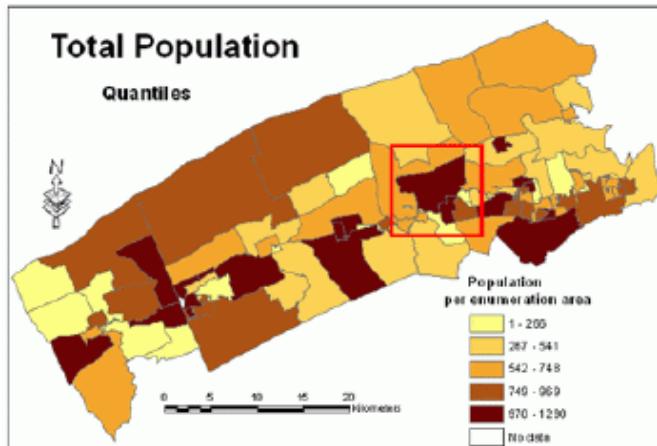


Figure 2. Population – absolute values. Click image for larger view.

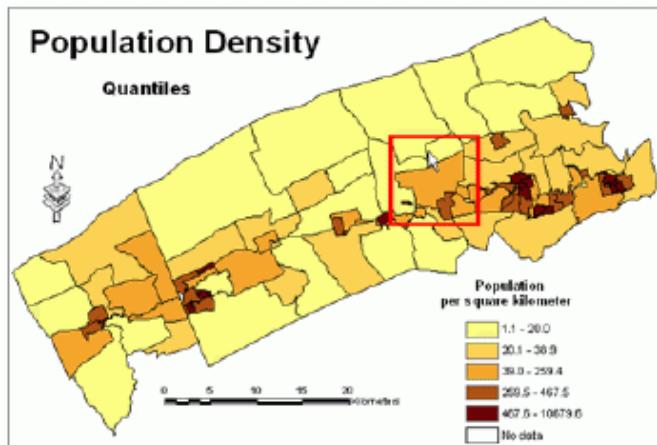
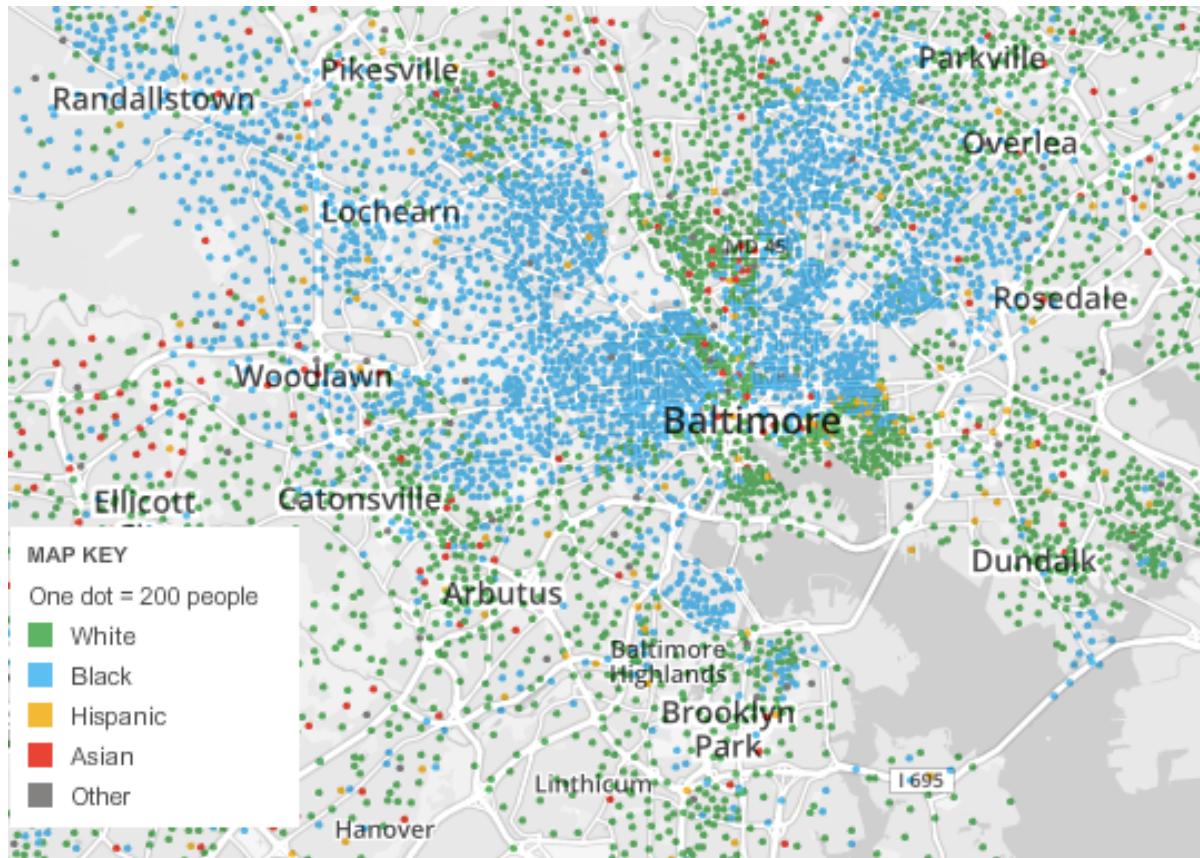


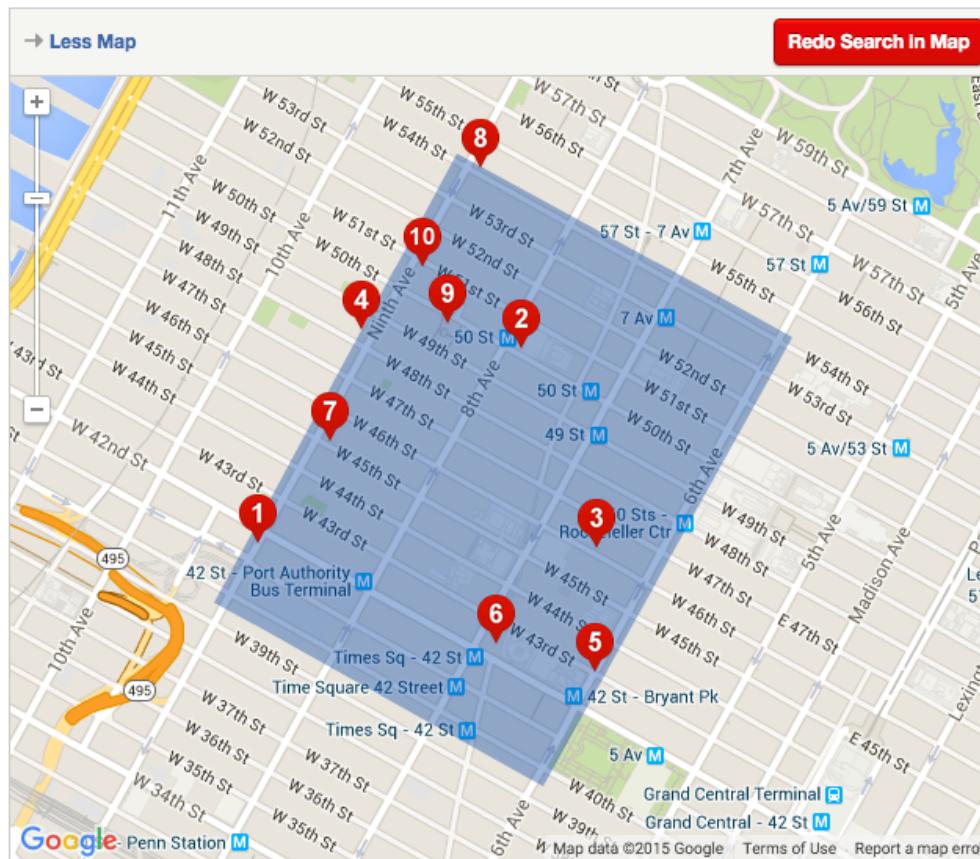
Figure 3. Population density. Click image for larger view.

Dot density map



Via New York Times

Pin map (now ubiquitous)



Ad by Google related to: tacos Theater District, Manhattan, NY

Via Yelp

**How to use
(and not abuse)
color on maps**

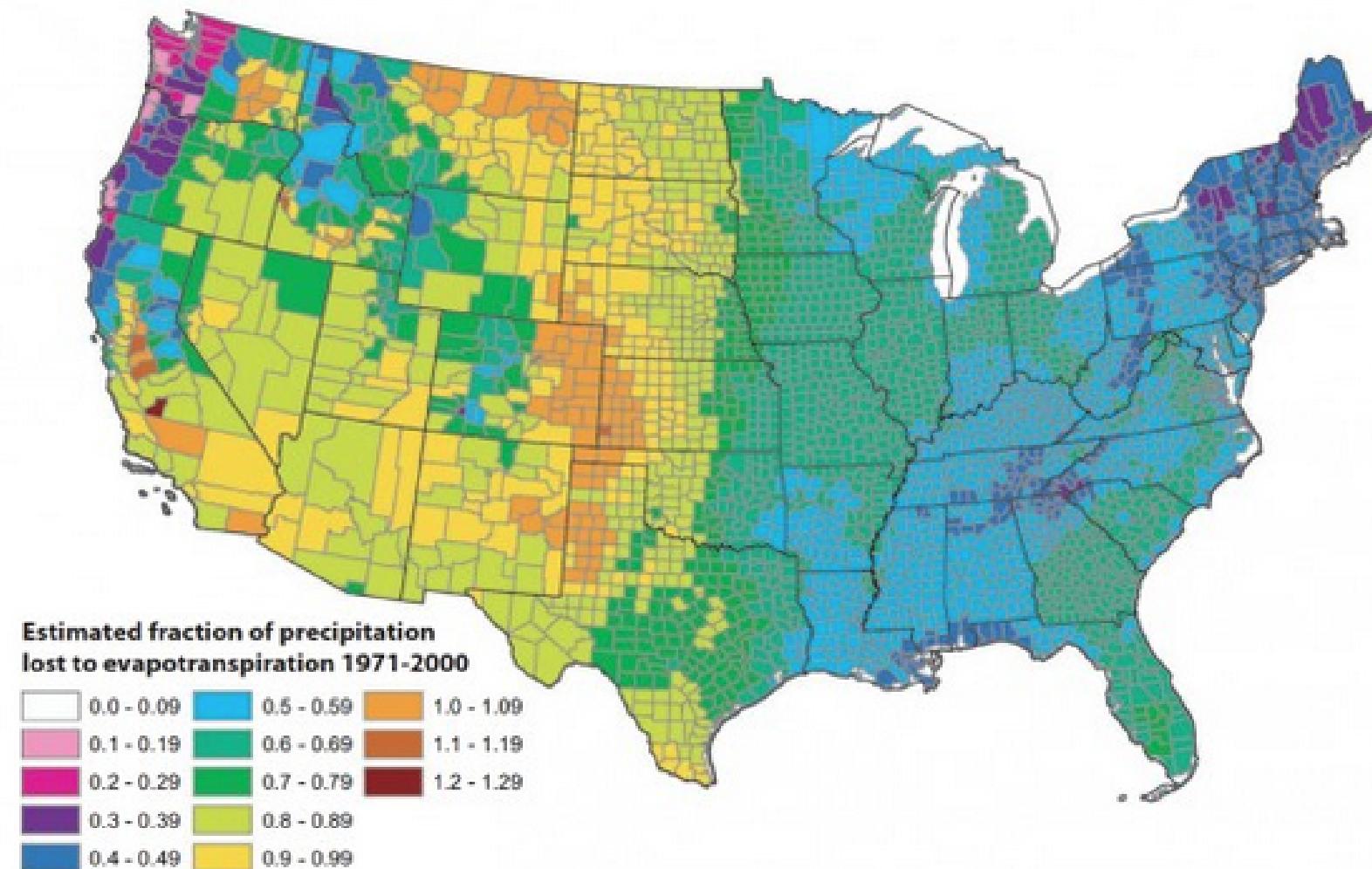


FIGURE 13. Estimated Mean Annual Ratio of Actual Evapotranspiration (ET) to Precipitation (P) for the Conterminous U.S. for the Period 1971–2000. Estimates are based on the regression equation in Table 1 that includes land cover. Calculations of ET/P were made first at the 800-m resolution of the PRISM climate data. The mean values for the counties (shown) were then calculated by averaging the 800-m values within each county. Areas with fractions >1 are agricultural counties that either import surface water or mine deep groundwater.

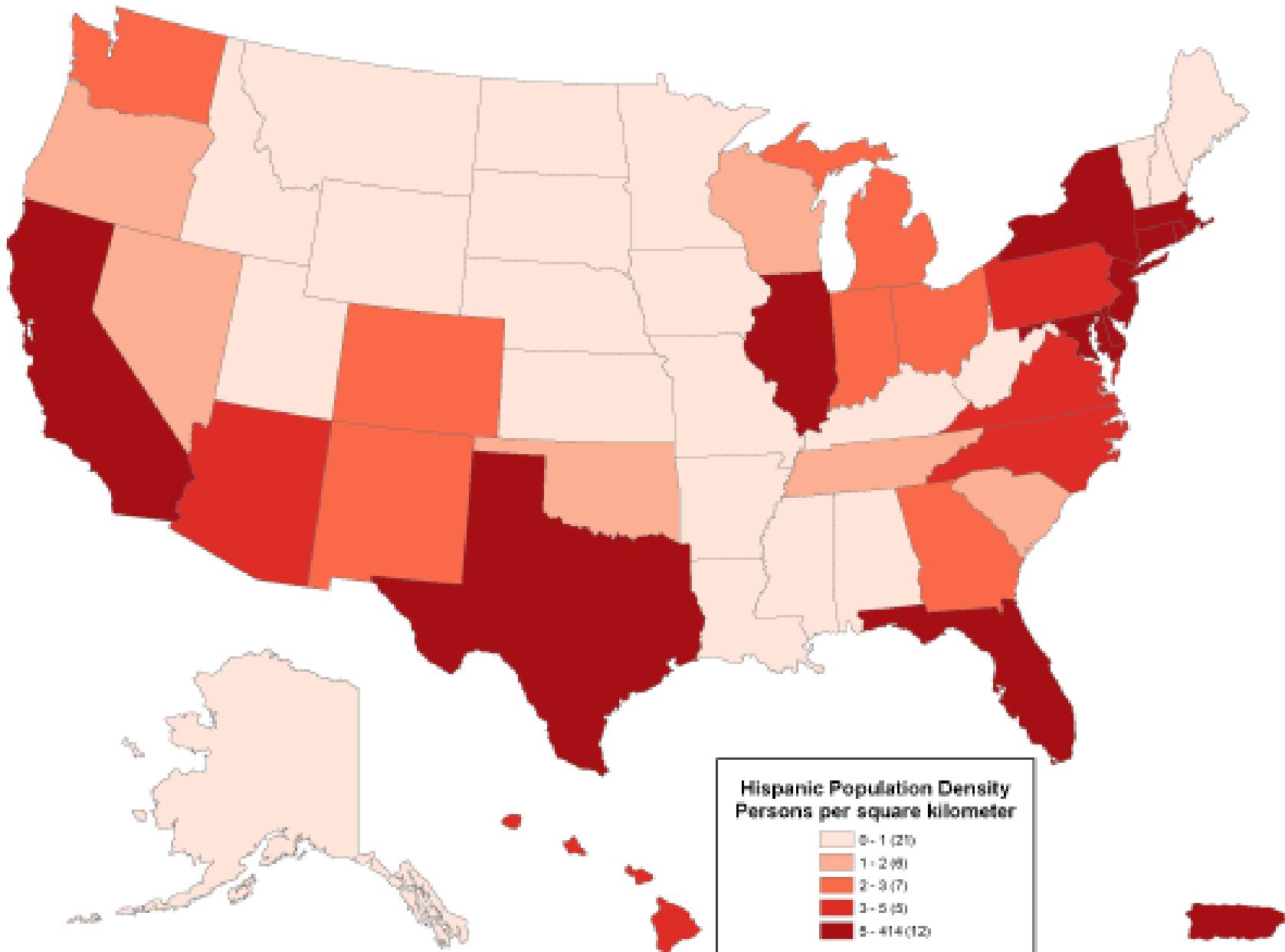
Sequential Schemes



Diverging Schemes



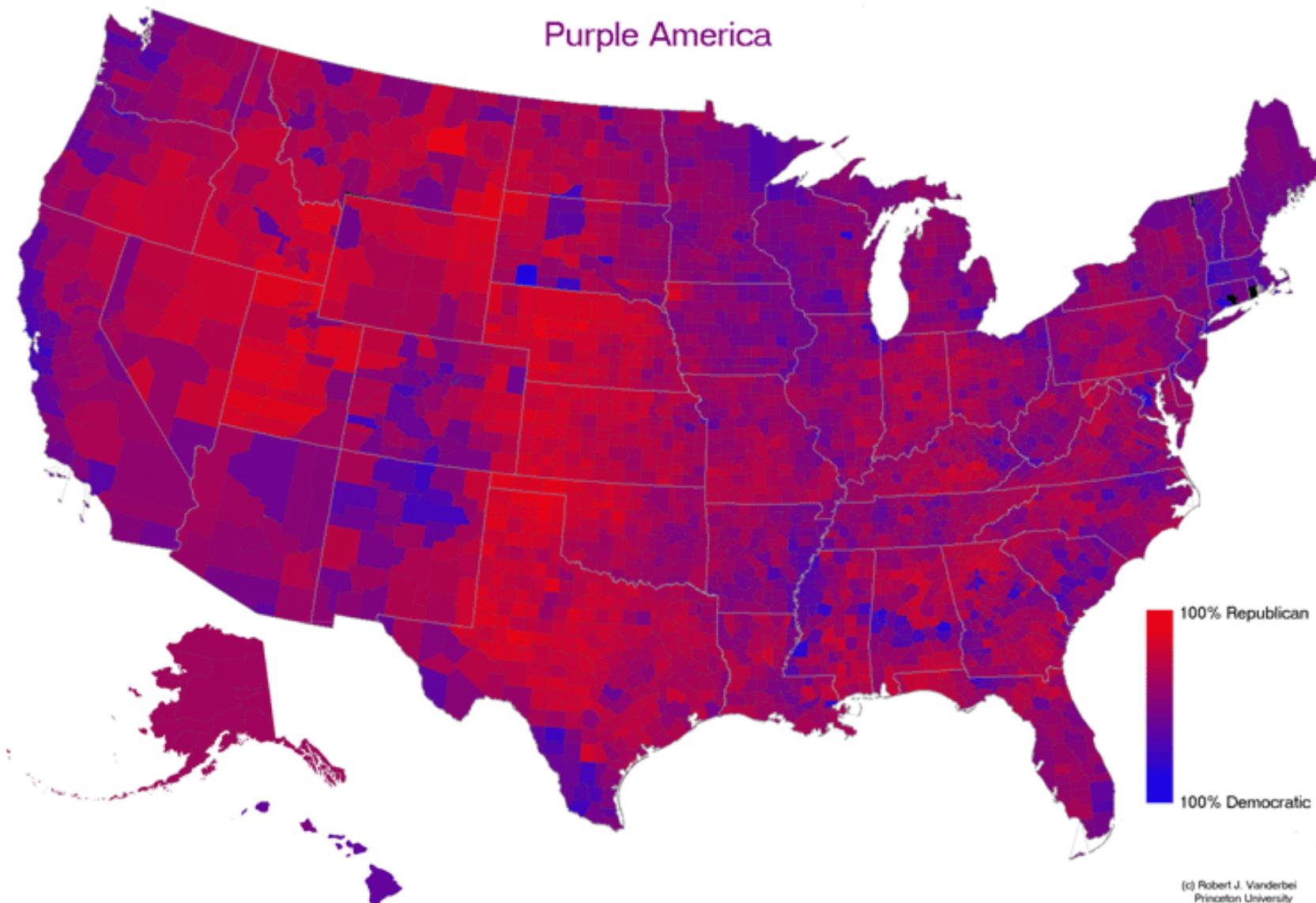
Via Mapbox



Via Penn State

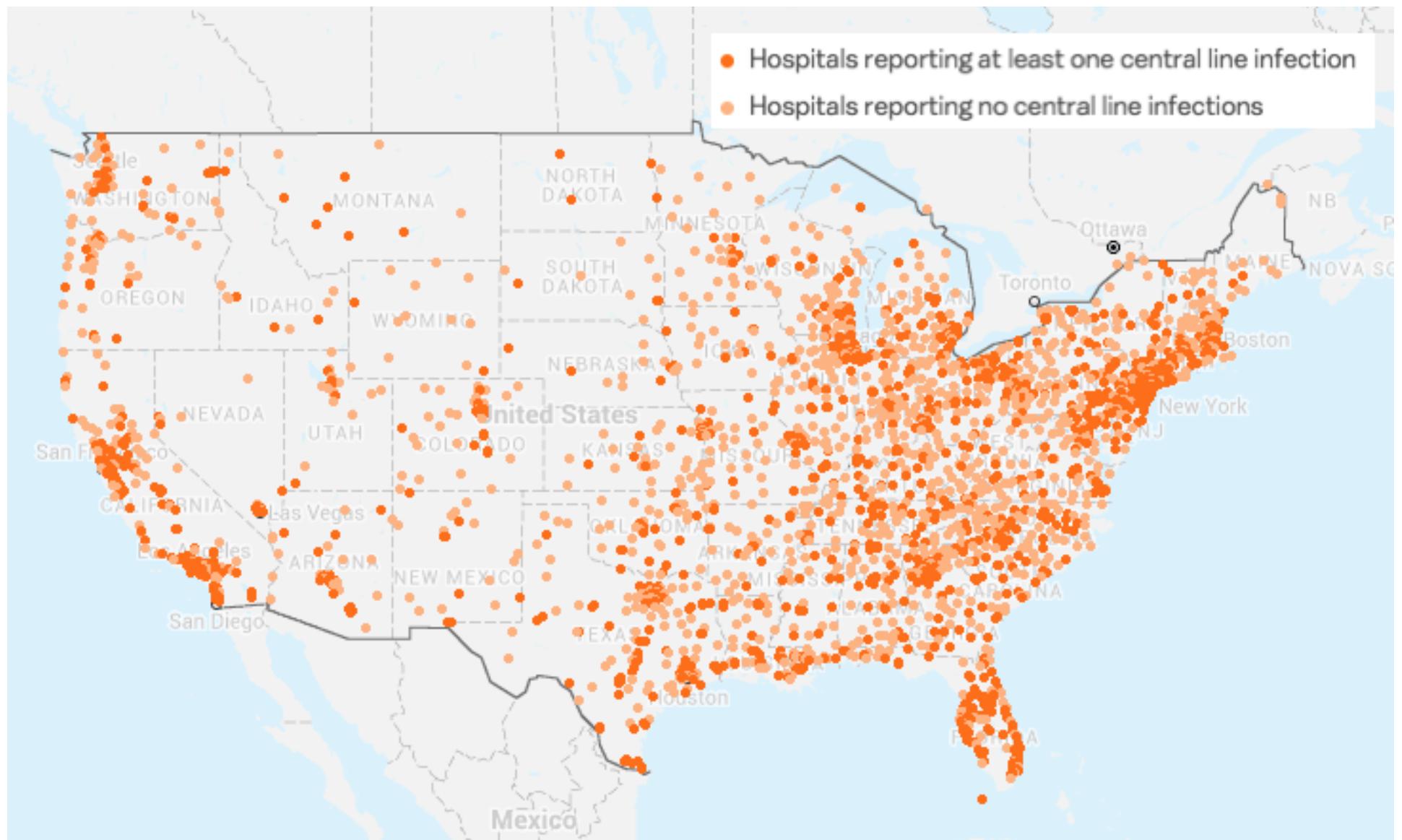
2004 Presidential Election

Purple America



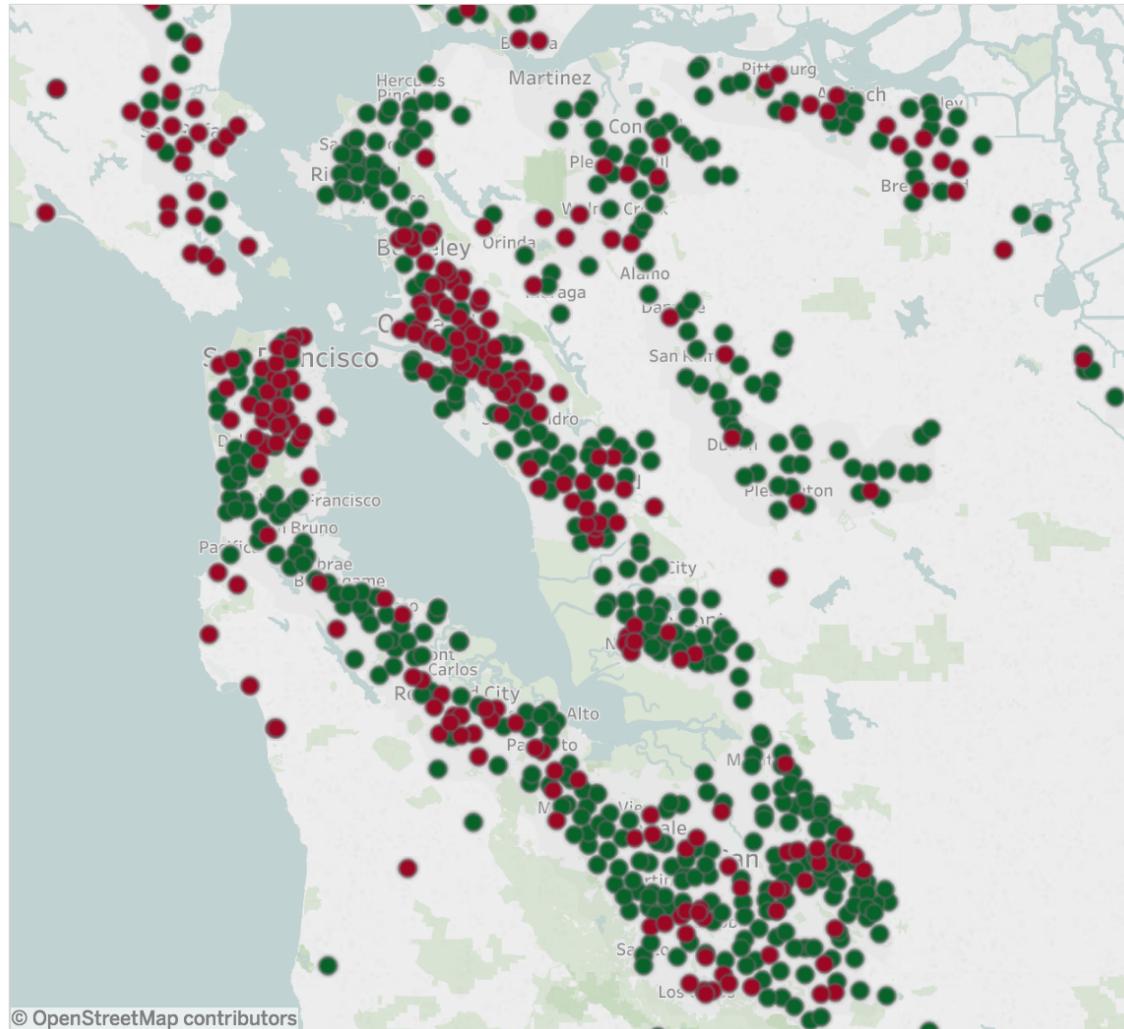
(c) Robert J. Vanderbei
Princeton University

Via Princeton



Via VOX

Pro-tip: test for colorblindness!



Via VizWiz

Tools:

Carto

<https://carto.com>

The end!

Keep in touch: nadja.popovich@journalism.cuny.edu