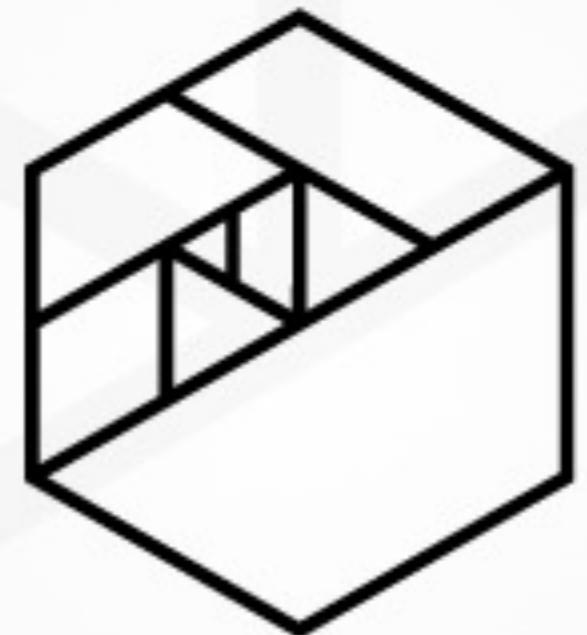


Intro to Data Visualization

11.30.2015



METIS

What is Data Visualization?

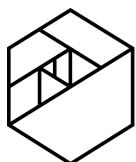


What is data visualization?

Data visualization...is not owned by any one field, but rather finds interpretation across many...

It involves the creation and study of the visual representation of data, meaning "information that has been abstracted in some schematic form, including attributes or variables for the units of information".

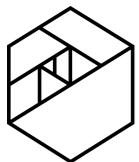
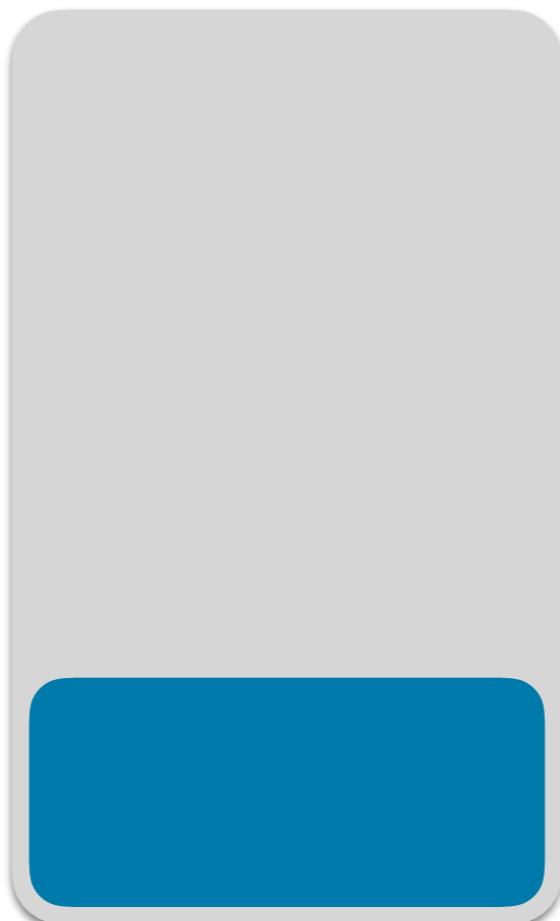
- Wikipedia



What is data visualization?

Data visualization is encoding visual elements with data.

26%



What is data visualization?

Data visualization is encoding visual elements with data.

Visual elements include:

Color

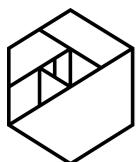
Size

Shape

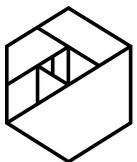
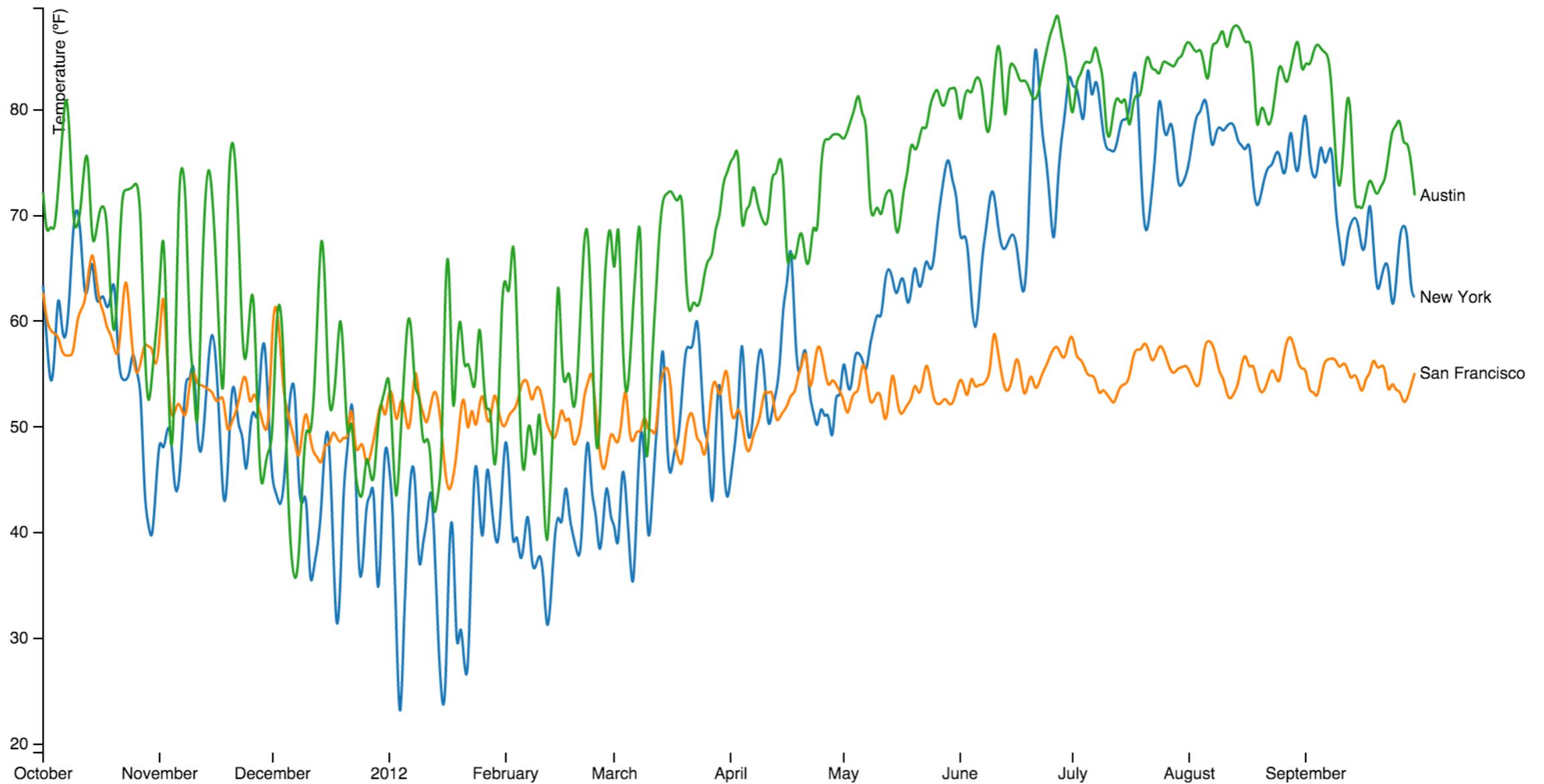
Length

Angle

Position

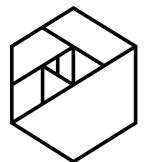
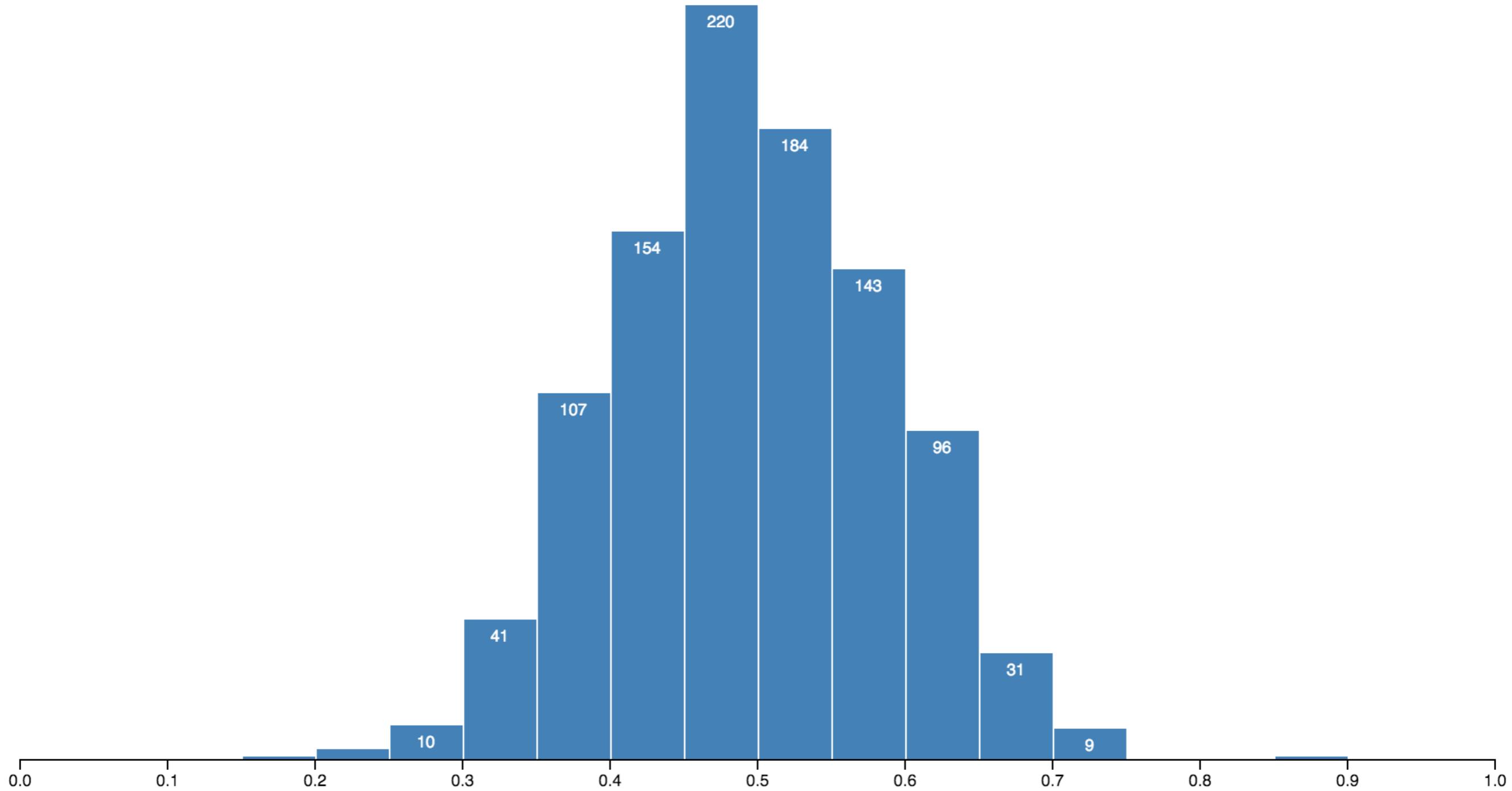


What is data visualization?



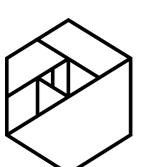
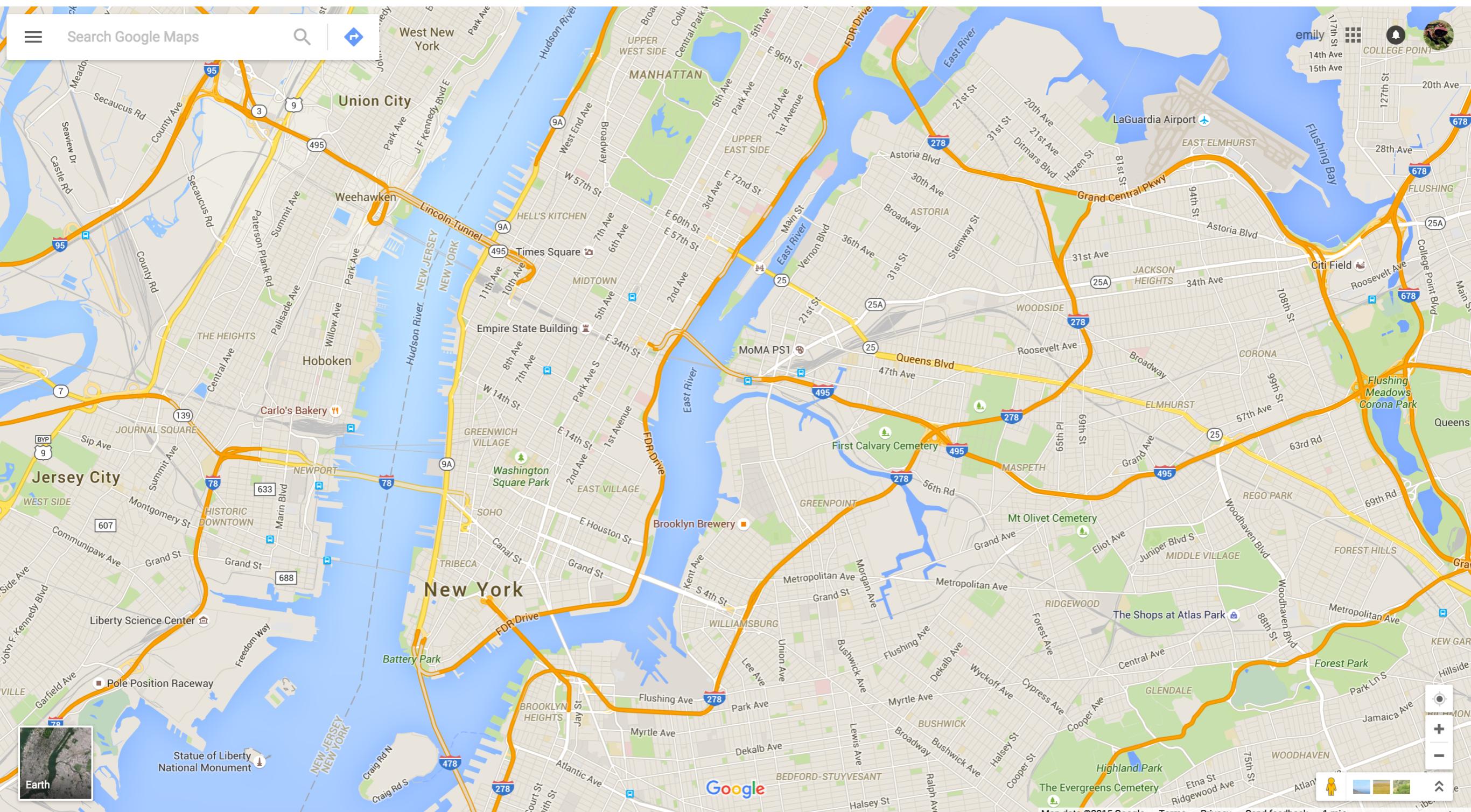
Temperature in Austin, New York, and San Francisco
Mike Bostock

What is data visualization?

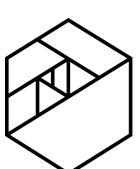
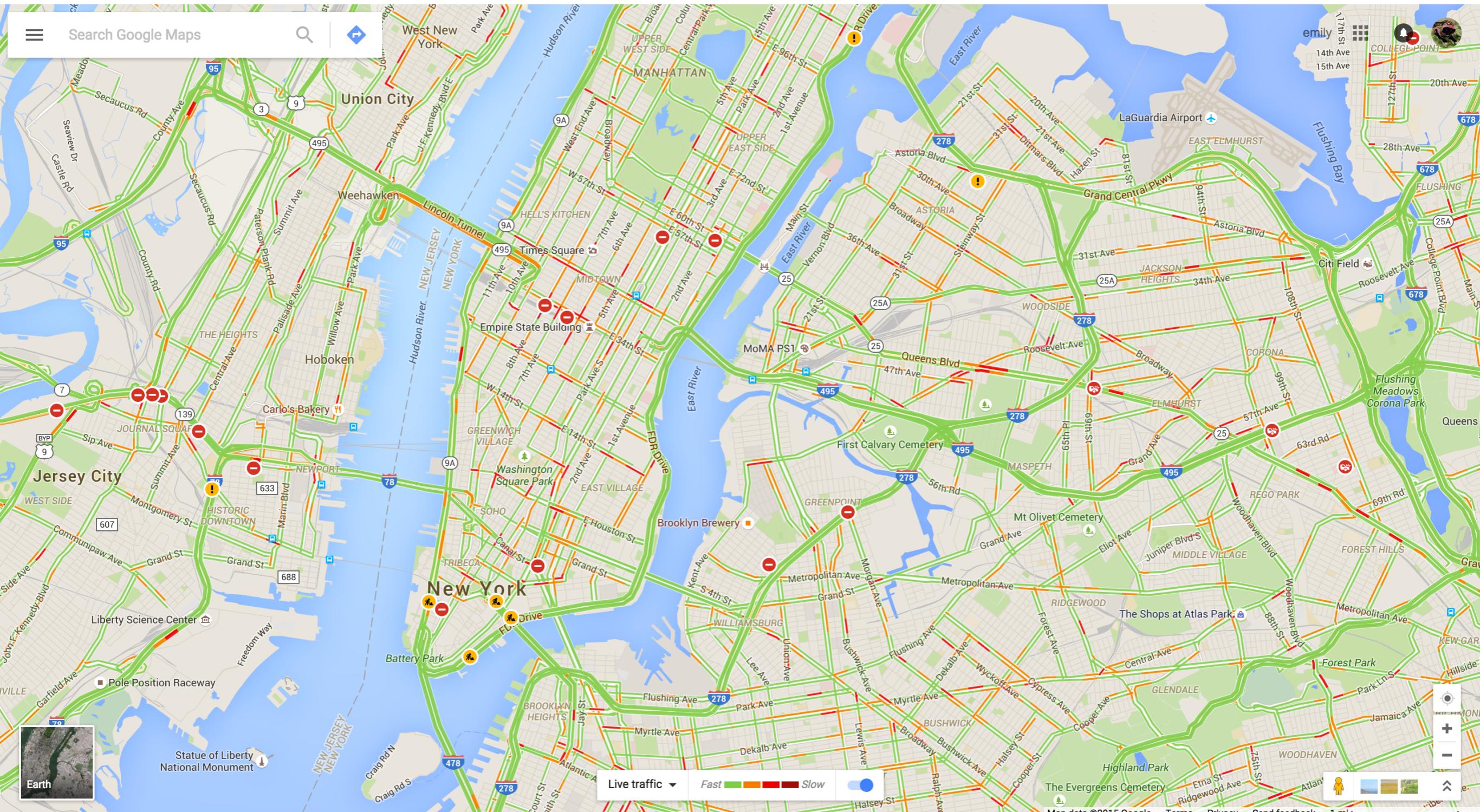


Random distribution
Mike Bostock

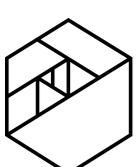
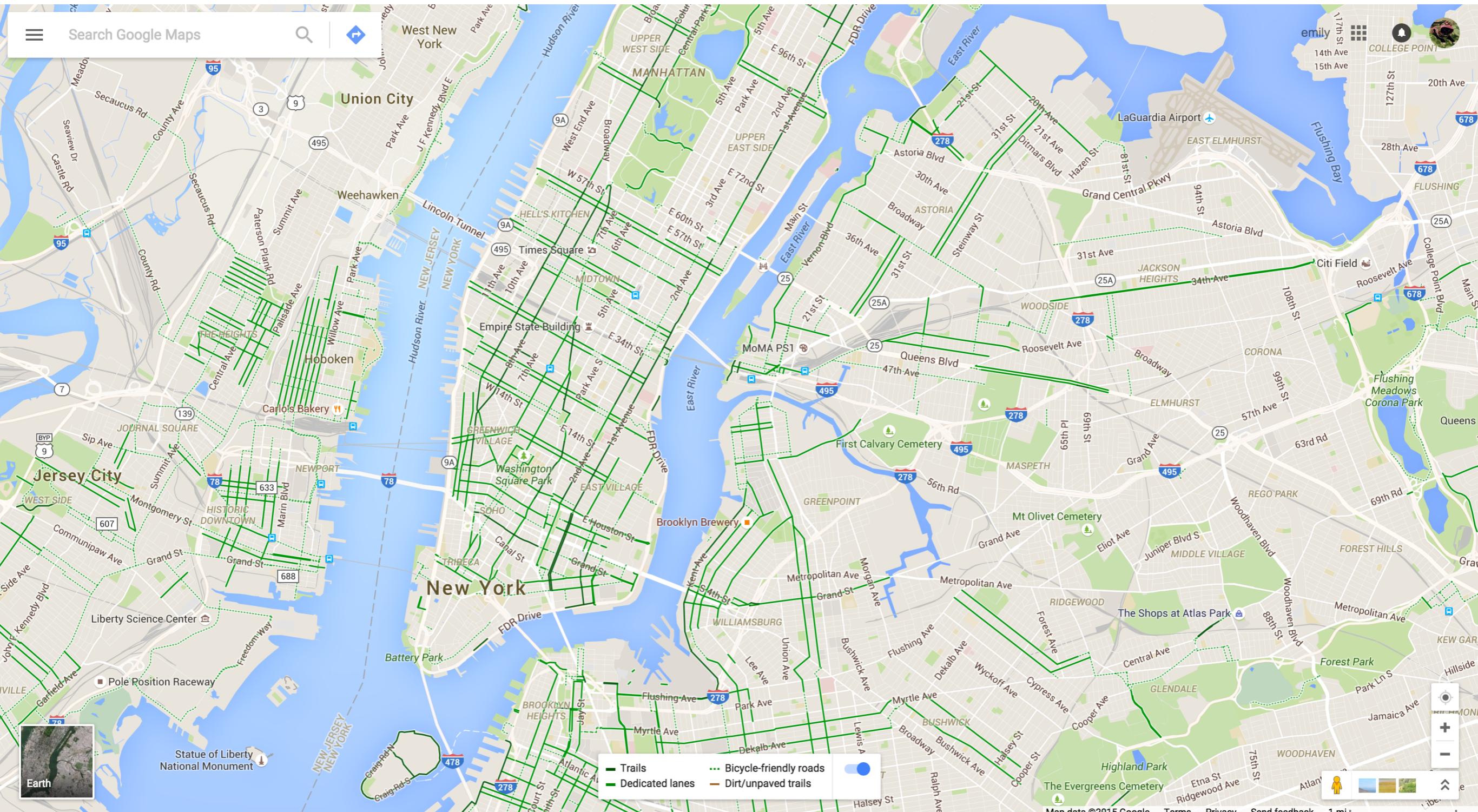
What is data visualization?



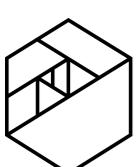
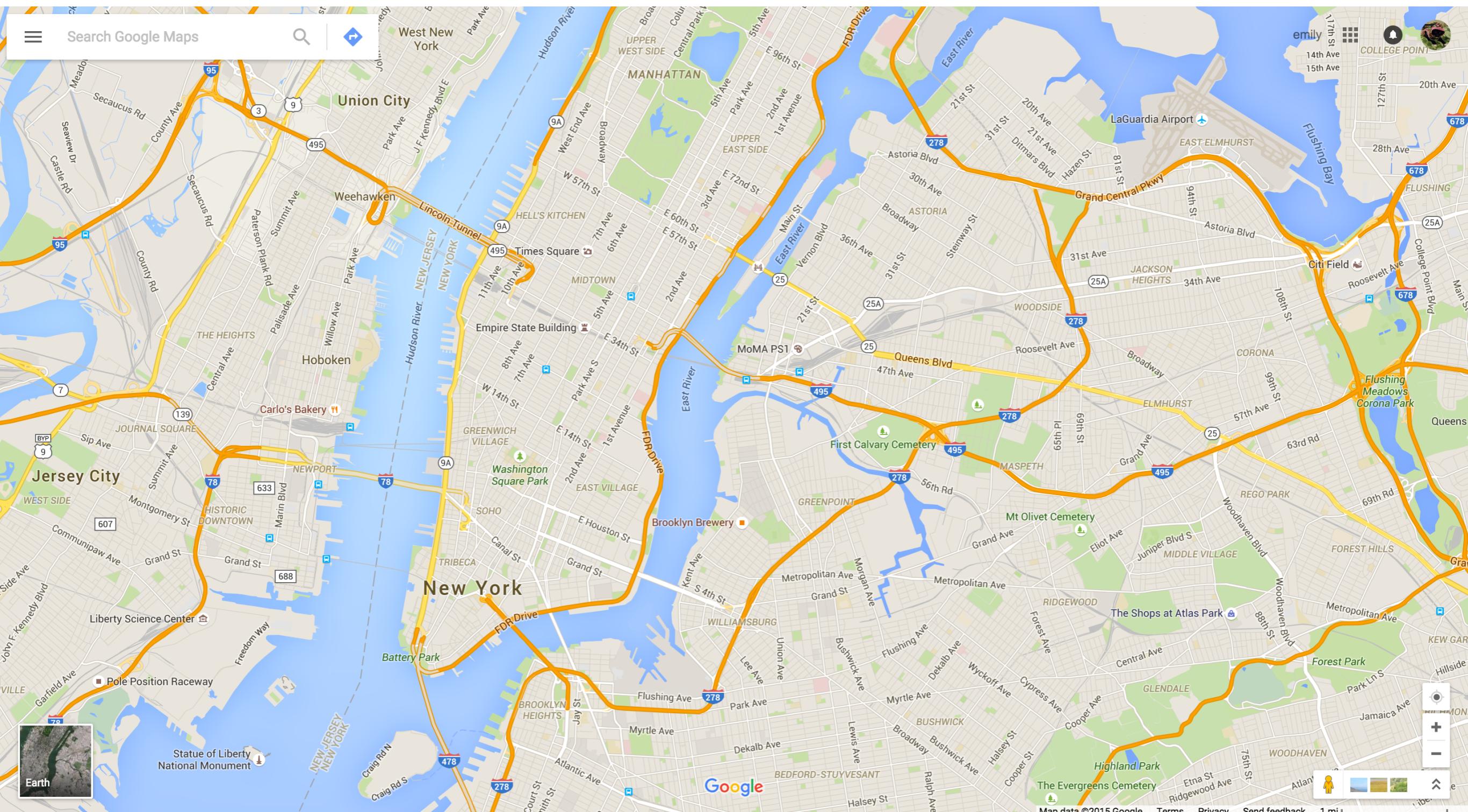
What is data visualization?



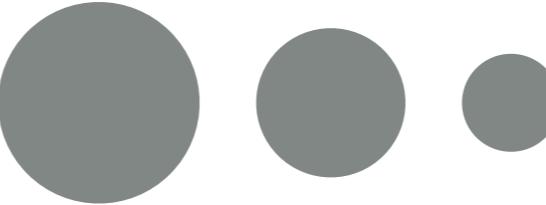
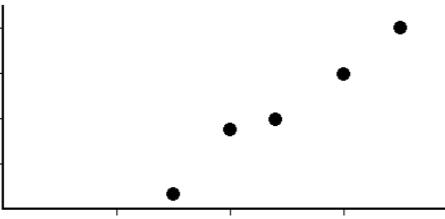
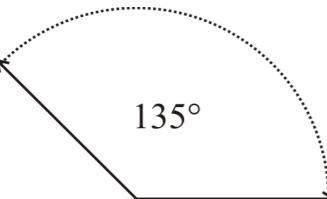
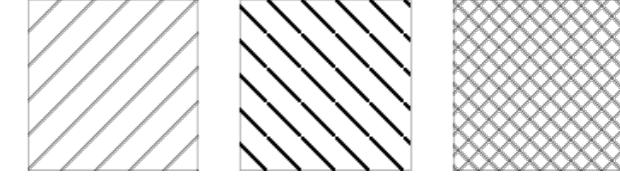
What is data visualization?

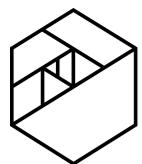


Data visualization is encoding information with graphic elements



Data visualization is encoding information with graphic elements

LENGTH	SIZE (AREA)	COLOR HUE
		
POSITION	ORIENTATION (SLOPE)	SHAPE
		
ANGLE	COLOR DENSITY	TEXTURE
		



What is data visualization?

New York, NY

Monday 11:00 PM

Clear



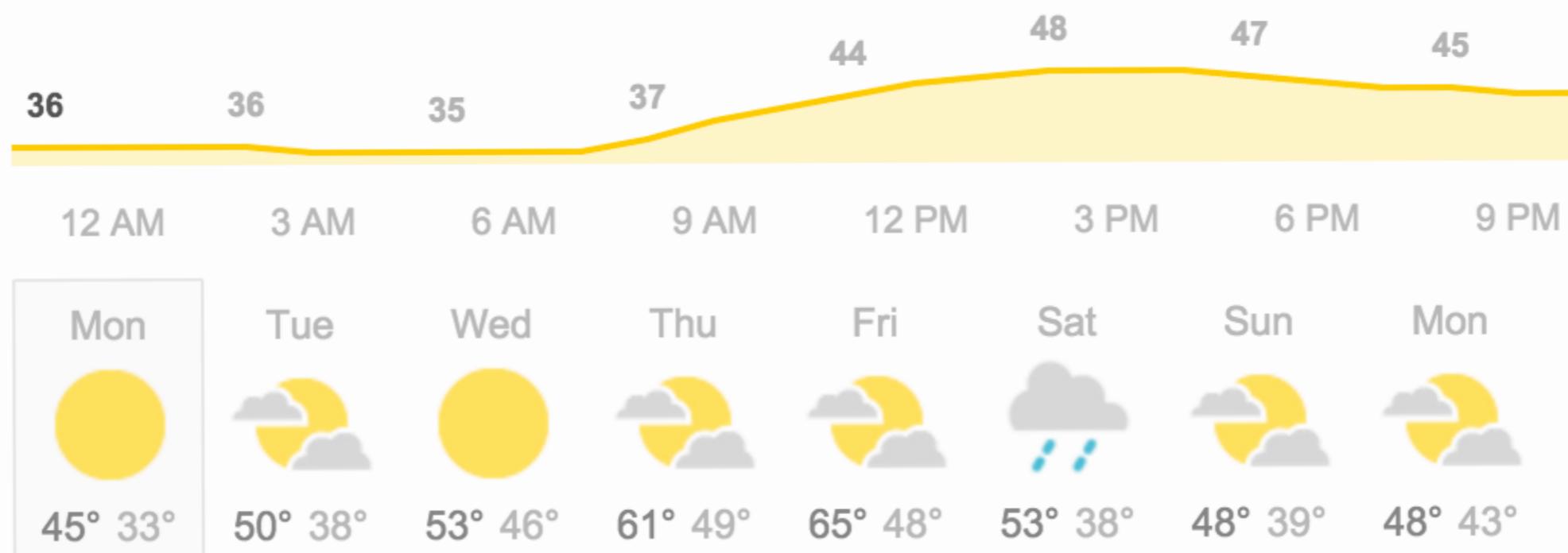
36 °F | °C

Precipitation: 0%
Humidity: 51%
Wind: 4 mph

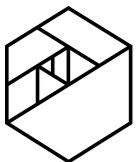
Temperature

Precipitation

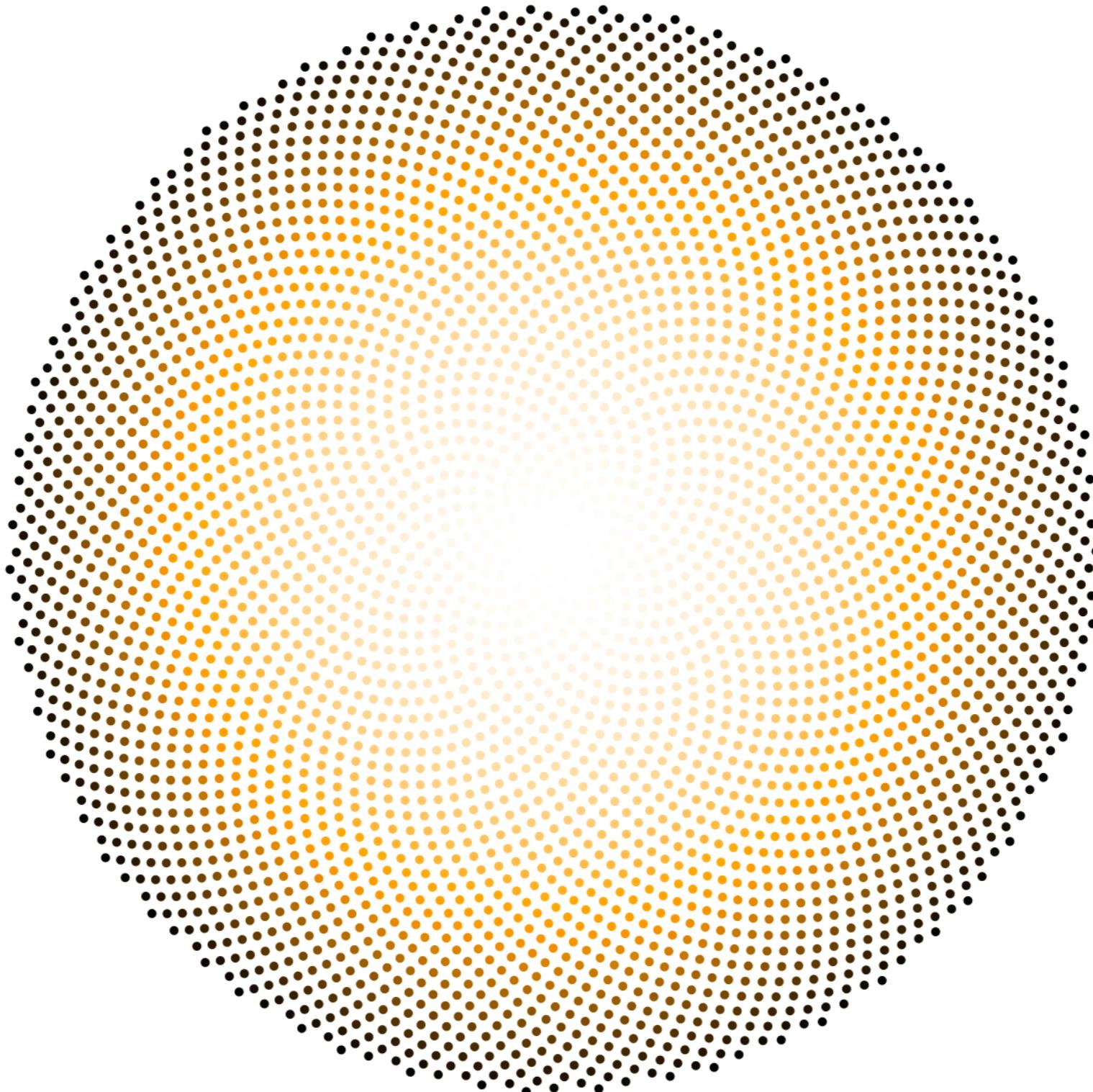
Wind



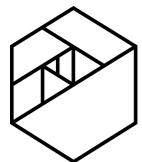
Google Weather



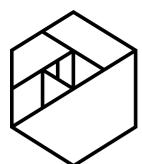
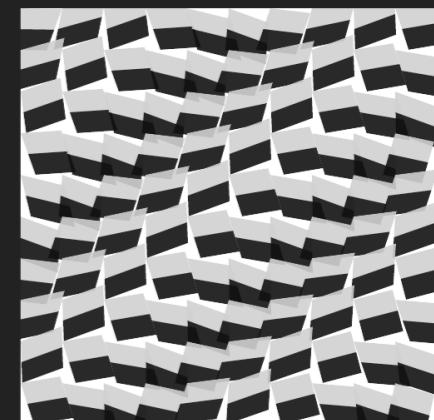
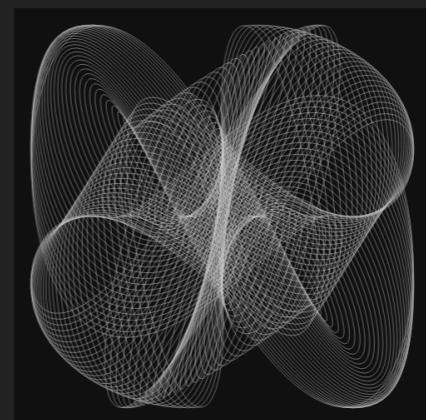
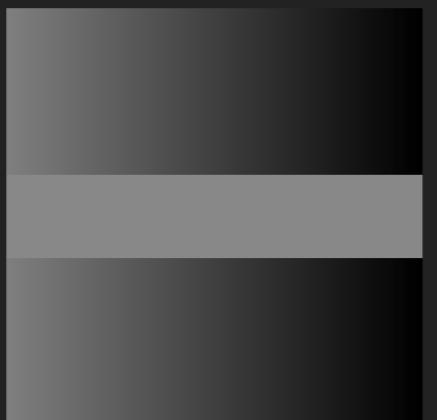
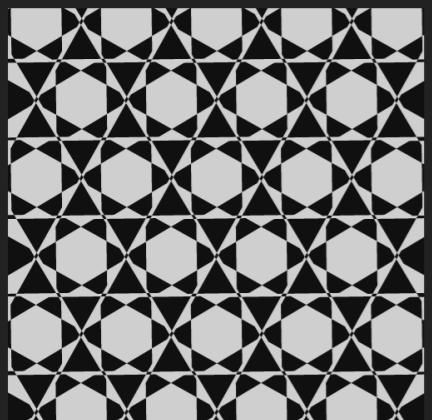
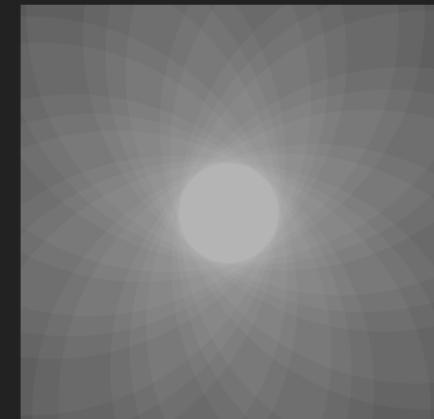
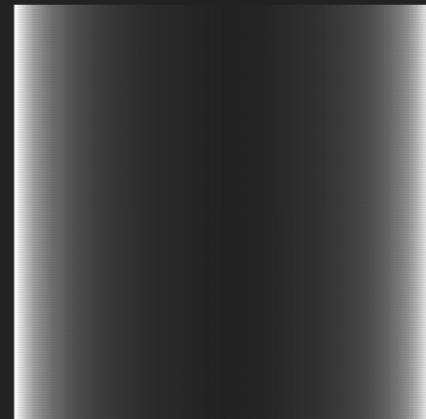
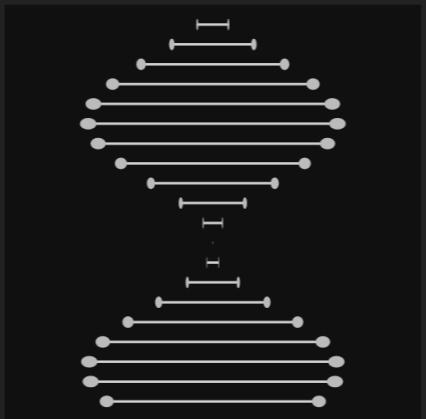
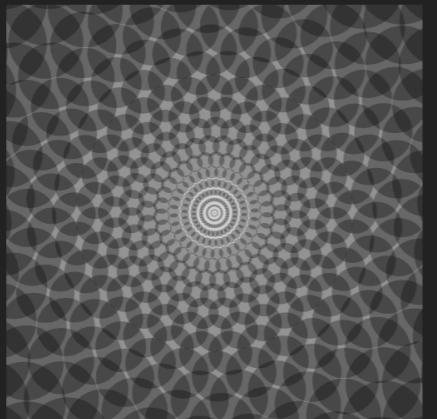
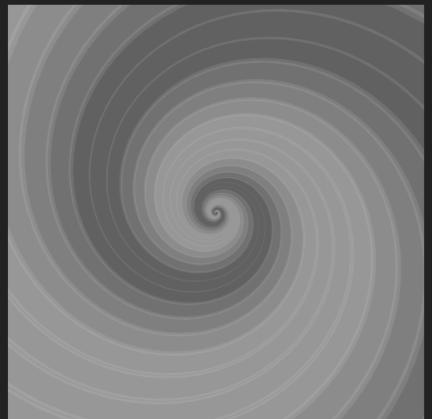
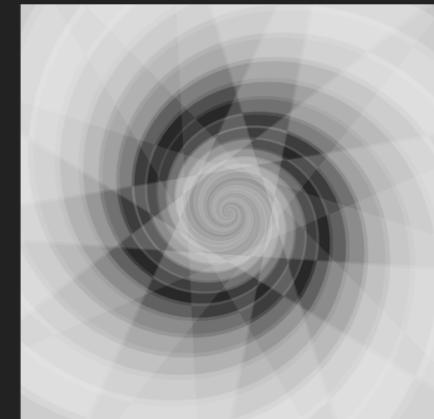
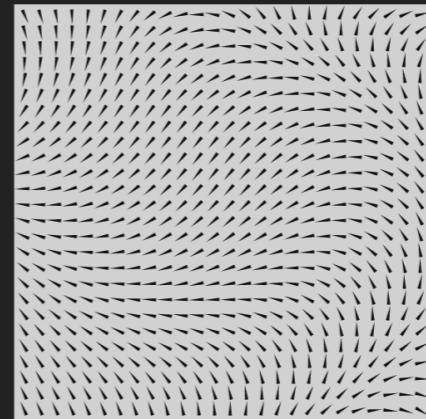
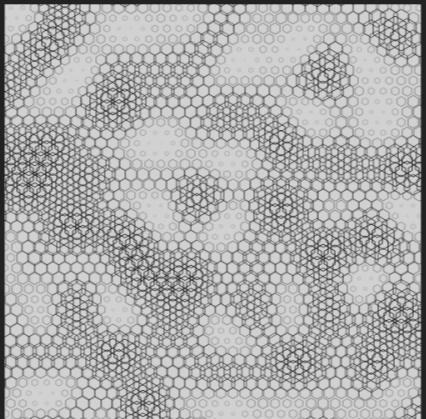
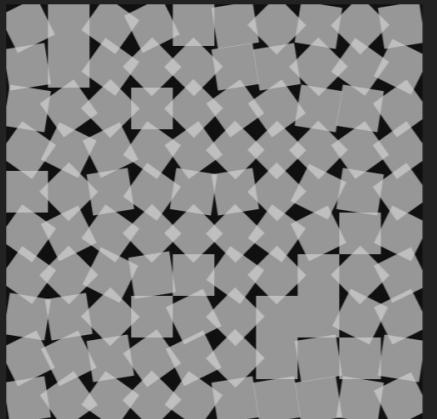
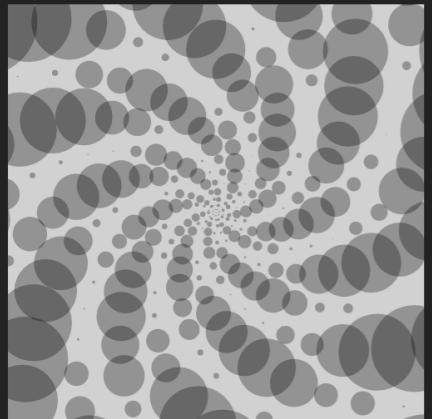
What is data visualization?



Mathematical model of florets in the head of a sunflower
Jason Davies



What is data visualization?



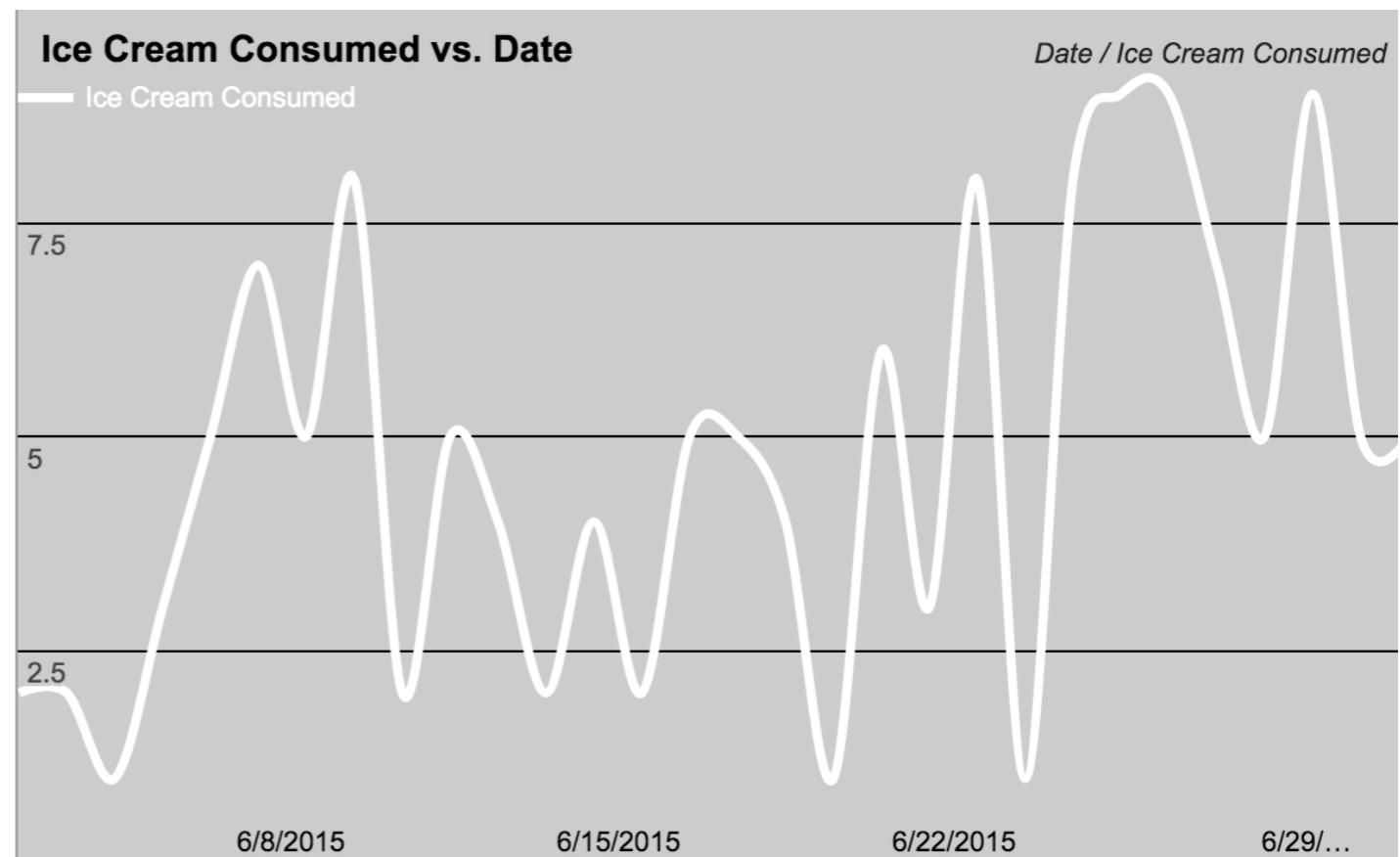
<http://jfire.io/animations/>
John Firebaugh

Quick Quiz!

A.

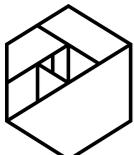
1	Date	Ice Cream Consumed
2	6/1/2015	2
3	6/2/2015	2
4	6/3/2015	1
5	6/4/2015	3
6	6/5/2015	5
7	6/6/2015	7
8	6/7/2015	5
9	6/8/2015	8
10	6/9/2015	2
11	6/10/2015	5
12	6/11/2015	4
13	6/12/2015	2
14	6/13/2015	4
15	6/14/2015	2
16	6/15/2015	5
17	6/16/2015	5
18	6/17/2015	4
19	6/18/2015	1
20	6/19/2015	6
21	6/20/2015	3
22	6/21/2015	8
23	6/22/2015	1
24	6/23/2015	8
25	6/24/2015	9
26	6/25/2015	9
27	6/26/2015	7
28	6/27/2015	5
29	6/28/2015	9
30	6/29/2015	5
31	6/30/2015	5

B.



Which of these is an example of data visualization?

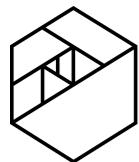
A, B, or both A & B



Tables as Data Visualization

Highlight Table Example

Product Category	Product Sub-Category	Region				Profitability
		South	Central	East	West	
Furniture	Bookcases	(\$22,417)	\$73	(\$10,151)	(\$676)	(\$50,677)
	Chairs & Chairmats	\$34,026	\$37,920	\$33,583	\$44,409	\$152,031
	Office Furnishings	\$25,121	\$26,293	\$14,523	\$30,941	
	Tables	\$26,172	(\$19,777)	(\$50,677)	(\$16,990)	
Office Supplies	Appliances	\$26,986	\$22,950	\$16,812	\$31,276	
	Binders and Binder Accessories	\$69,530	\$73,951	\$71,420	\$92,273	
	Envelopes	\$19,182	\$10,825	\$7,482	\$11,222	
	Labels	\$3,479	\$2,429	\$4,041	\$3,740	
	Paper	\$10,997	\$11,047	\$13,510	\$10,433	
	Pens & Art Supplies	\$1,397	\$2,781	\$2,856	\$518	
	Rubber Bands	\$156	(\$174)	(\$238)	\$178	
	Scissors, Rulers and Trimmers	(\$2,903)	(\$1,765)	(\$1,179)	(\$1,953)	
Technology	Storage & Organization	\$11,836	(\$68)	(\$7,233)	(\$2,018)	
	Computer Peripherals	\$30,475	\$11,971	\$14,808	\$37,280	
	Copiers and Fax	\$63,598	\$513	\$67,254	\$35,997	
	Office Machines	\$129,060	\$38,876	\$47,277	\$61,377	
	Telephones and Communication	\$78,985	\$79,393	\$73,715	\$84,860	



Tables as Data Visualization

2015 NFL Predictions

By JAY BOICE and NATE SILVER

FiveThirtyEight's 2015 NFL forecast uses an Elo-based model to calculate each team's chances of advancing to the playoffs and winning Super Bowl 50. Probabilities are based on 20,000 simulations and will update after each game. [Read more: How this works | Complete Elo history](#)

UPDATED 11:51 PM EST | NOV 26



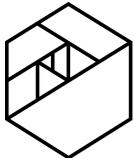
Week 12 Games			Week ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰													
Away team	THURS NOV. 26			SUN NOV. 29										MON NOV. 30		
	PHI	CAR✓	CHI✓	BUF	MIA	MIN	NO	NYG	OAK	SD	STL	TB	ARI	PIT	NE	BAL
	48%	65%	17%	29%	38%	49%	32%	58%	55%	46%	18%	28%	71%	34%	59%	60%
Home team	DET✓	DAL	GB	KC	NYJ	ATL	HOU	WSH	TEN	JAX	CIN	IND	SF	SEA	DEN	CLE
	52%	34%	83%	70%	62%	50%	68%	42%	45%	54%	82%	72%	29%	65%	41%	40%

[Win probabilities](#) [Elo point spreads](#)

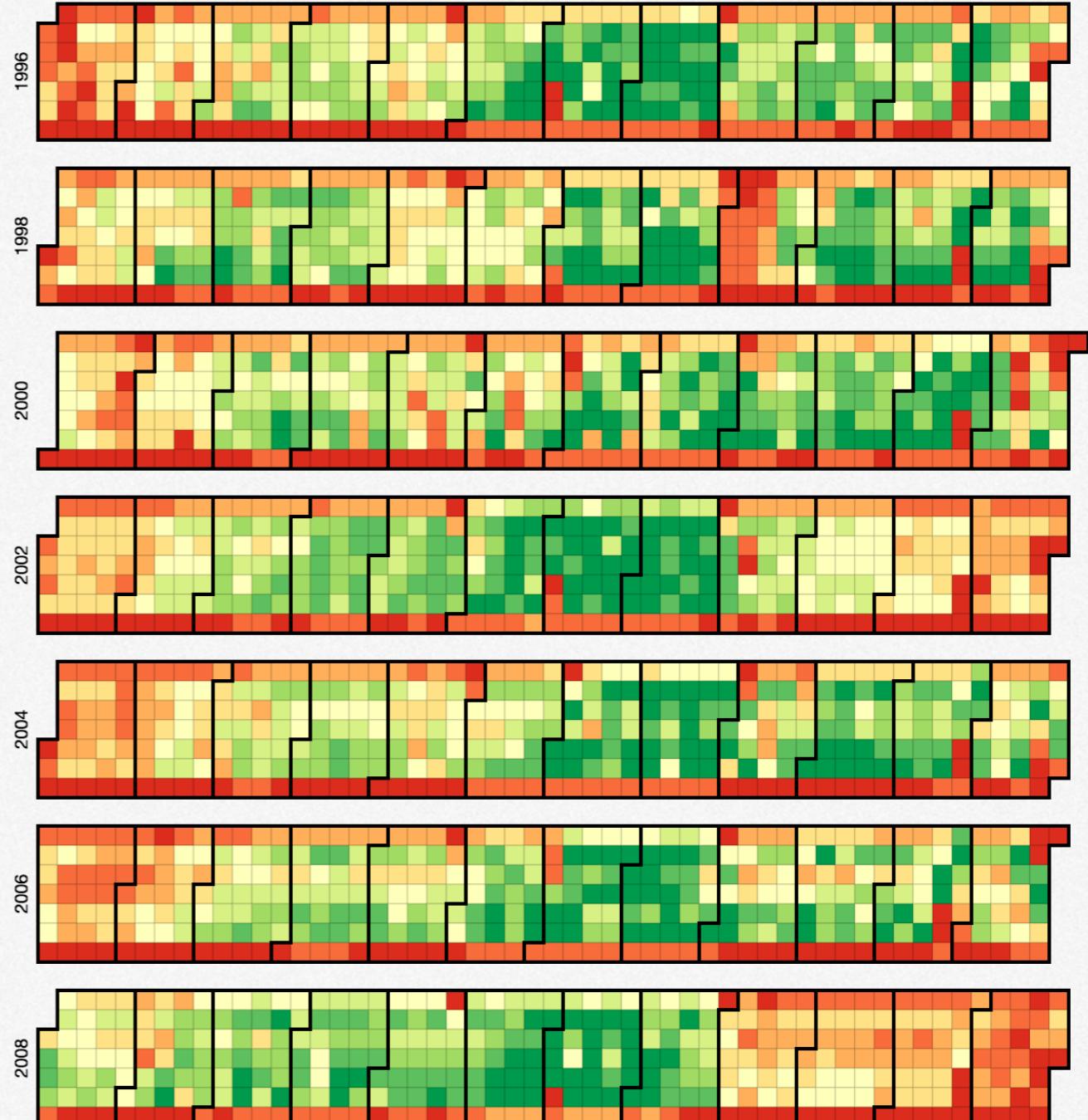
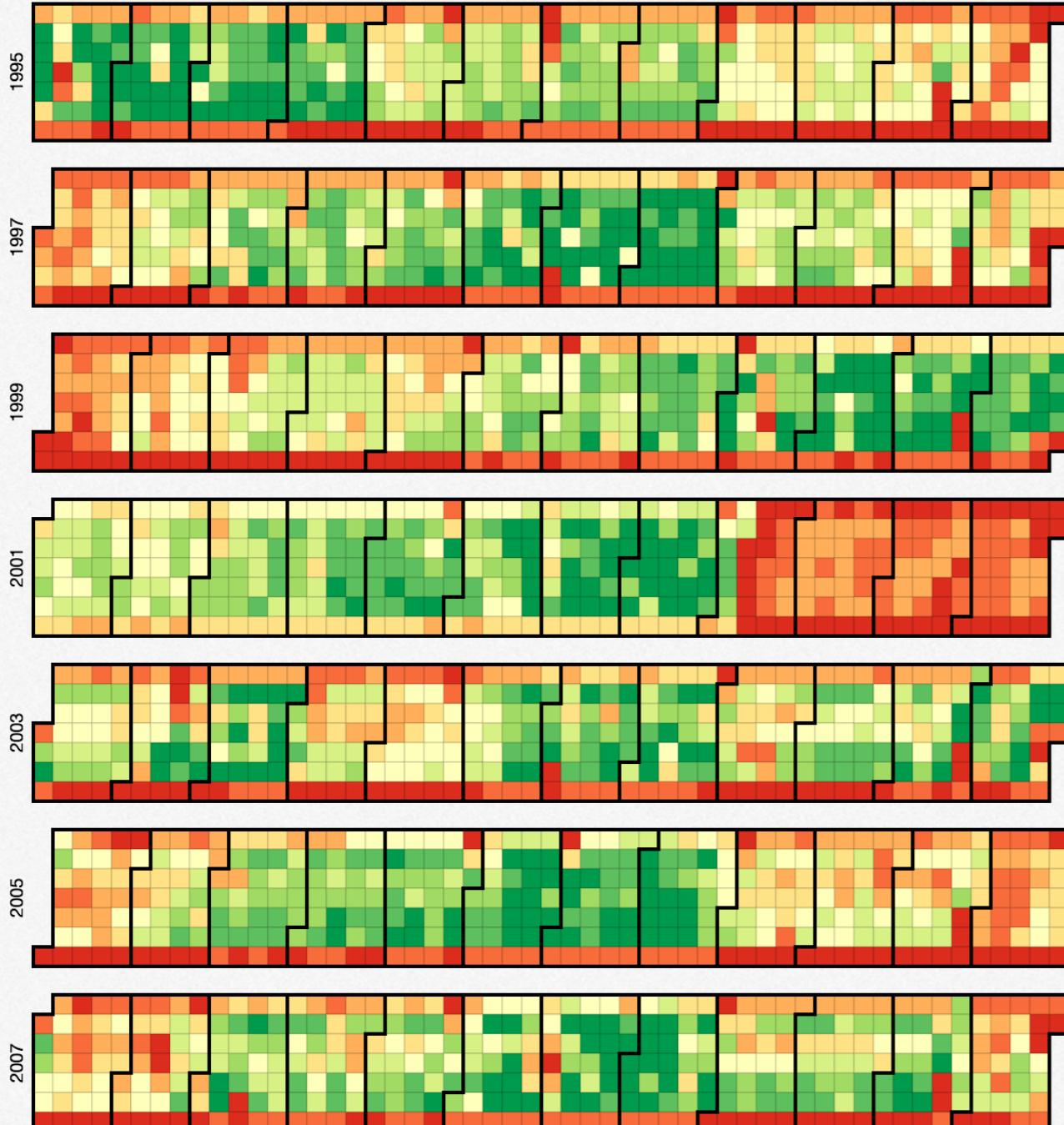
Team-By-Team Forecast

Forecast from November 26 (current) ▾

ELO RATING	1-WEEK CHANGE	TEAM	DIVISION	AVERAGE SIMULATED SEASON			PLAYOFF ODDS			
				WINS	LOSSES	POINT DIFF.	MAKE PLAYOFFS	WIN DIVISION	FIRST ROUND BYE	WIN SUPER BOWL
1763		New England	AFC East	14.8	1.2	+207.5	>99%	>99%	97%	33%
1689	+20	Carolina	NFC South	14.7	1.3	+171.1	>99%	>99%	>99%	20%
1655		Arizona	NFC West	12.1	3.9	+157.9	97%	91%	70%	12%
1637		Denver	AFC West	11.9	4.1	+72.1	98%	89%	49%	8%
1630		Cincinnati	AFC North	12.1	3.9	+118.2	>99%	89%	48%	7%
1626		Seattle	NFC West	8.8	7.2	+65.3	43%	8%	2%	3%
1621	-31	Green Bay	NFC North	10.1	5.9	+68.7	86%	55%	16%	5%
1611		Kansas City	AFC West	9.5	6.5	+111.6	70%	11%	<1%	2%
1580		Pittsburgh	AFC North	9.1	6.9	+48.5	62%	11%	4%	2%
1554		Minnesota	NFC North	9.9	6.1	+23.9	73%	40%	11%	2%



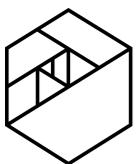
Calendars as Data Visualization



U.S. Commercial Flights, 1995-2008

use the menu to change the dataset

U.S. Commercial Flights

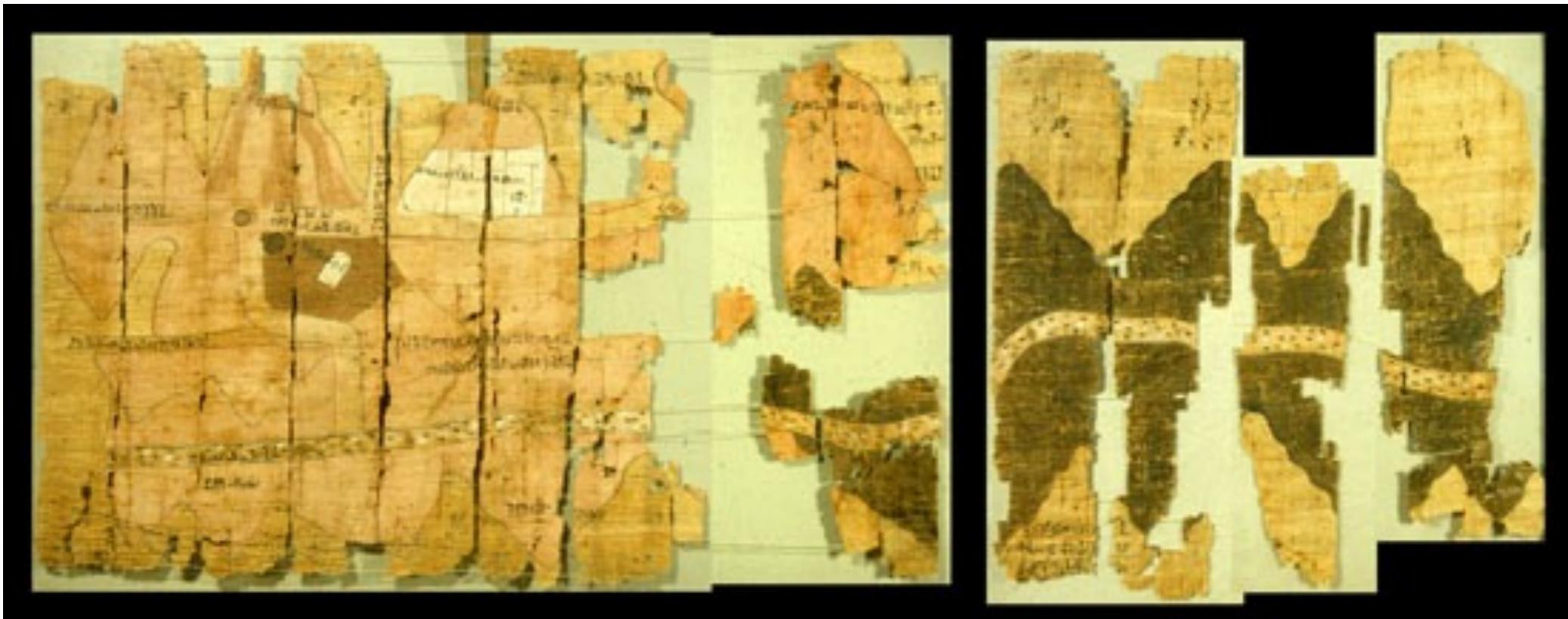


Mike Bostock

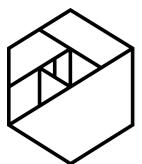
A (brief) history of data visualization



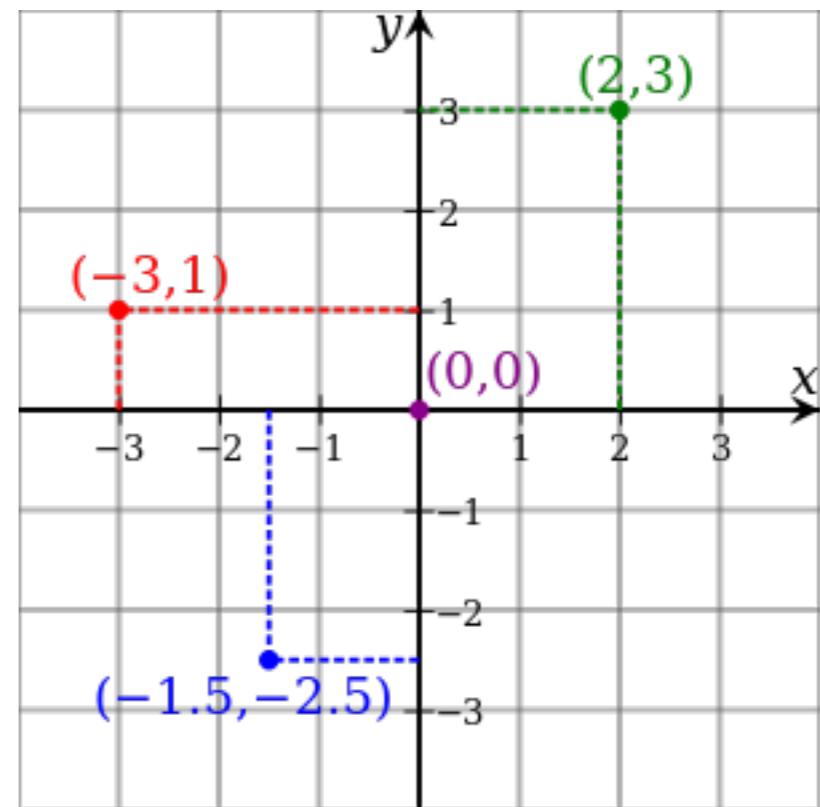
Who invented data visualization?



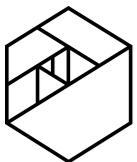
Turin Papyrus Map (Egypt, 1150 BC)



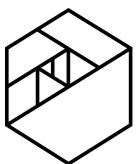
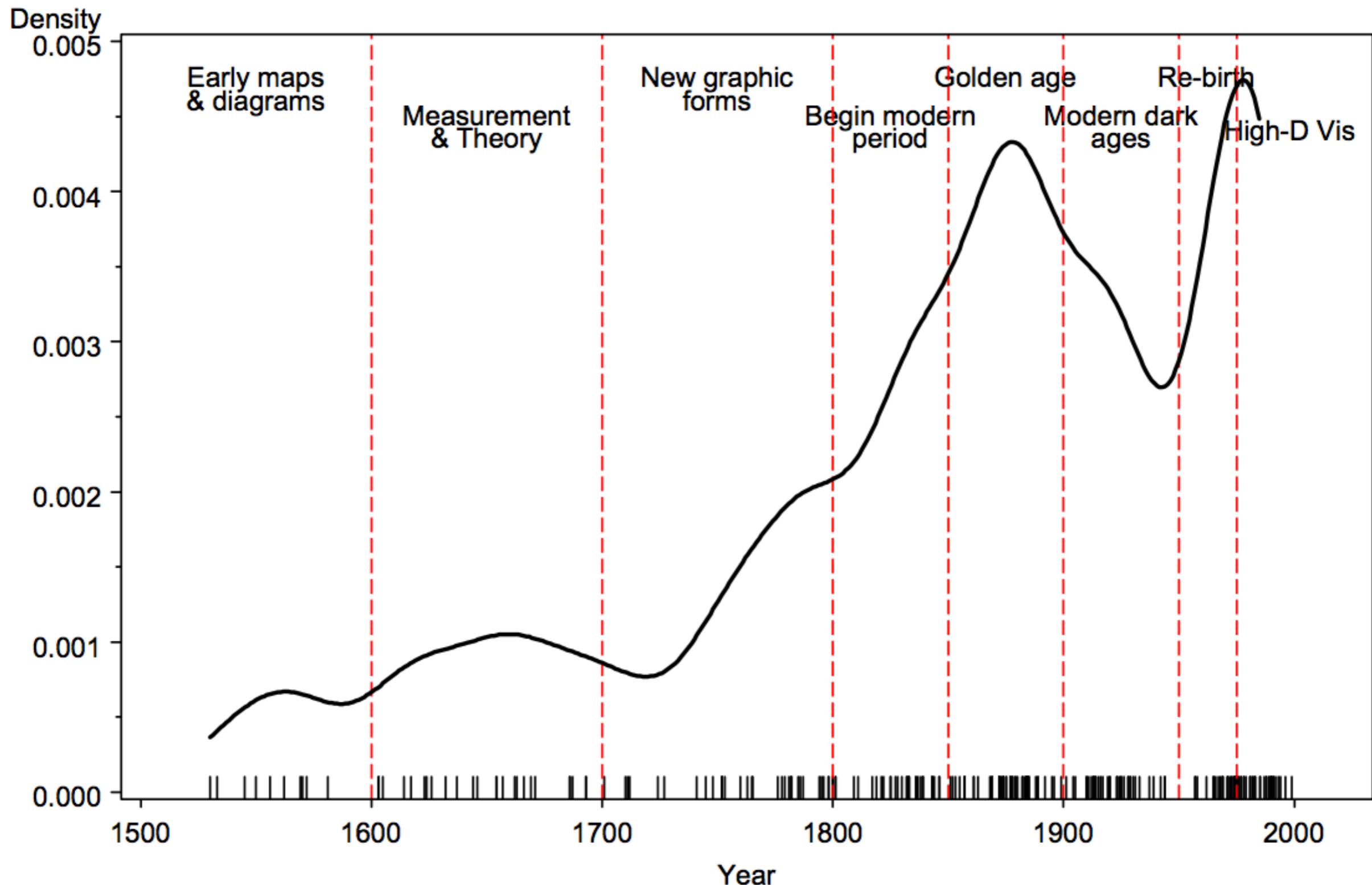
Who invented data visualization?



René Descartes - mathematician, scientist, philosopher

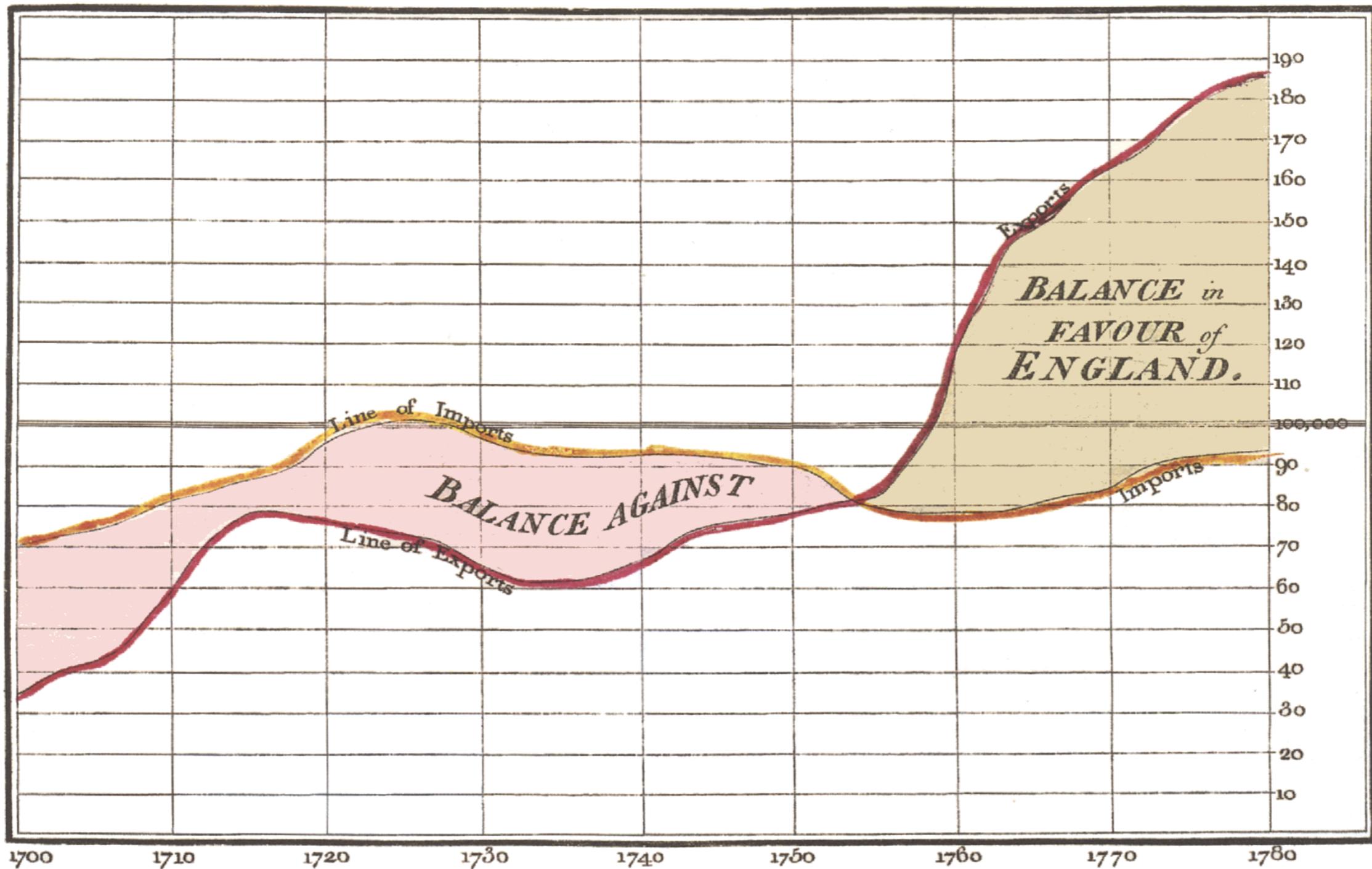


Milestones: Time course of developments



The Golden Age

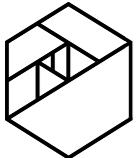
Exports and Imports to and from DENMARK & NORWAY from 1700 to 1780.



The Bottom line is divided into Years, the Right hand line into £10,000 each.

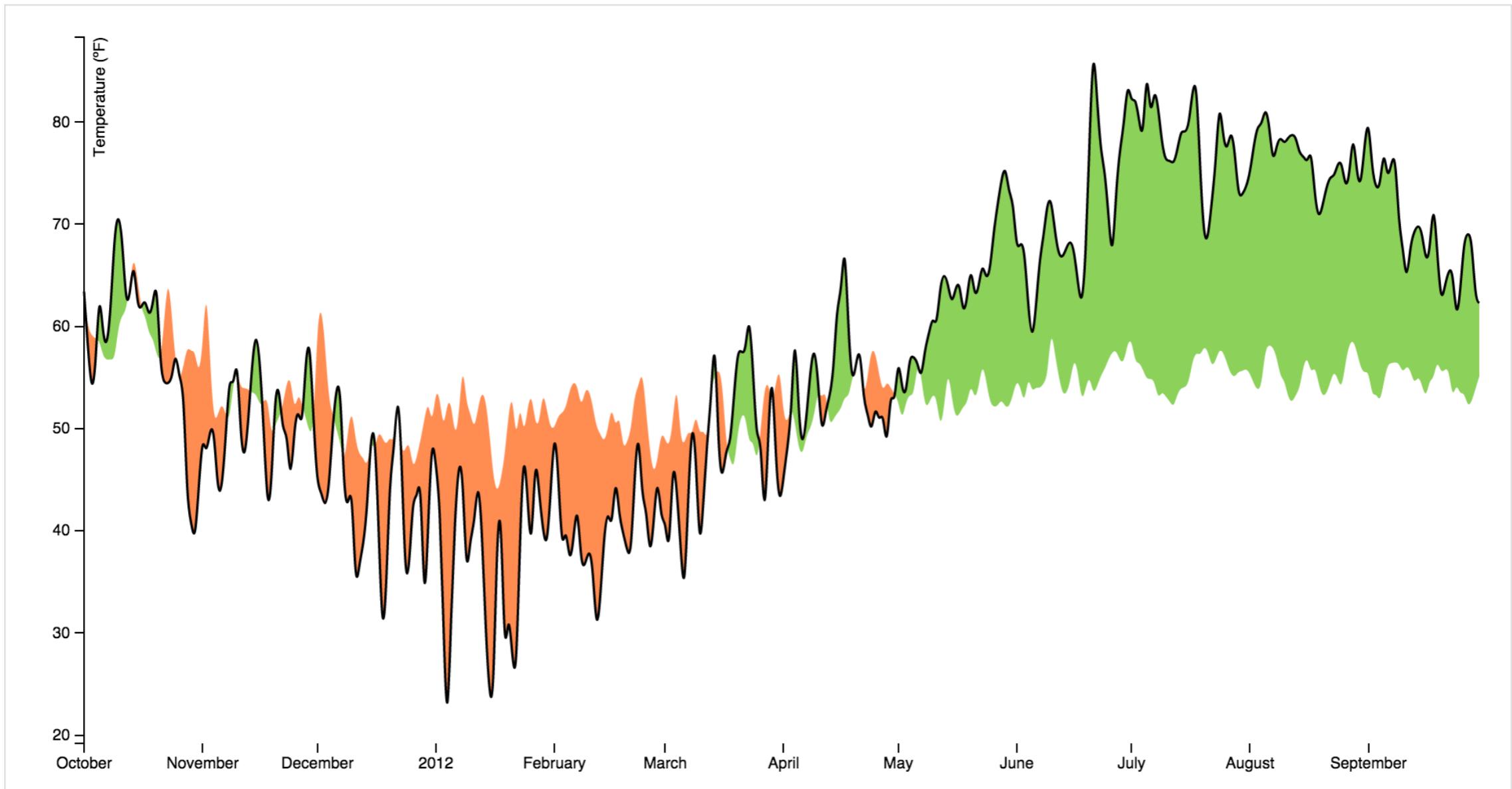
Published as the Act directs, 1st May 1786, by W^m Playfair

Neale sculpt^r 352, Strand, London.

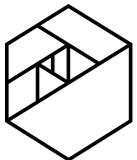


Present Day

Difference Chart

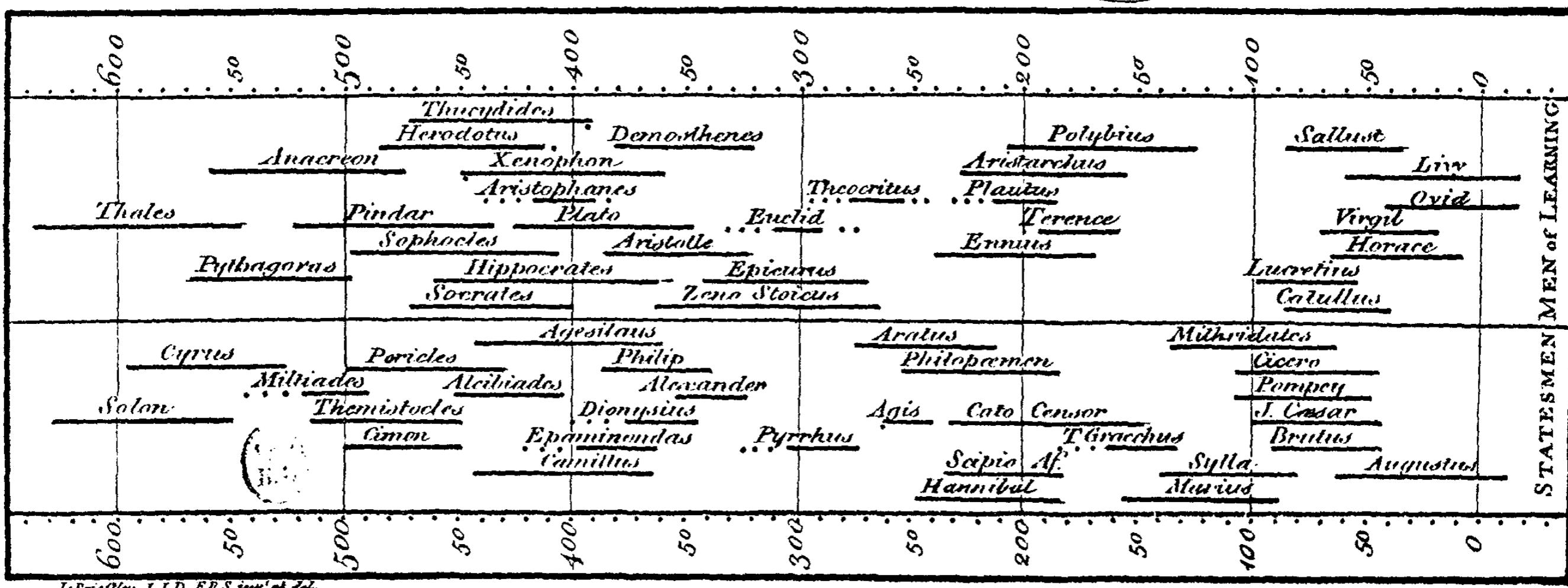


Temperature in New York vs. San Francisco
Mike Bostock

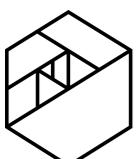


The Golden Age

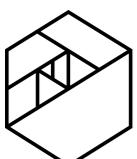
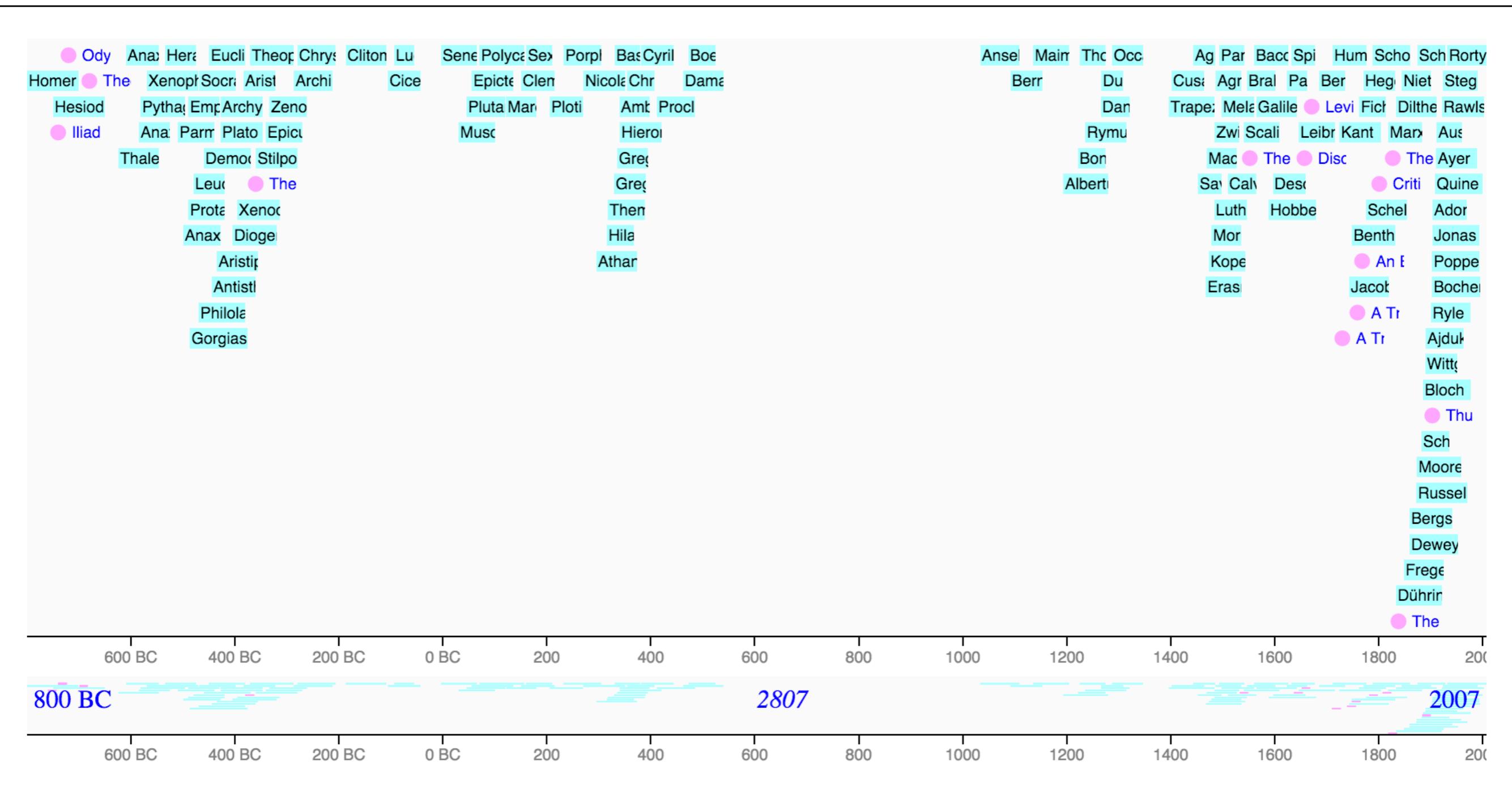
A Specimen of a Chart of Biography.



J. Friesley L.L.D. F.R.S. invent'd & publ'd.



Present Day



Why Visualize Data?



Communicate Effectively

534

Journal of the American Statistical Association, September 1984

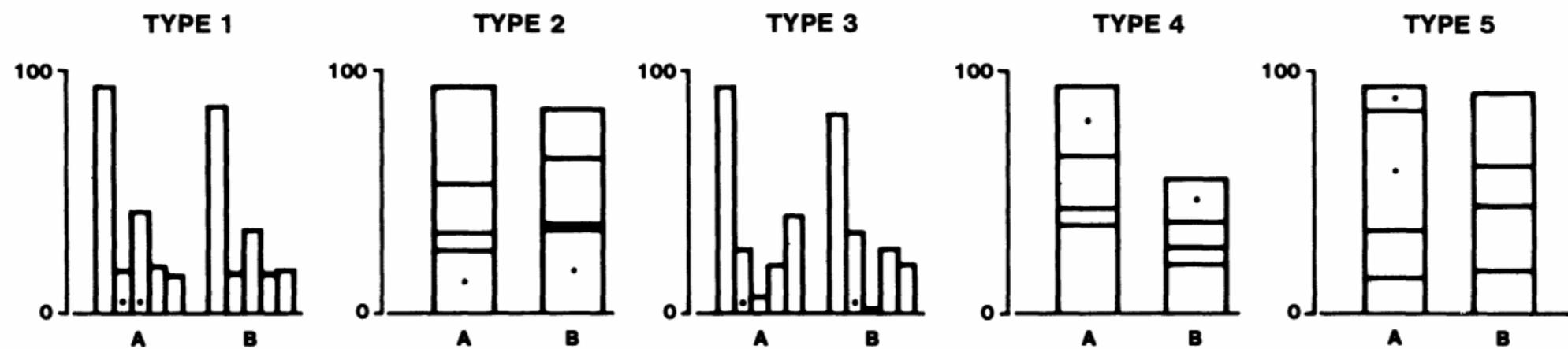
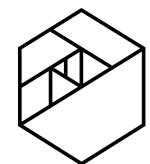


Figure 4. Graphs from position-length experiment.



Communicate Effectively

534

Journal of the American Statistical Association, September 1984

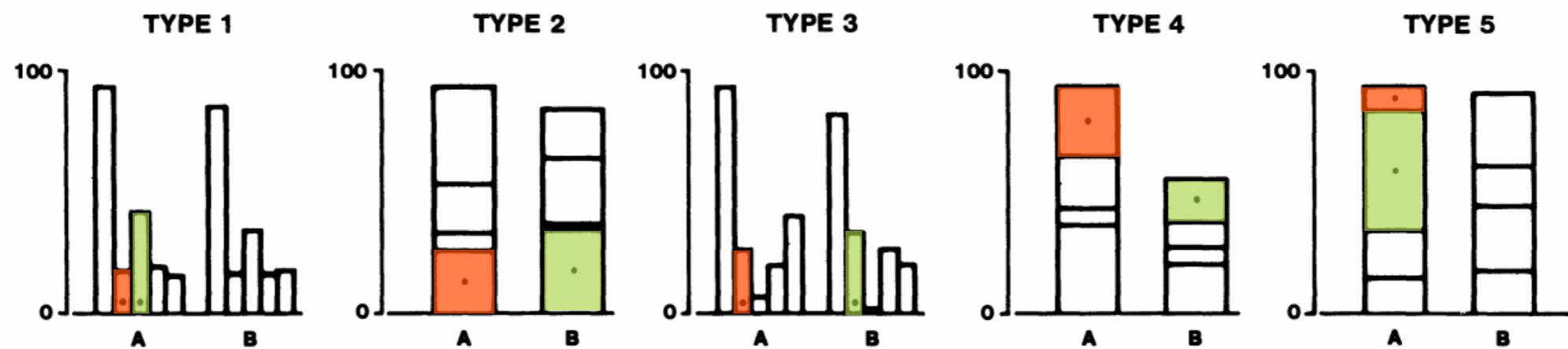
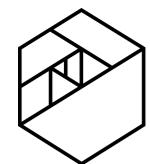
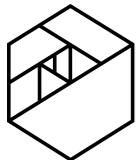
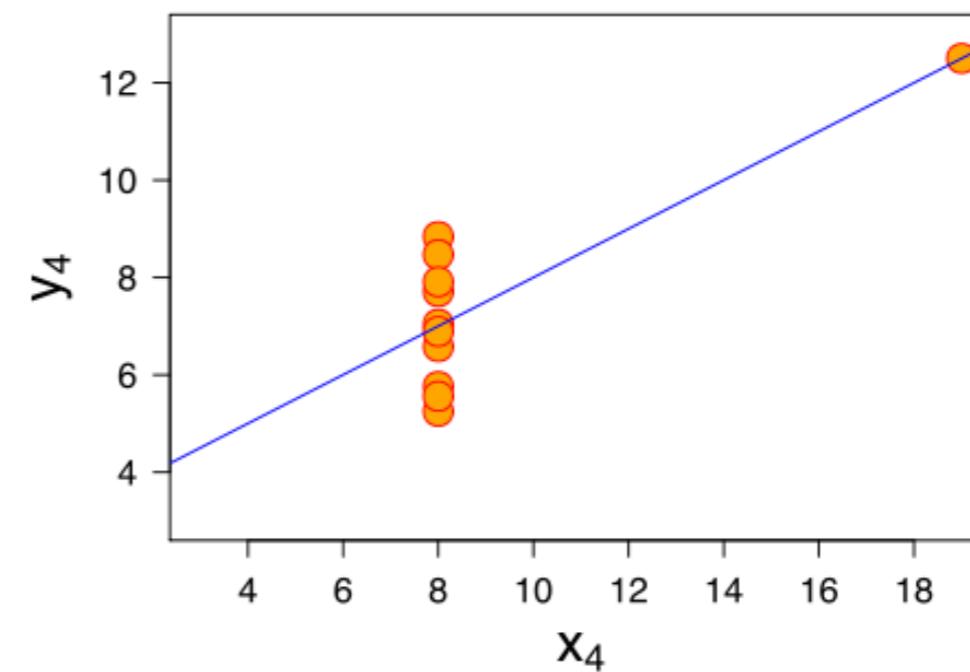
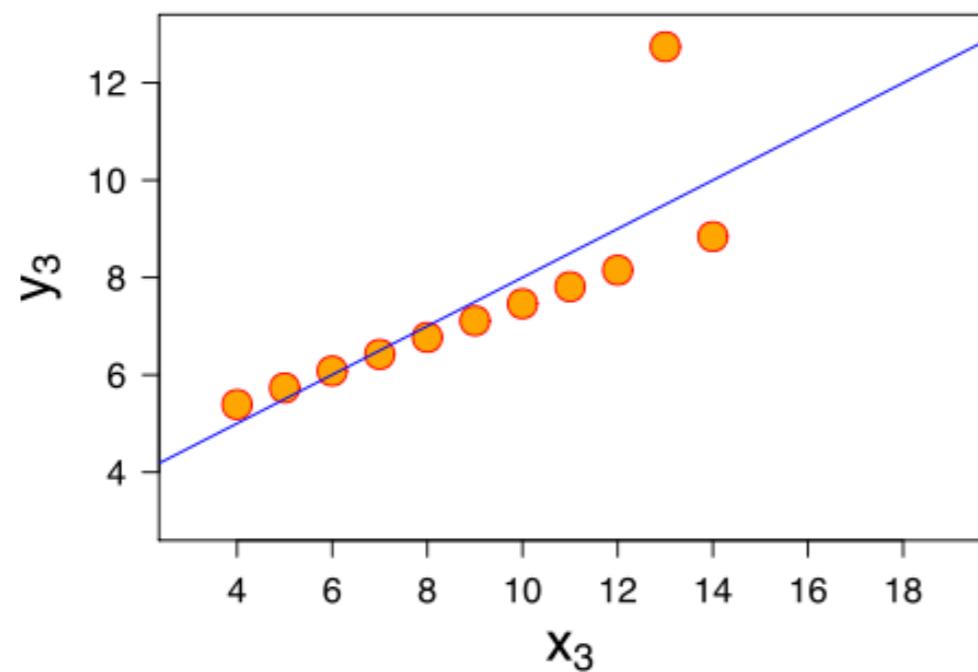
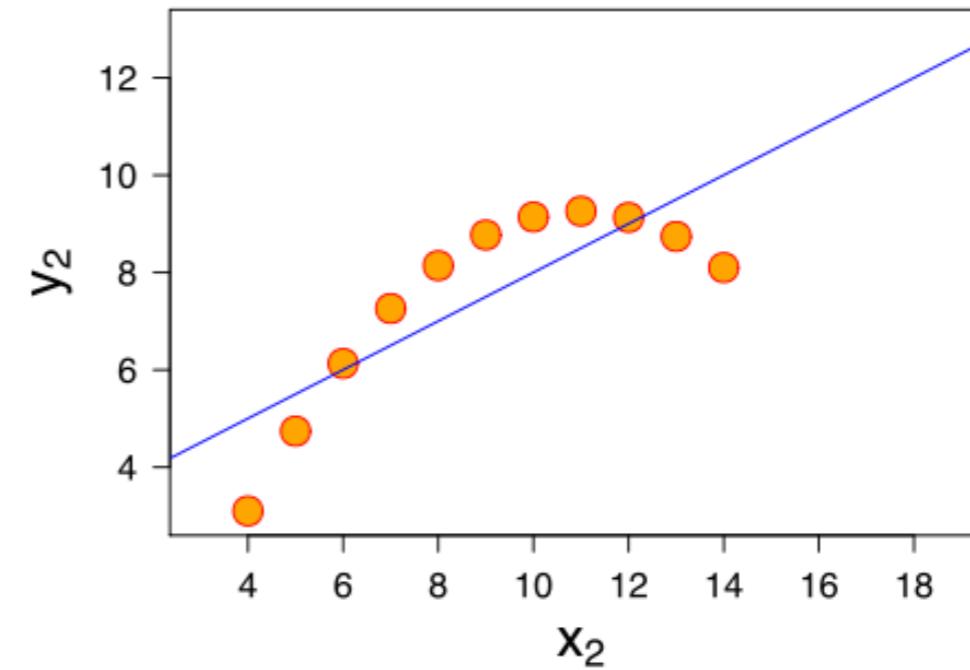
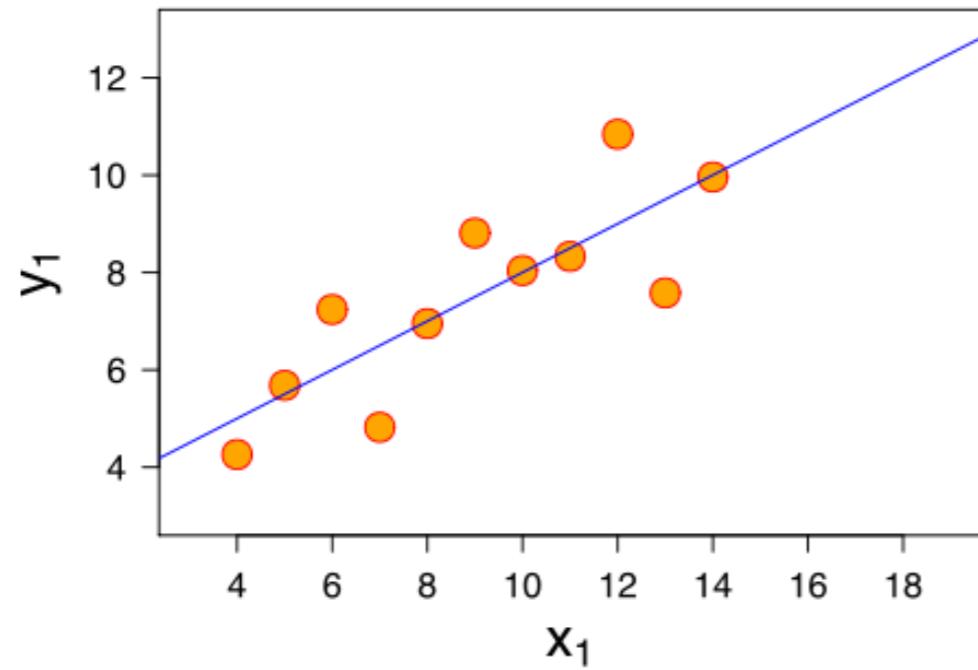


Figure 4. Graphs from position-length experiment.



Graphical Perceptions
Cleveland & McGill

Anscombe's Quartet



Napoleon's 1812 Russian Campaign

Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite. Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. _____ Les renseignements qui ont servi à dresser la carte ont été puisés

dans les ouvrages de M.M. Chiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre.

Pour mieux faire juger à l'oeil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davoust qui avaient été détachés sur Minsk et Mohilow et ont rejoint vers Orscha et Witebsk, avaient toujours marché avec l'armée.

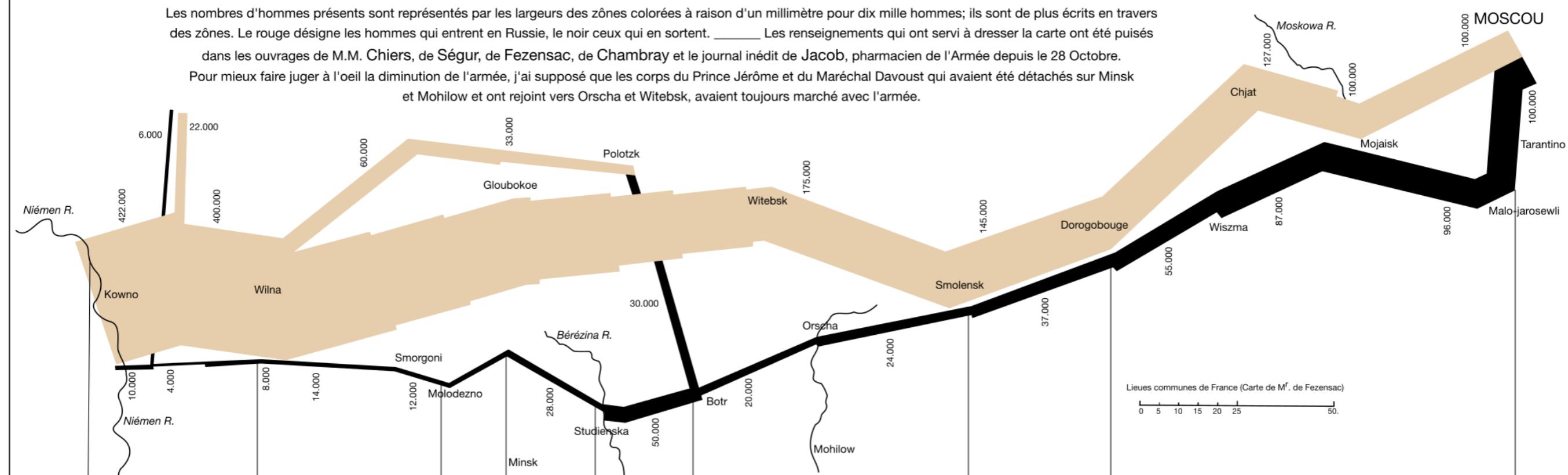


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.

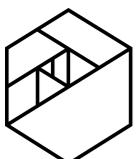
Les Cosaques passent au galop
le Niémen gelé.



[Vectorization CC-BY-SA martingrandjean.ch 2014]

Imp. Lith. Regnier et Dourdet.

Autog. par Regnier, 8. Pas. S^e Marie Sⁱ G^a à Paris.

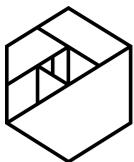
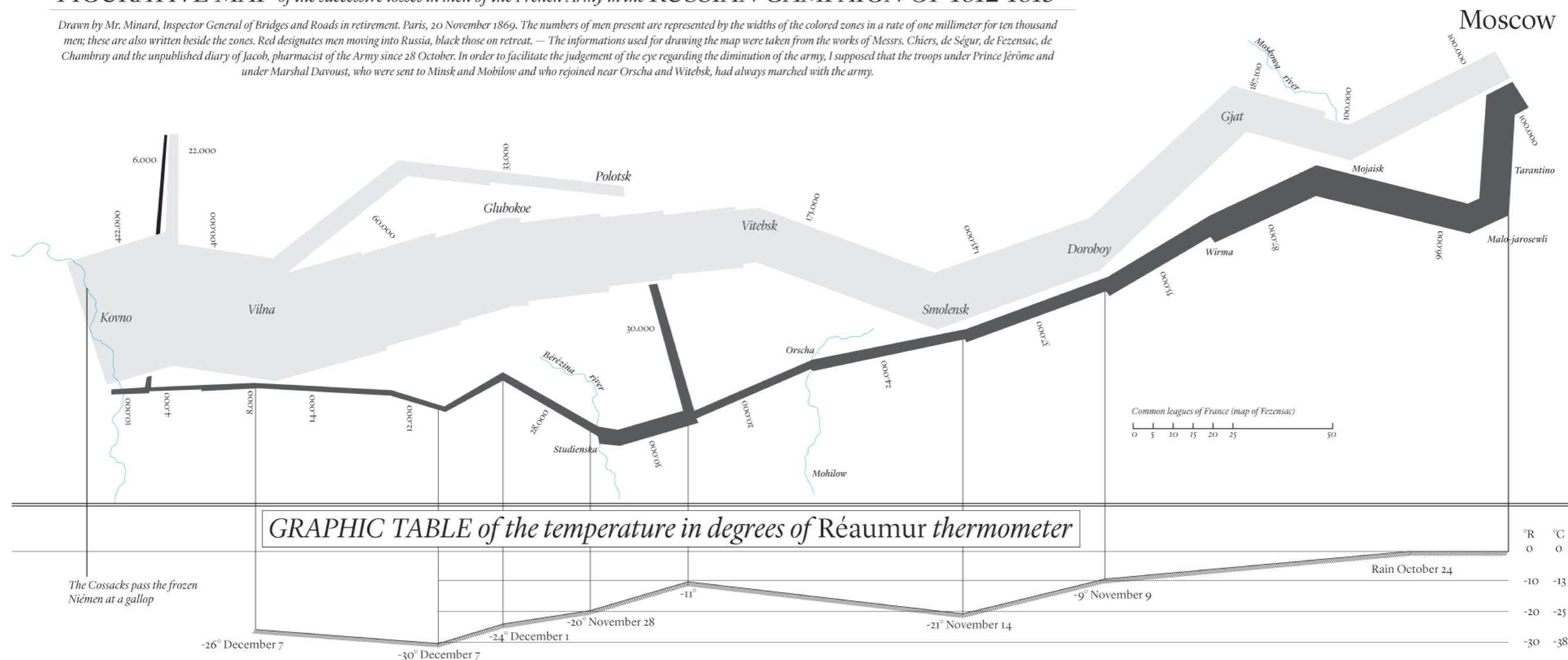


Charles Minard

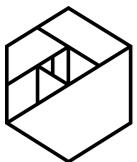
Napoleon's 1812 Russian Campaign

FIGURATIVE MAP of the successive losses in men of the French Army in the RUSSIAN CAMPAIGN OF 1812-1813

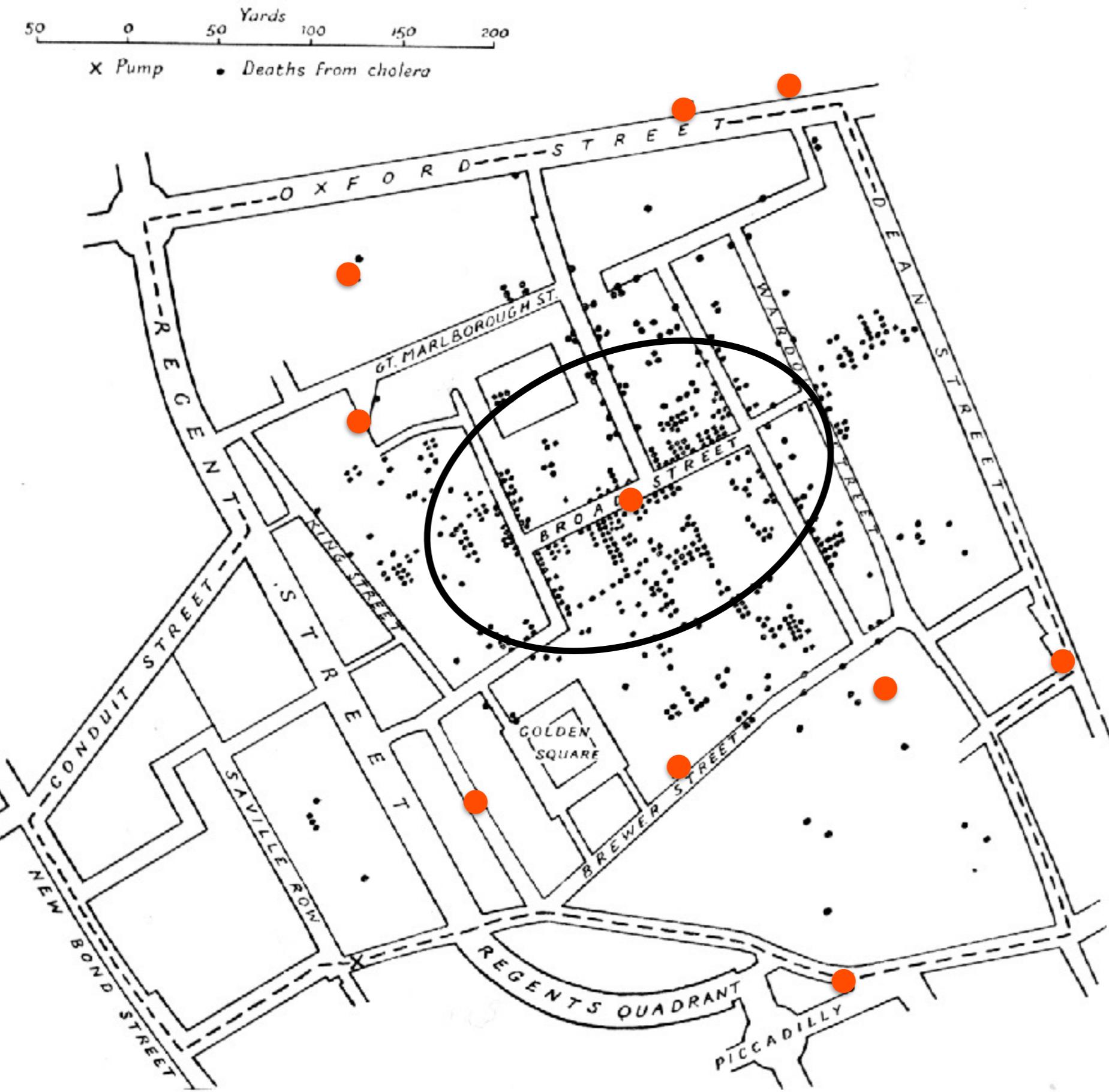
Drawn by Mr. Minard, Inspector General of Bridges and Roads in retirement. Paris, 20 November 1869. The numbers of men present are represented by the widths of the colored zones in a rate of one millimeter for ten thousand men; these are also written beside the zones. Red designates men moving into Russia, black those on retreat. — The informations used for drawing the map were taken from the works of Messrs. Chiers, de Ségur, de Fezensac, de Chambray and the unpublished diary of Jacob, pharmacist of the Army since 28 October. In order to facilitate the judgement of the eye regarding the diminution of the army, I supposed that the troops under Prince Jérôme and under Marshal Davout, who were sent to Minsk and Mobilow and who rejoined near Orscha and Witebsk, had always marched with the army.



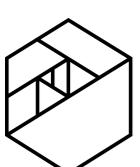
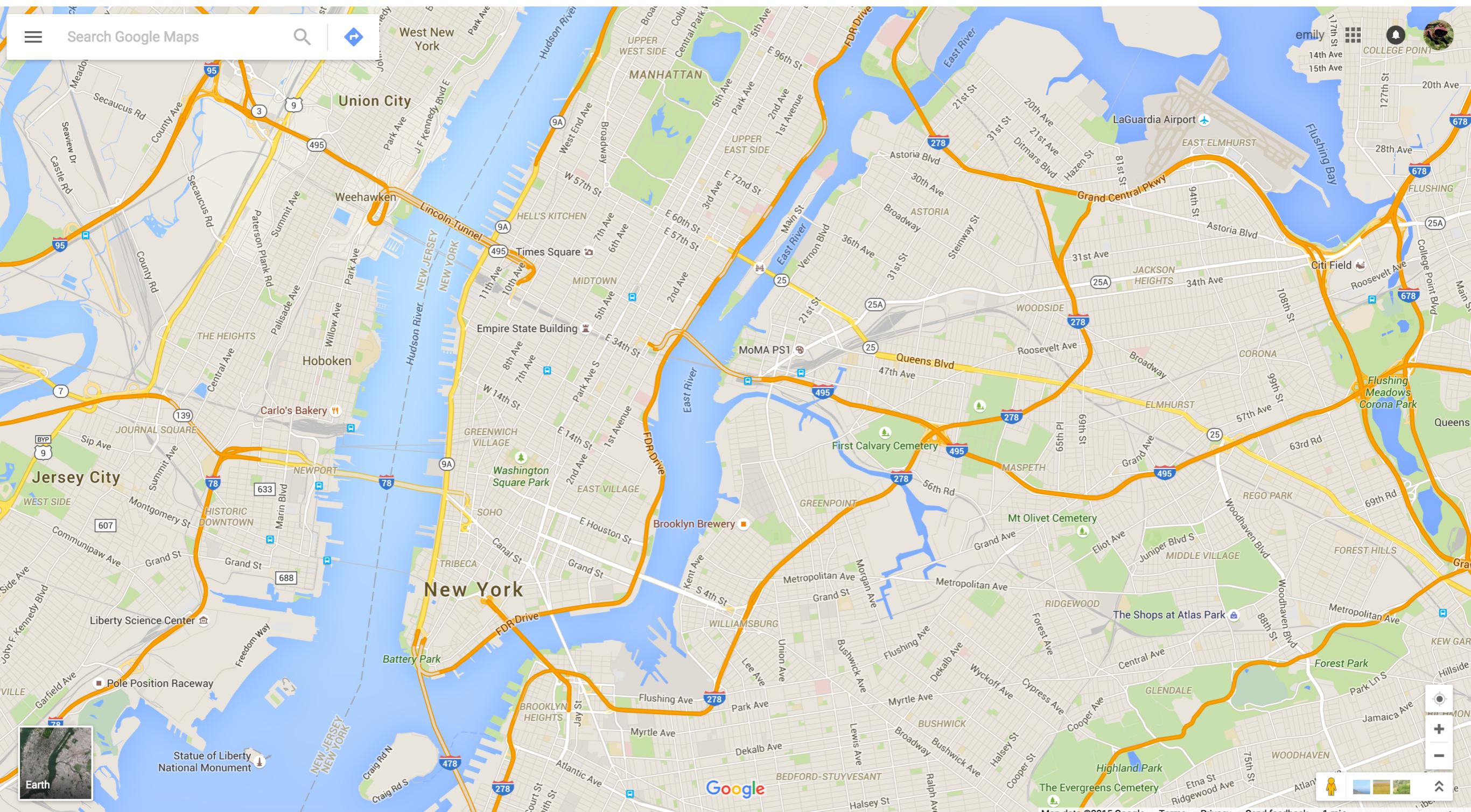
Cholera Map of London



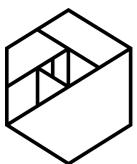
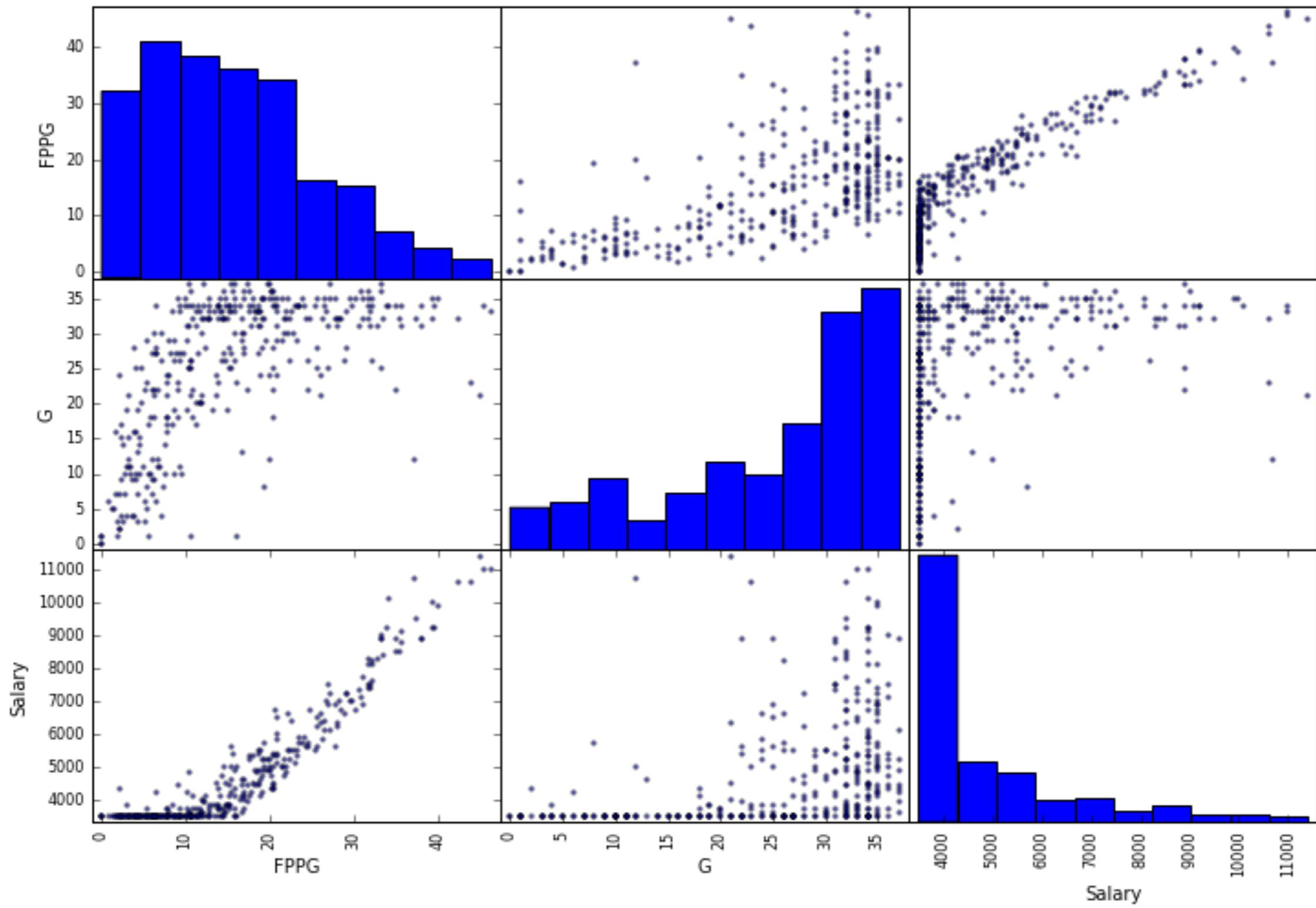
Cholera Map of London



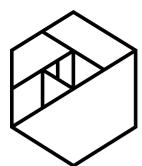
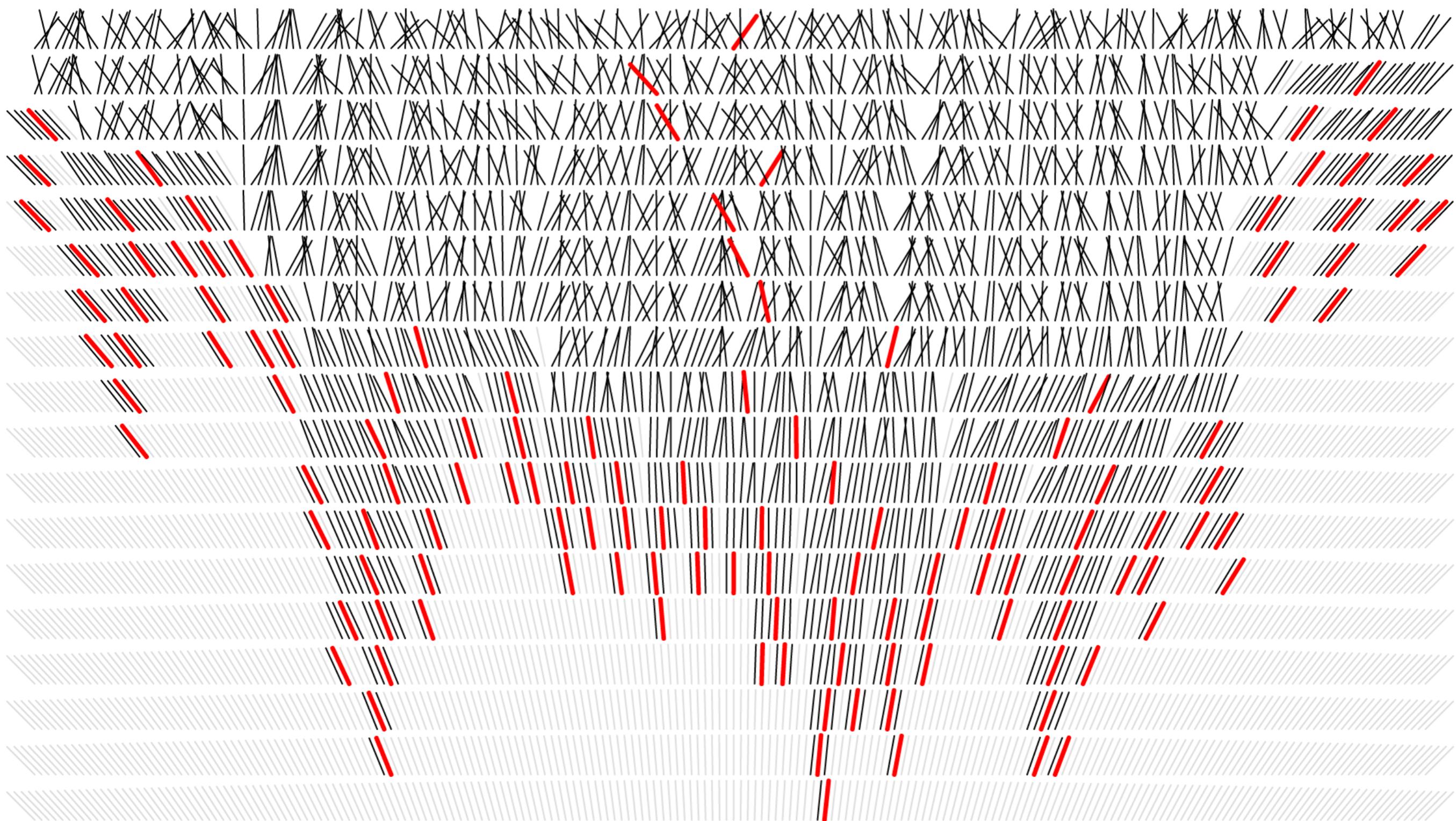
Google Maps



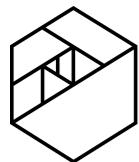
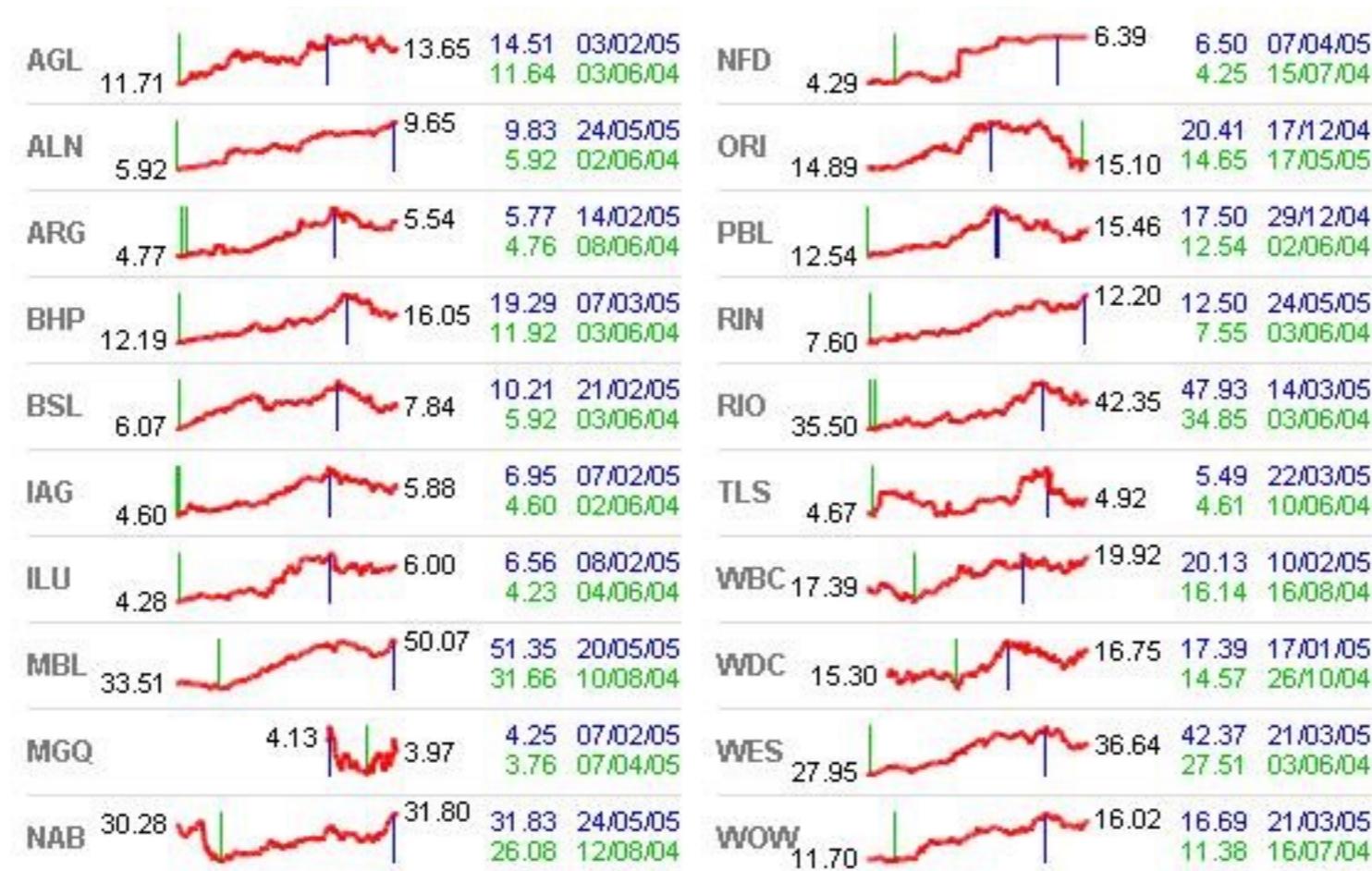
Exploration



Sorting Algorithms



Line Charts & Sparklines

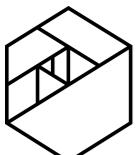


Line Charts & Sparklines

Education Performance Dashboard

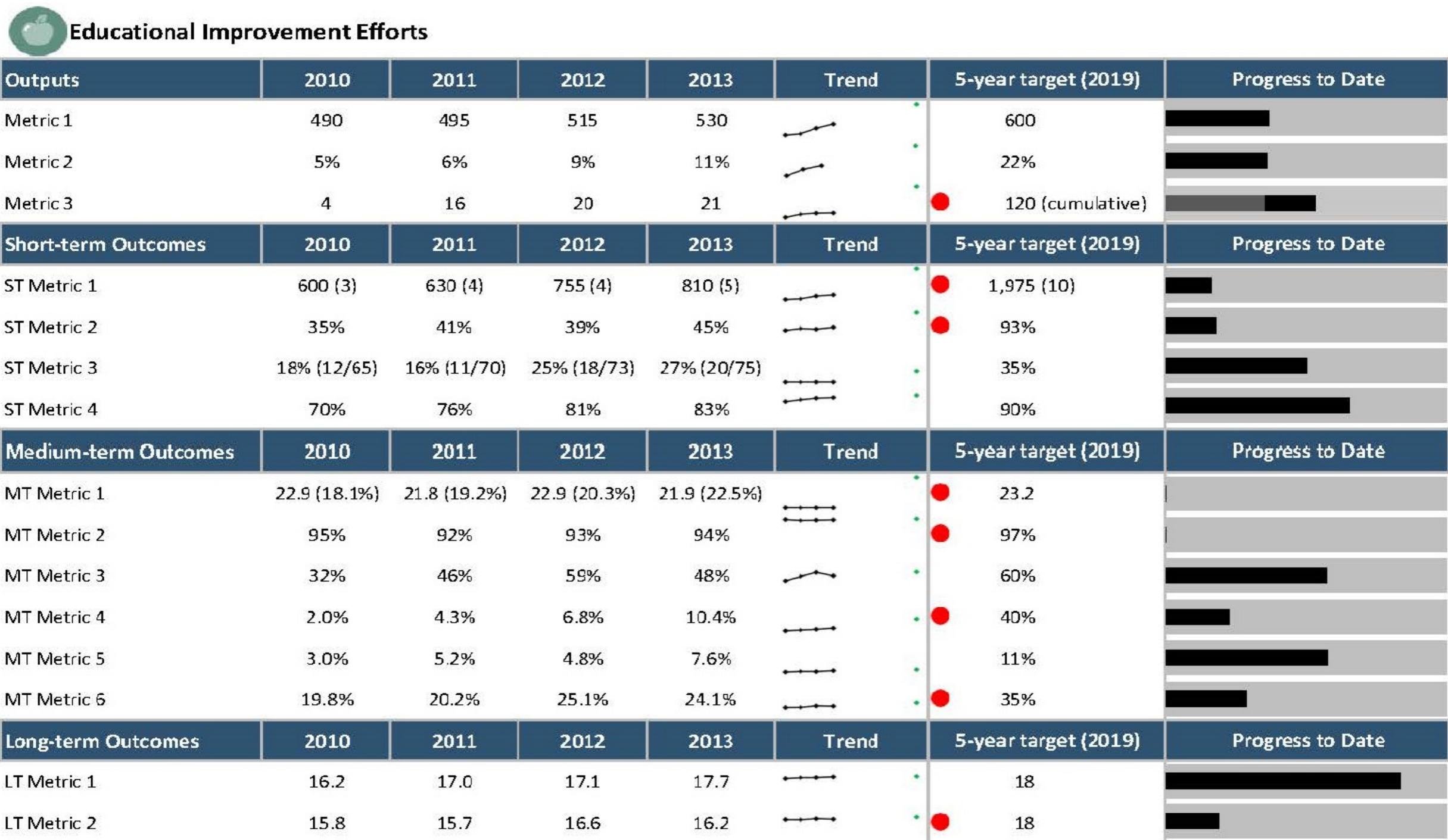
Outputs	2010	2011	2012	2013	5-year target (2014)
Metric 1	490	495	515	530	600
Metric 2	5%	6%	9%	11%	22%
Metric 3	4	16	20	21	120 cumulative
Short-term Outcomes	2010	2011	2012	2013	5-year target (2014)
ST Metric 1	600 (3)	630 (4)	755 (4)	810 (5)	1975 (10)
ST Metric 2	35%	41%	39%	45%	93%
ST Metric 3	18% (12/65)	16% (11/70)	25% (18/73)	27% (20/75)	35%
ST Metric 4	70%	76%	81%	83%	90%
Medium-term Outcomes	2010	2011	2012	2013	5-year target (2014)
MT Metric 1	22.9 (18.1%)	21.8 (19.2%)	22.9 (20.3%)	21.9 (22.5%)	23.2
MT Metric 2	95%	92%	93%	94%	97%
MT Metric 3	32%	46%	59%	48%	60%
MT Metric 4	2.0%	4.3%	6.8%	10.4%	40%
MT Metric 5	3.0%	5.2%	4.8%	7.6%	11%
MT Metric 6	19.8%	20.2%	25.1%	24.1%	35%
Long-term Outcomes	2010	2011	2012	2013	5-year target (2014)
LT Metric 1	16.2	17.0	17.1	17.7	18
LT Metric 2	15.8	15.7	16.6	16.2	18

*Some caveat goes here

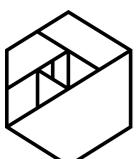


Stephanie Evergreen
<http://stephanieevergreen.com/>

Line Charts & Sparklines

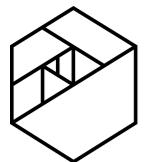


*Some caveat goes here



Stephanie Evergreen
<http://stephanieevergreen.com/>

Network Graphs



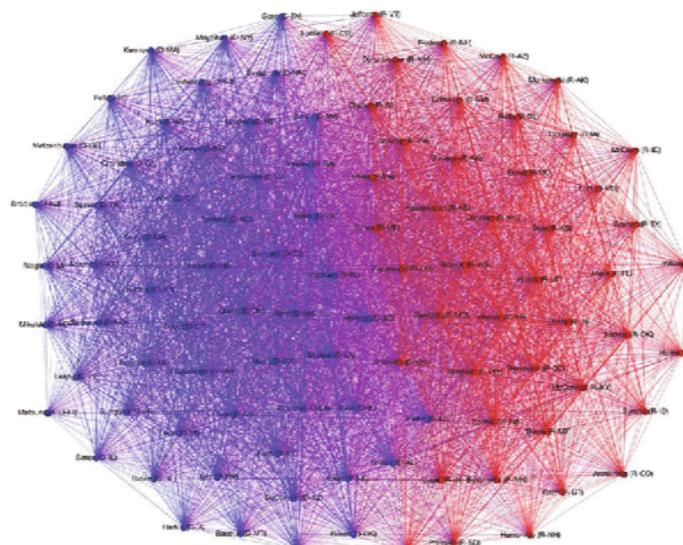
Network Graphs

Senators casting the same votes

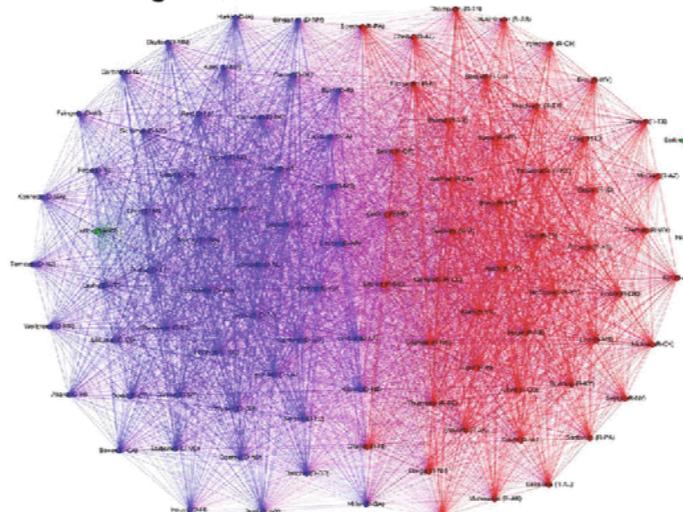
Democrat

Republican

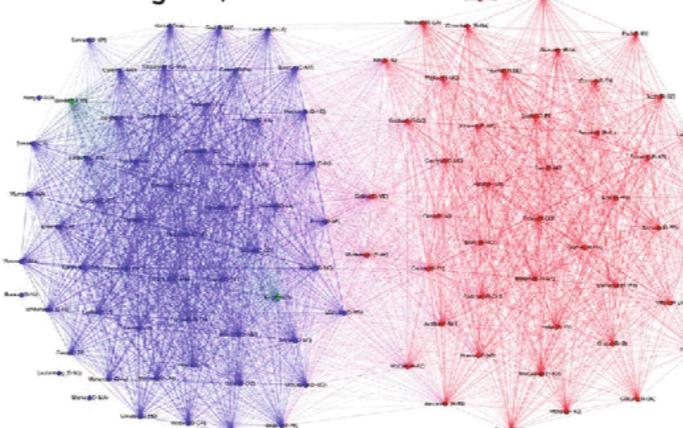
101st Congress, 1989 session



107th Congress, 2002 session

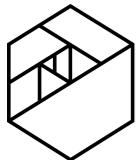


113th Congress, 2013 session



Sources: GovTrack.us, Renzo Lucioni

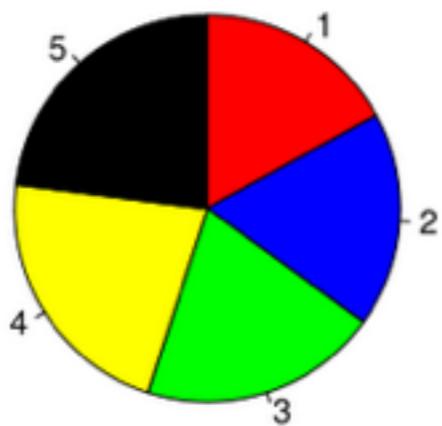
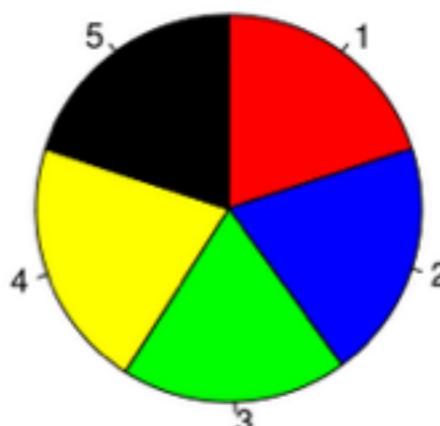
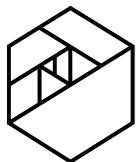
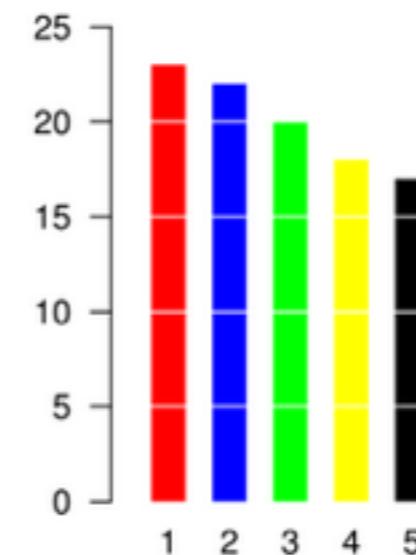
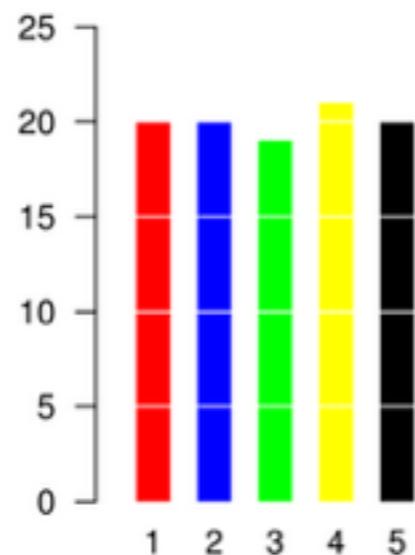
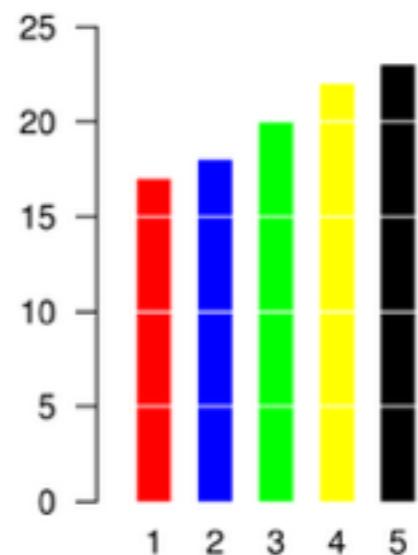
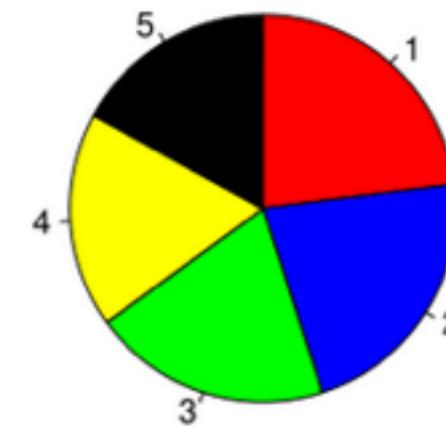
Independent



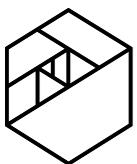
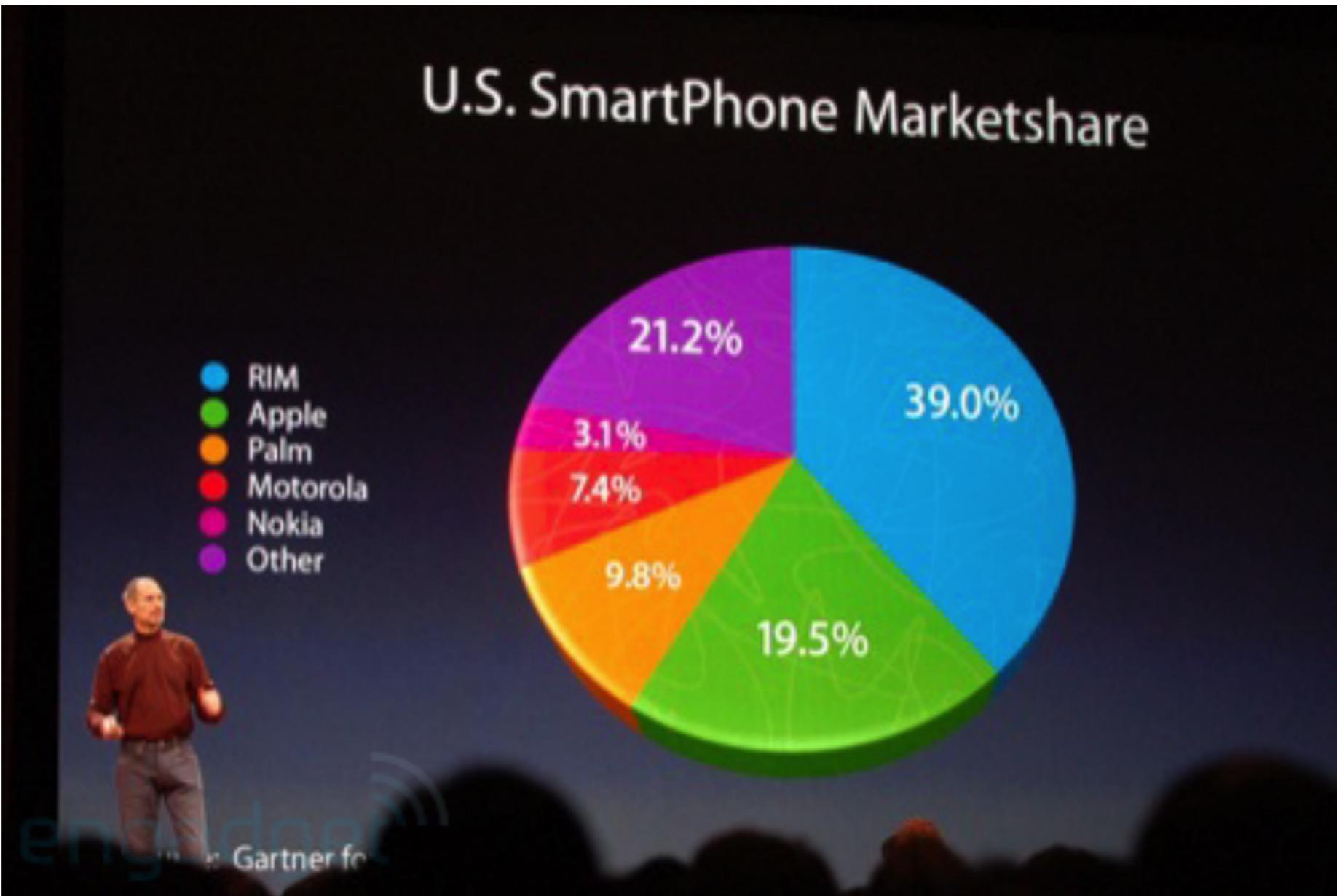
Ethical Design



Pie Charts

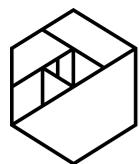
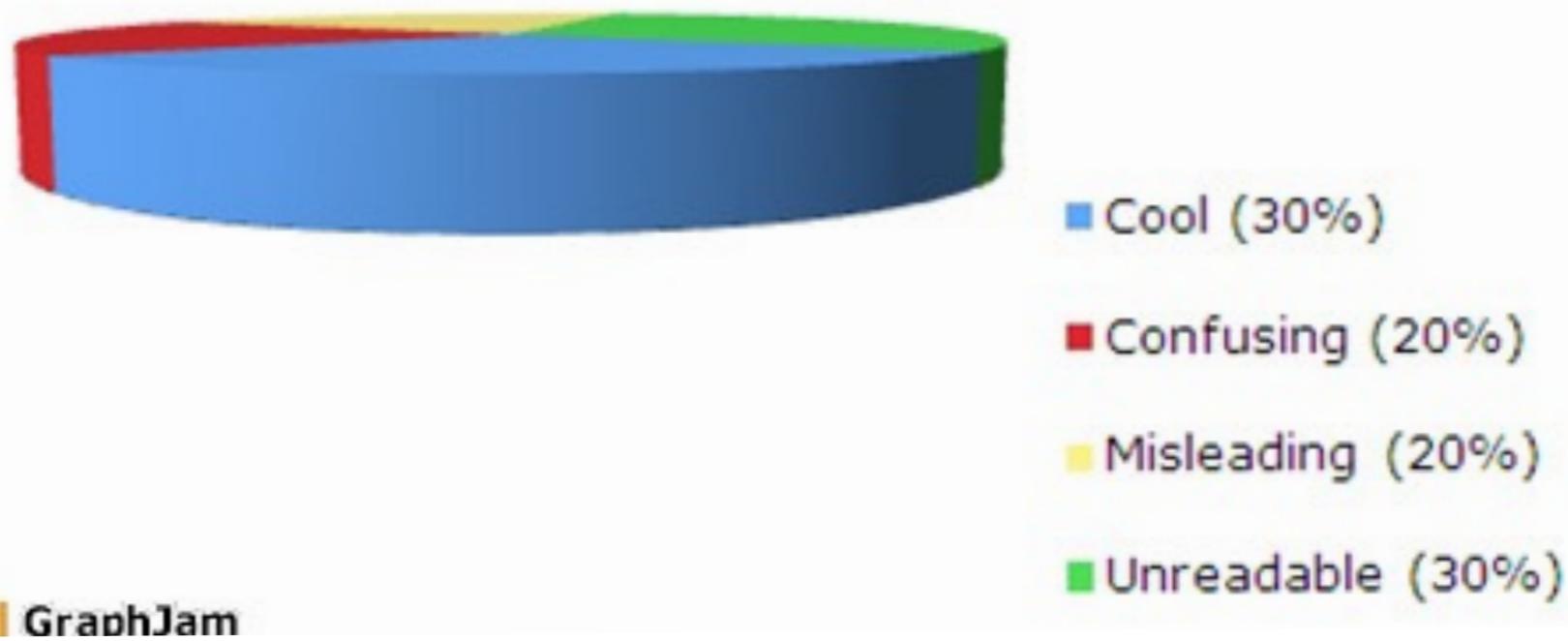
A**B****C**

Interpreting Radius

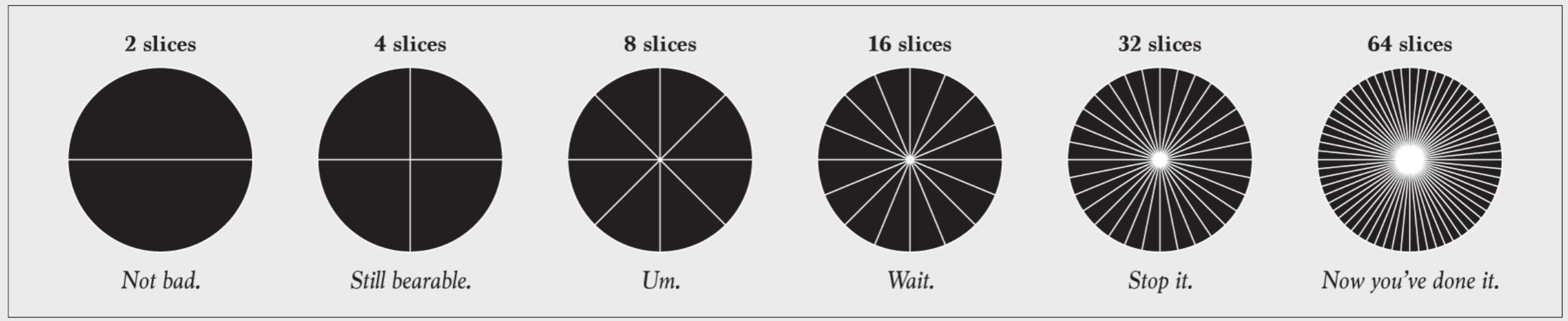


Pie Charts

Perception of 3D pie charts



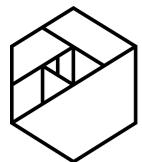
Pie Charts



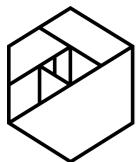
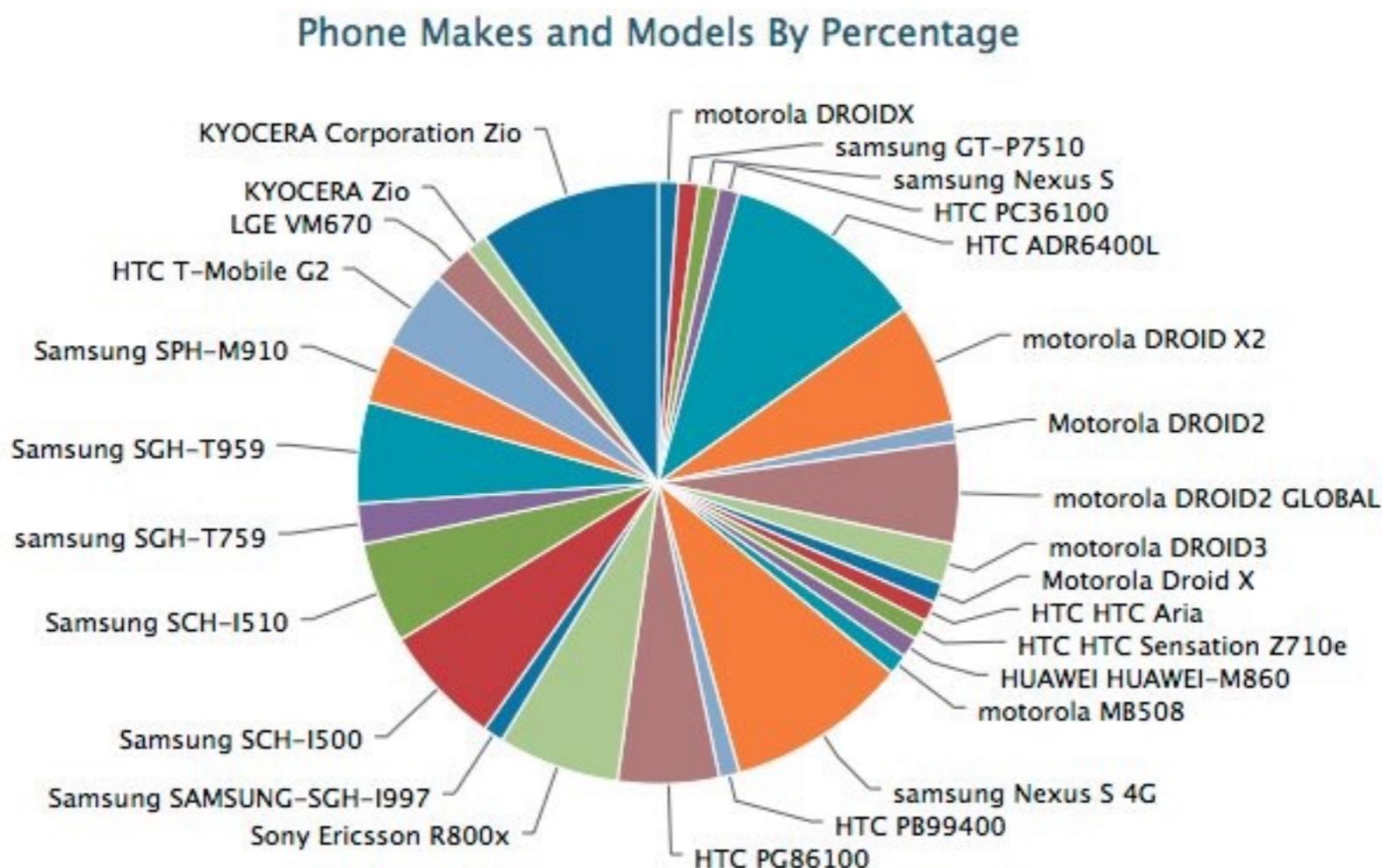
Real Chart Rules to Follow

Nathan Yau

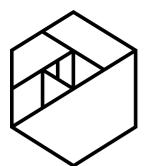
<http://flowingdata.com/2015/08/11/real-chart-rules-to-follow/>



Pie Charts



A Good Pie Chart

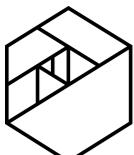
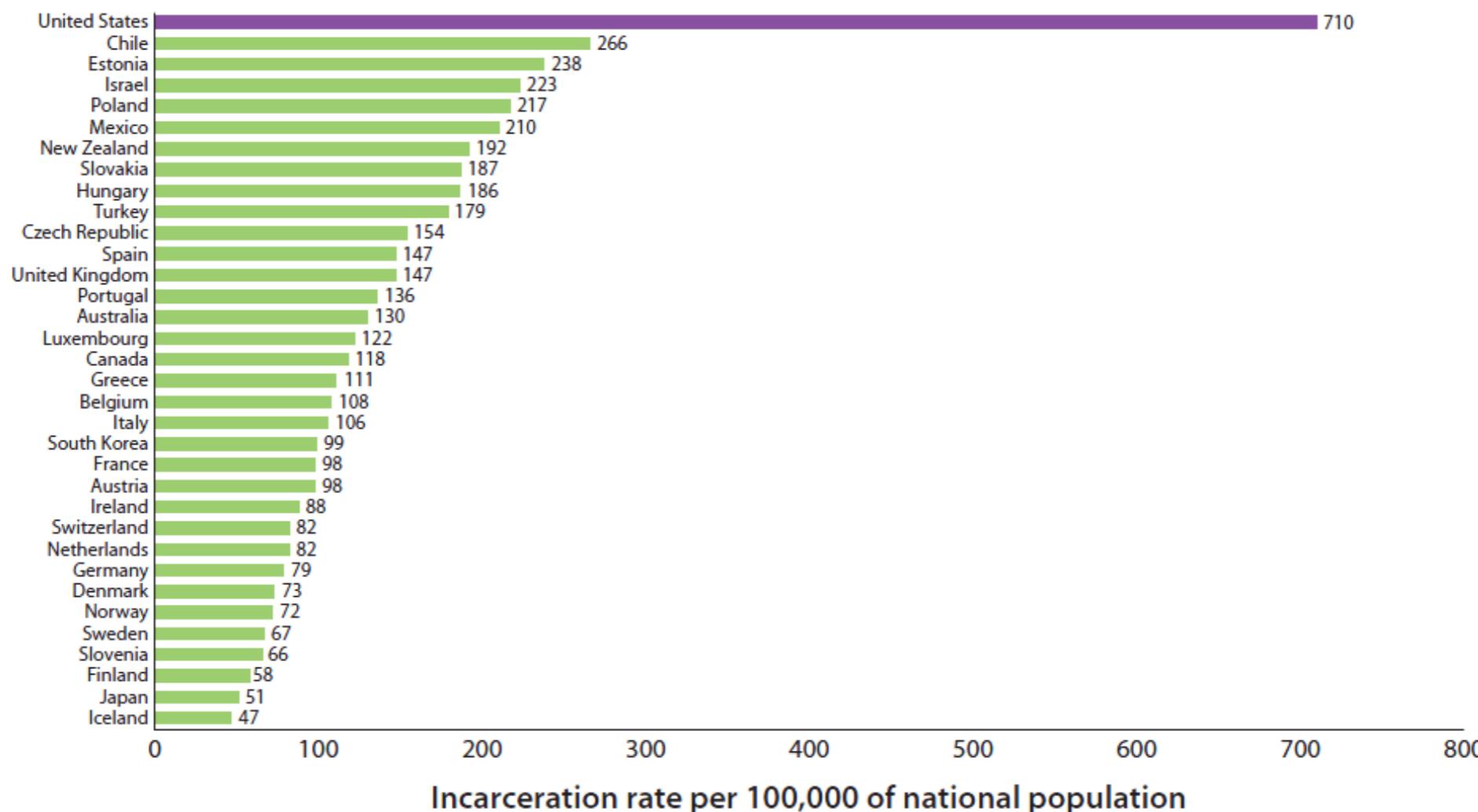


Bar Charts

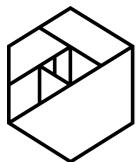
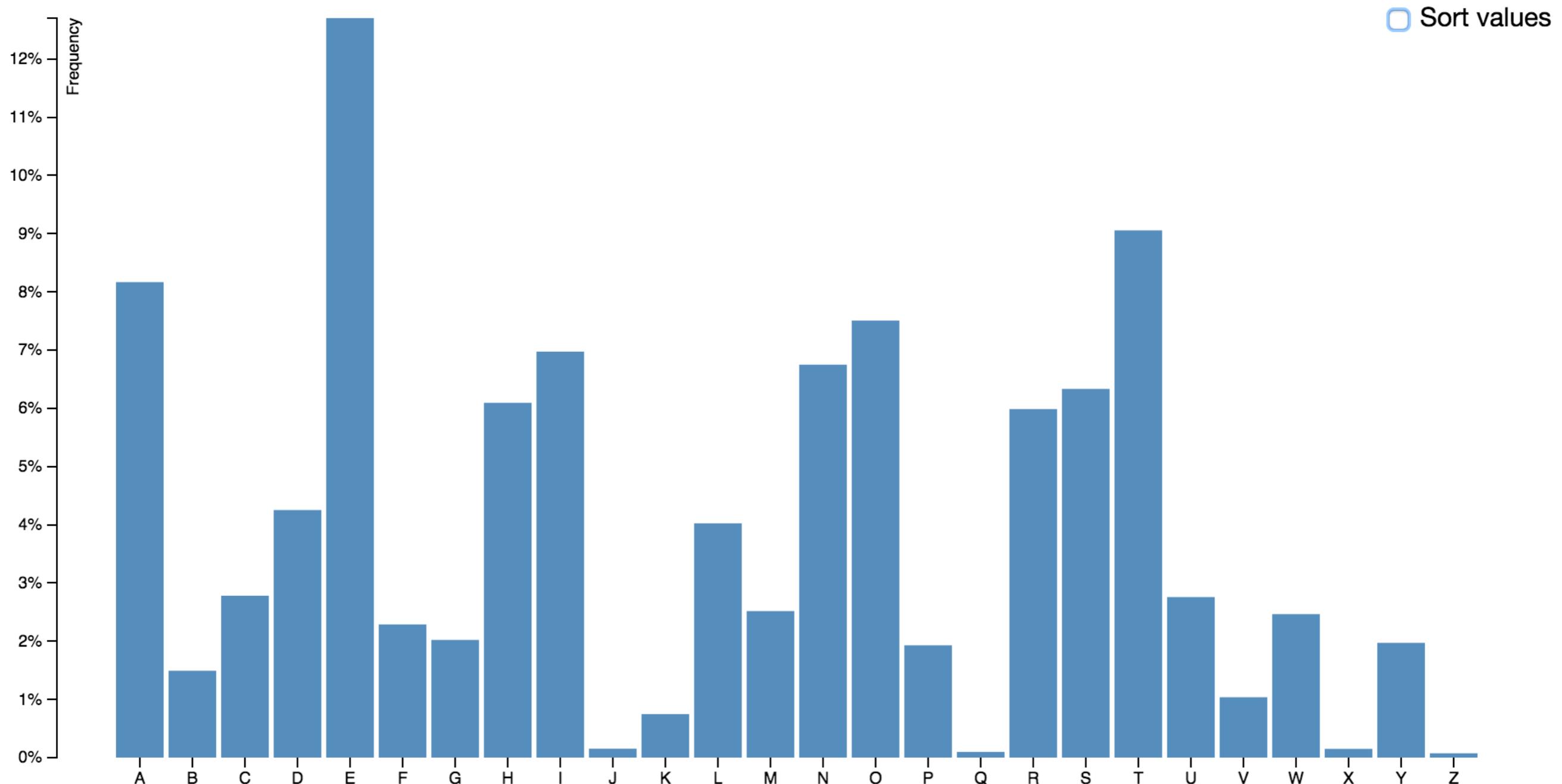
FIGURE 6.

Incarceration Rates in OECD Countries

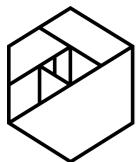
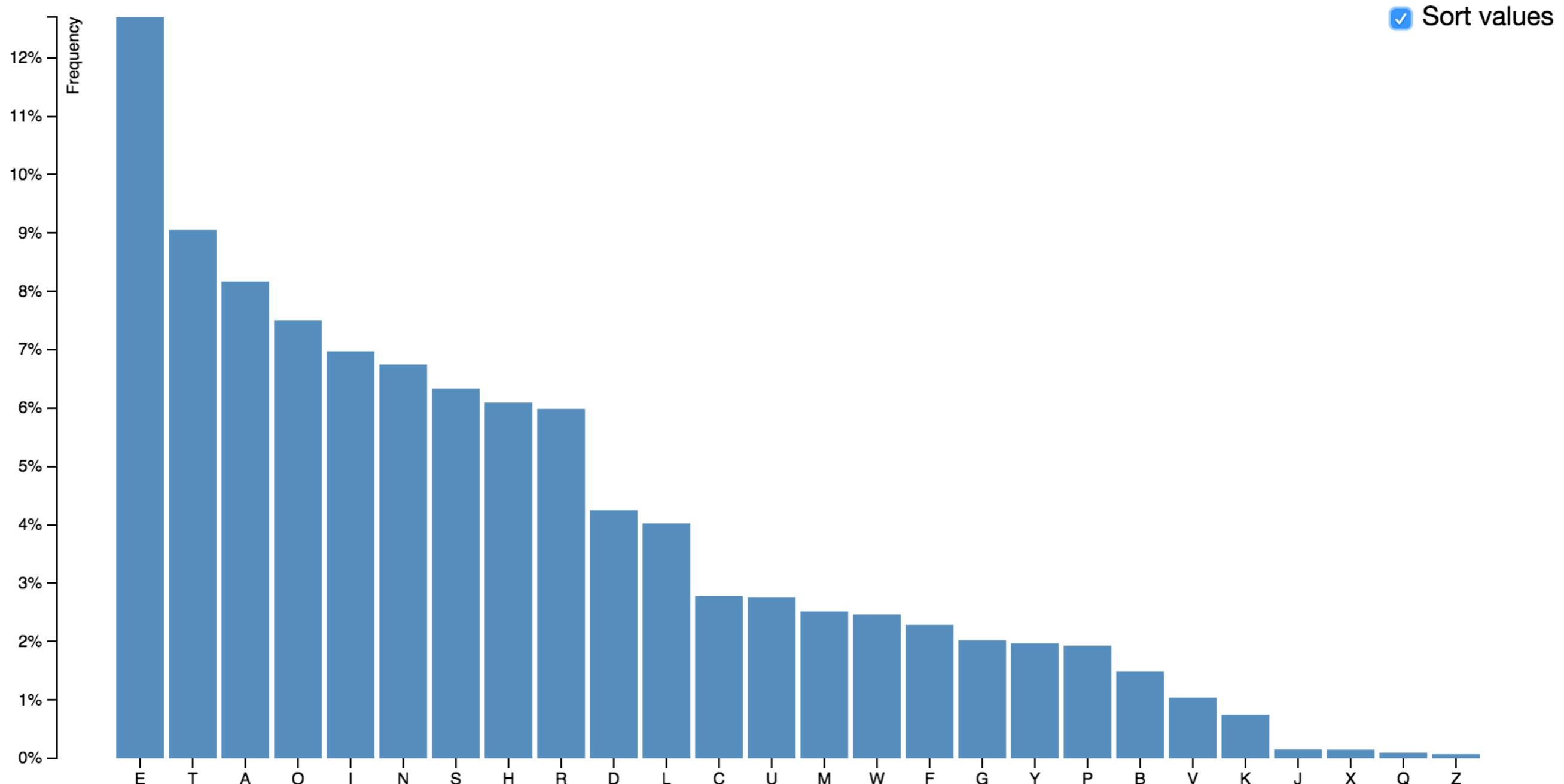
With an incarceration rate of 710 inmates per 100,000 residents, the United States stands in stark contrast to the typical incarceration rate of 115 among OECD nations.



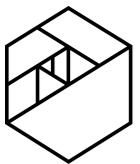
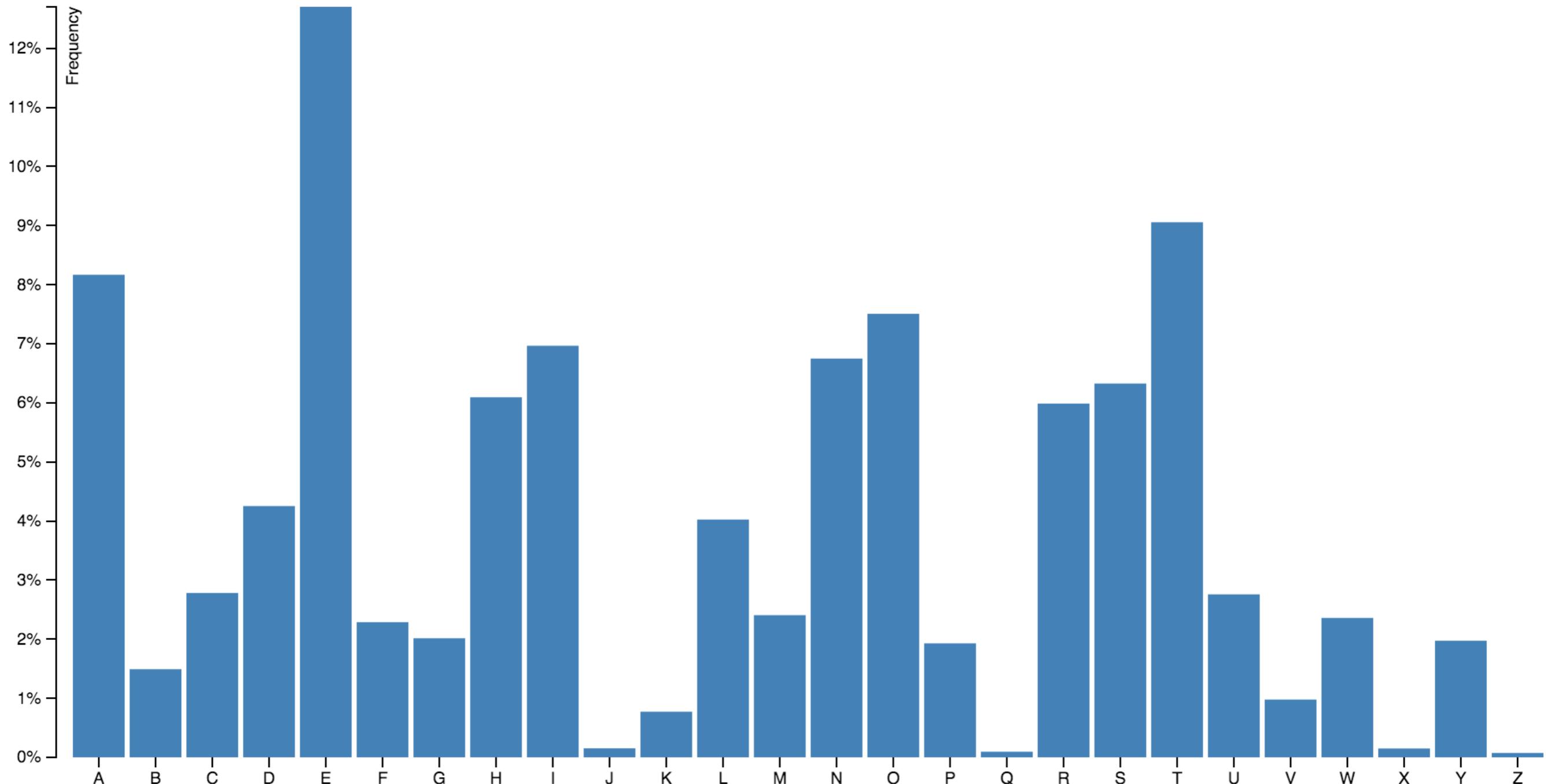
Sorting Values



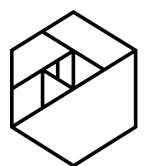
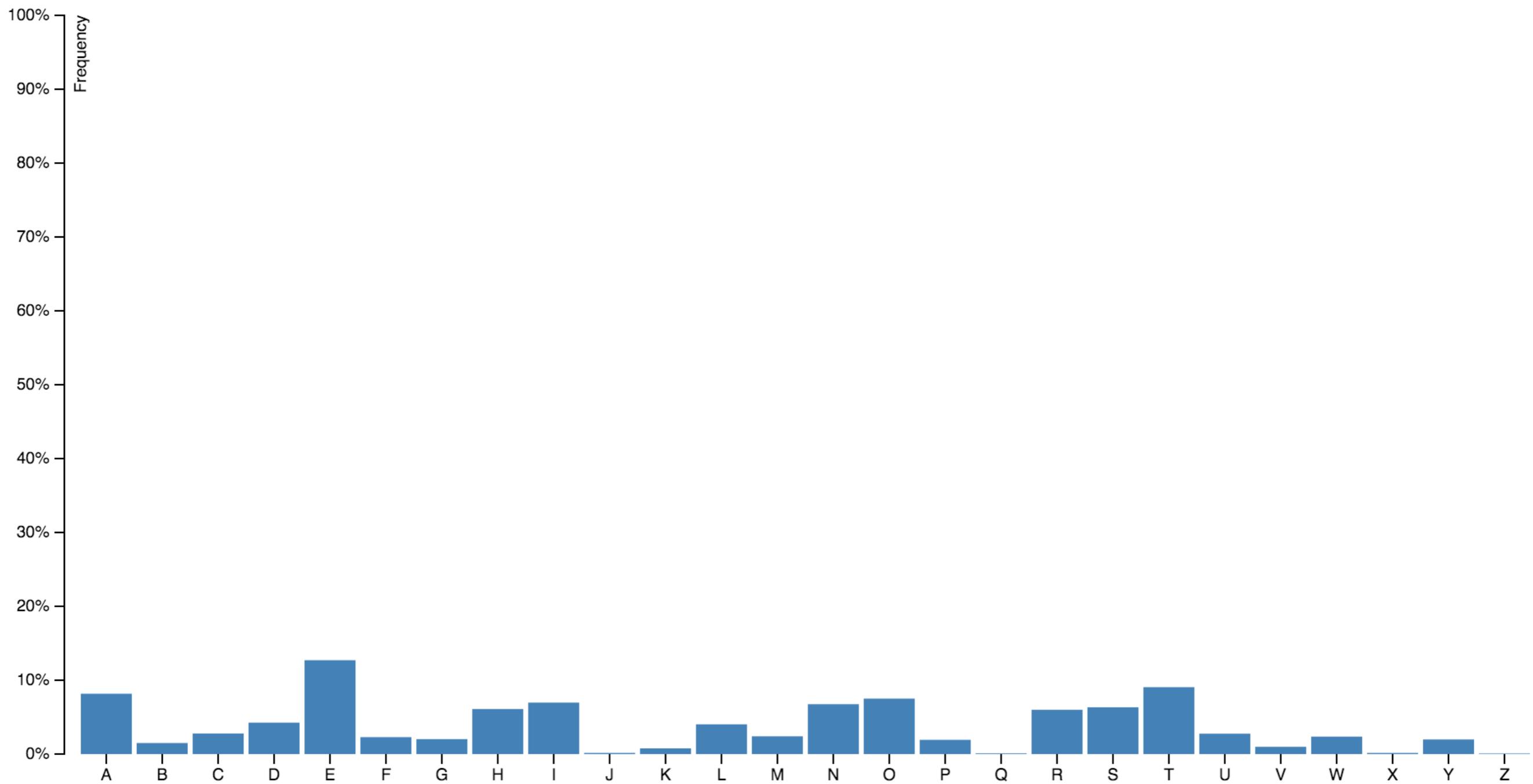
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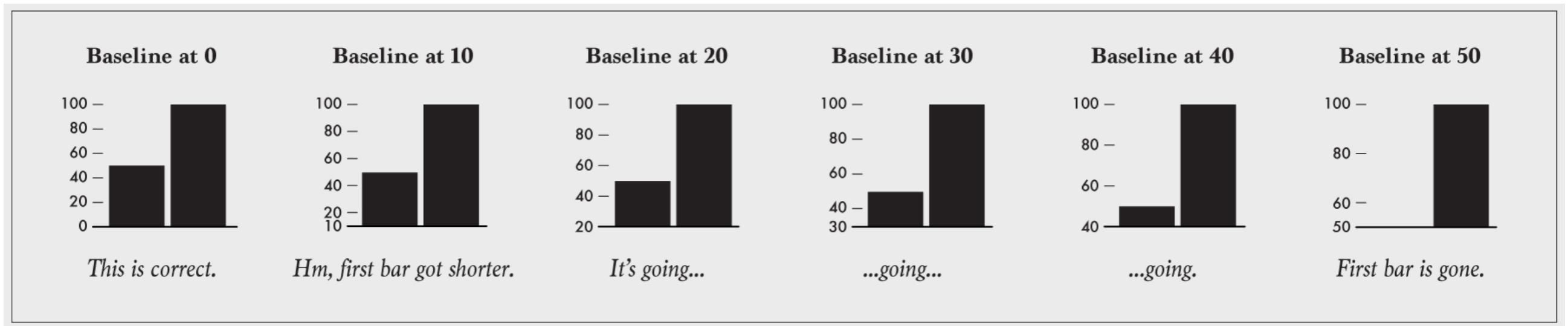
Axes



Axes



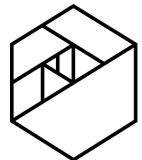
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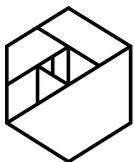
Real Chart Rules to Follow

Nathan Yau

<http://flowingdata.com/2015/08/11/real-chart-rules-to-follow/>

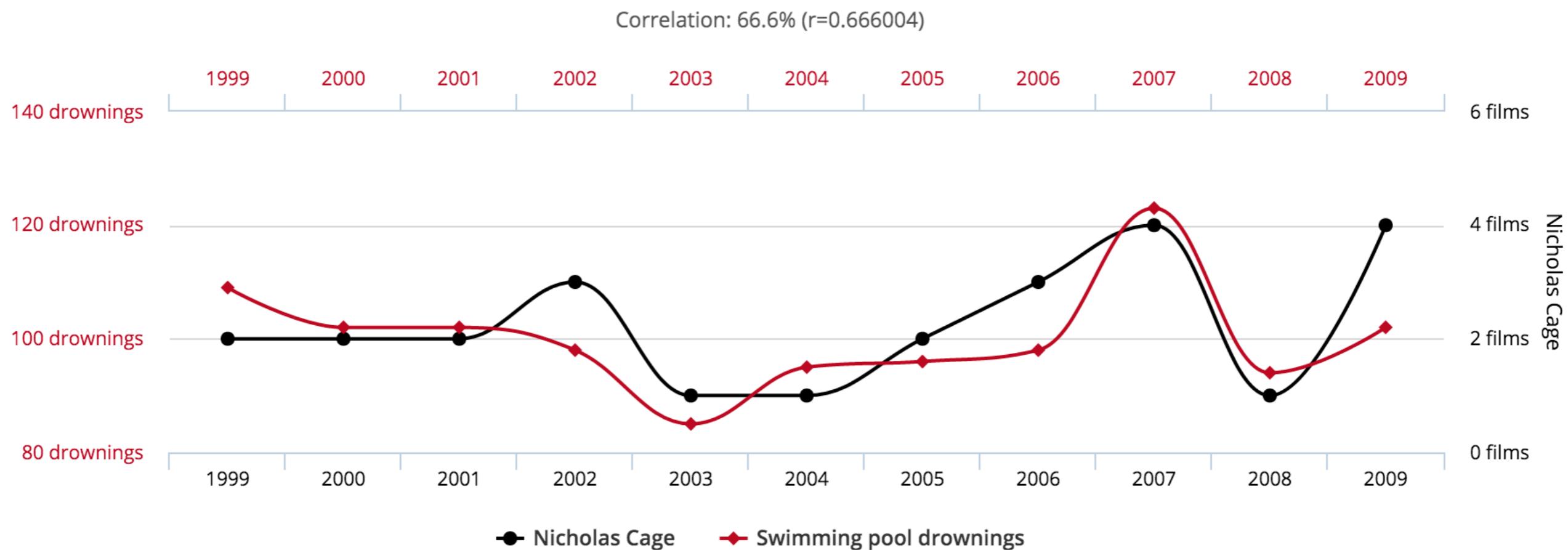


Axes



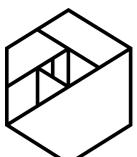
Axes

Number of people who drowned by falling into a pool
correlates with
Films Nicolas Cage appeared in

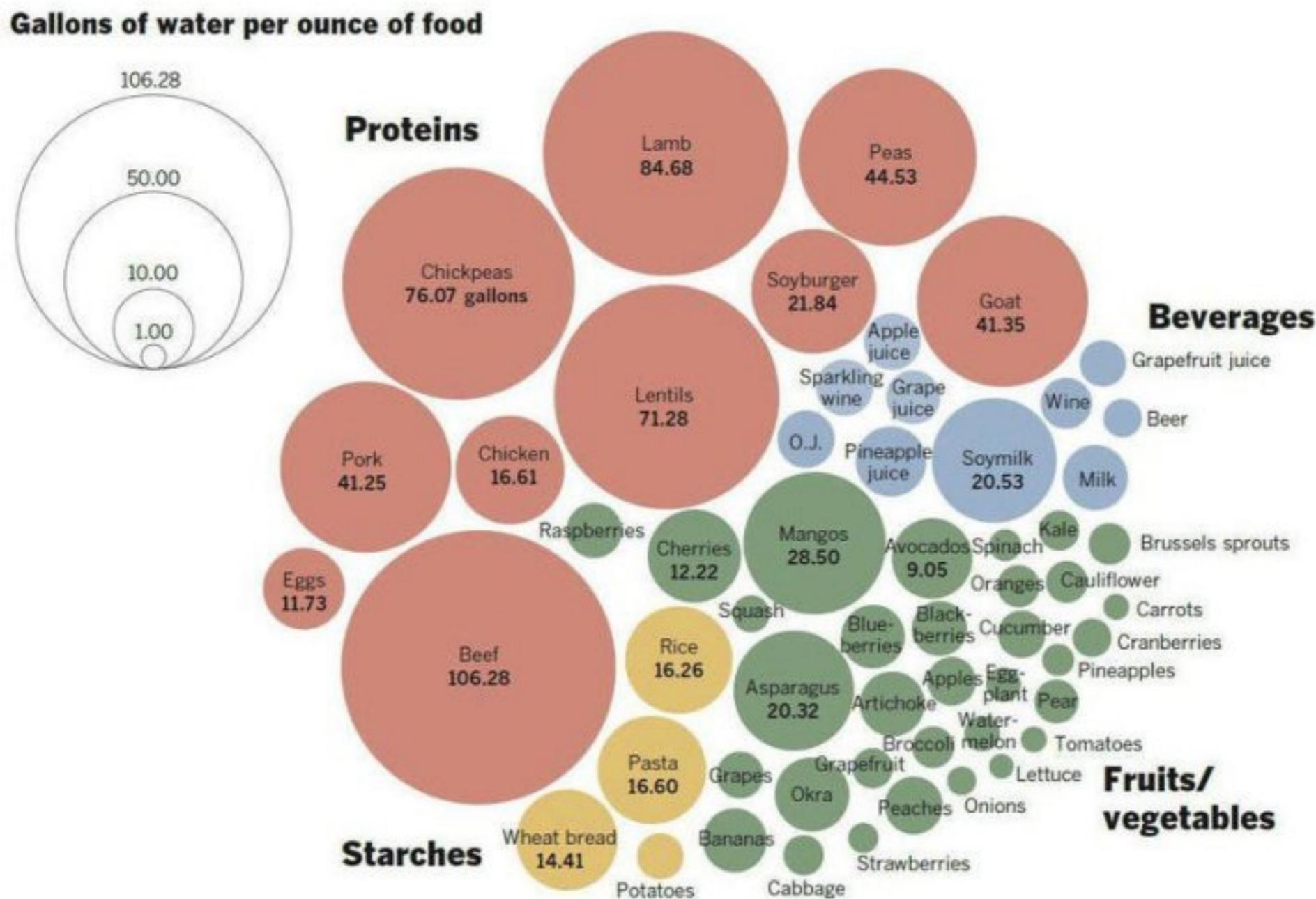


tylervigen.com

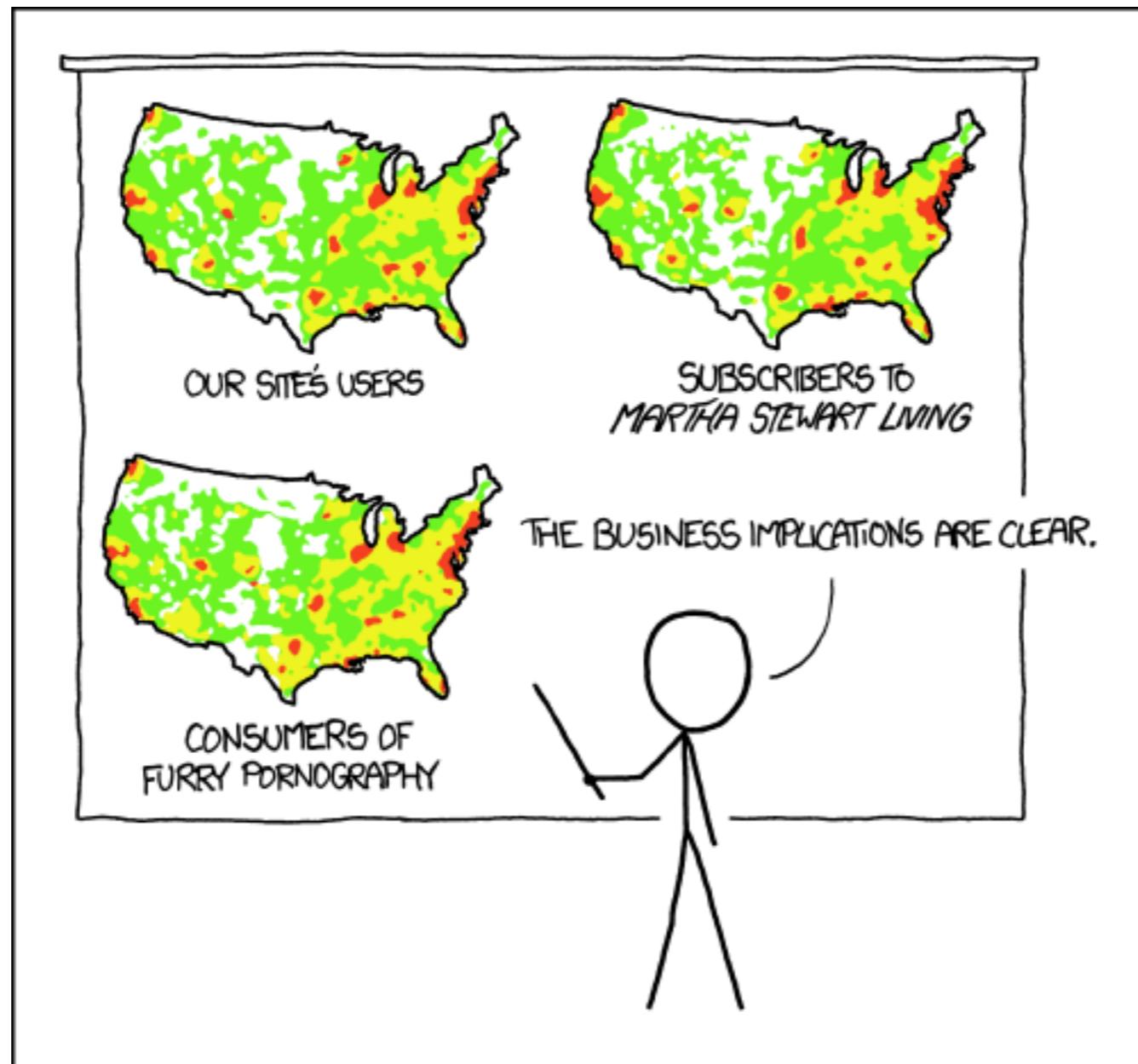
Data sources: Centers for Disease Control & Prevention and Internet Movie Database



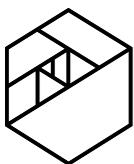
Bubble Chart



Maps



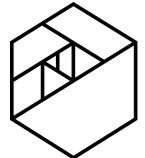
PET PEEVE #208:
GEOGRAPHIC PROFILE MAPS WHICH ARE
BASICALLY JUST POPULATION MAPS



Maps



Geography of Tweets & Flickr photos
Eric Fischer



Maps

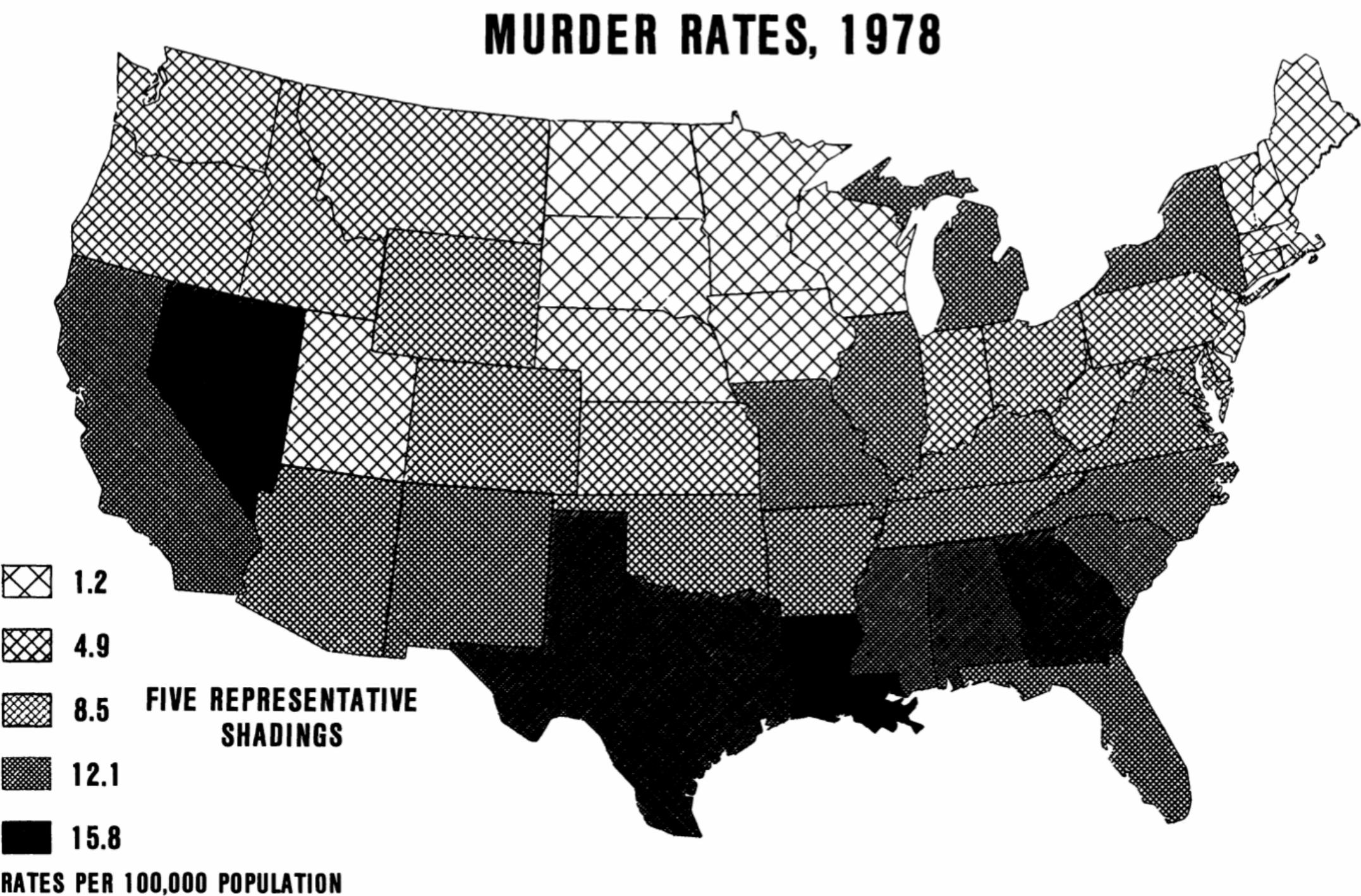
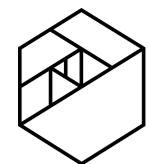
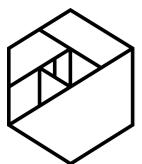
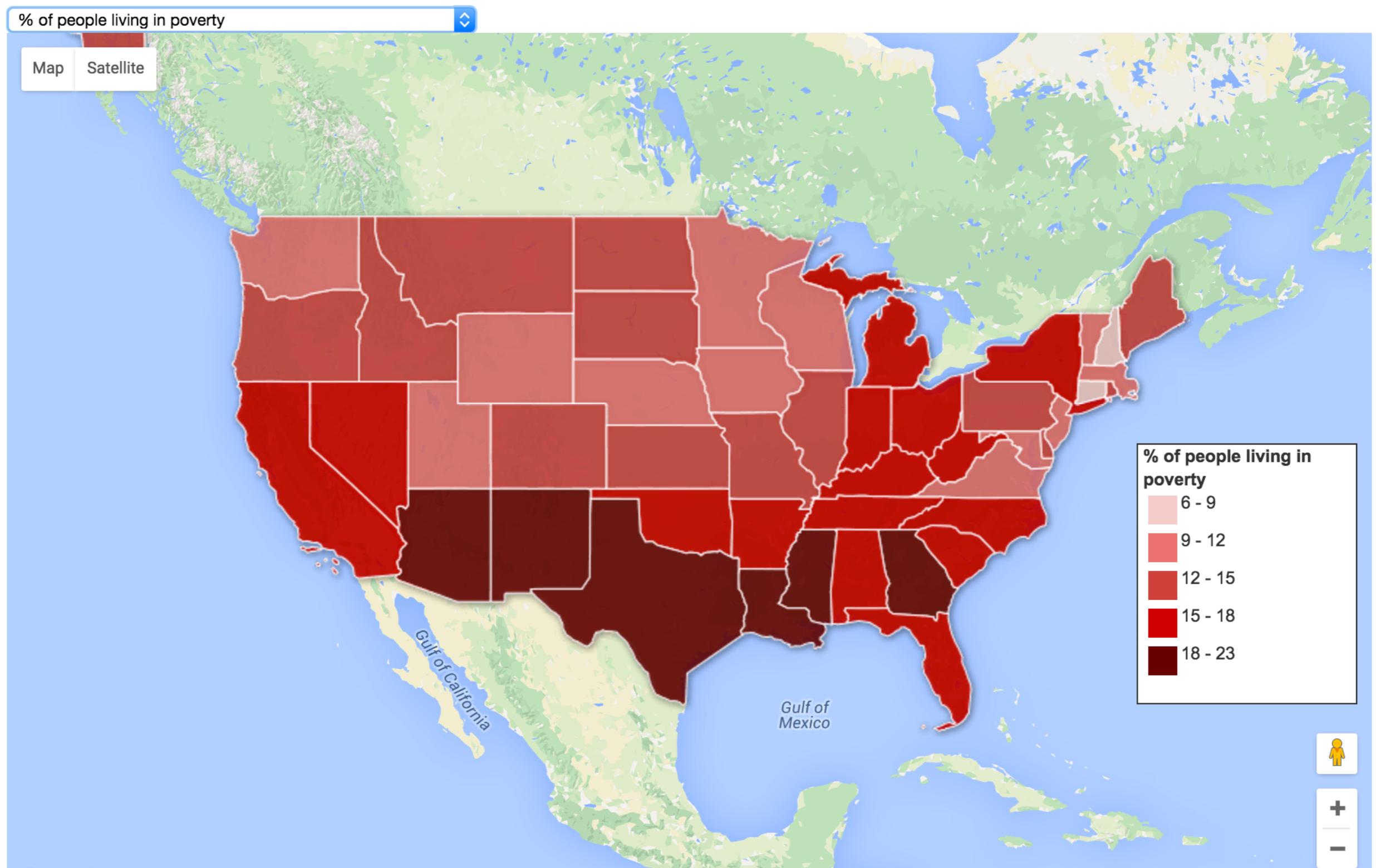


Figure 5. Statistical map with shading.

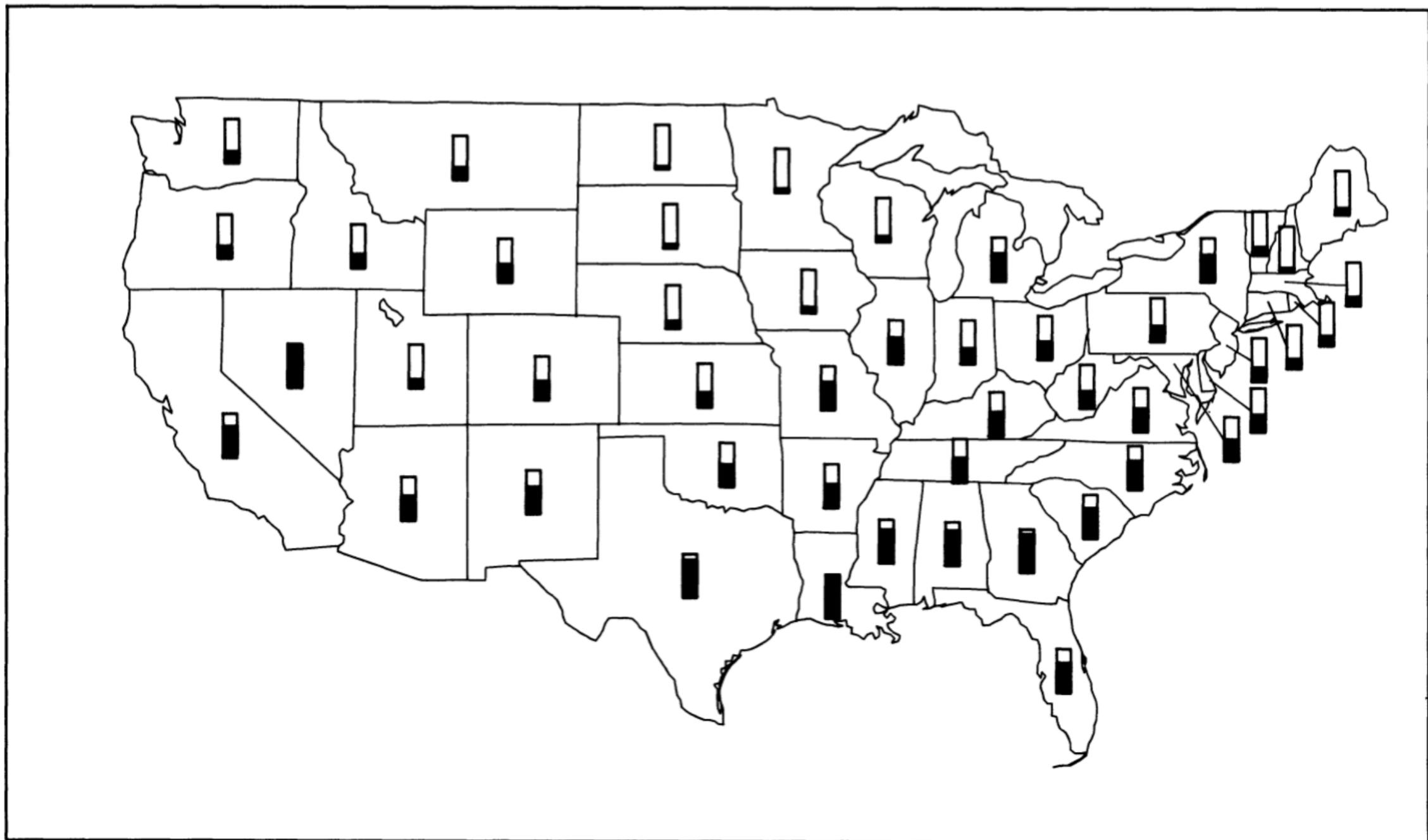


Maps – Choropleth



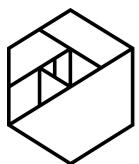
Maps

□ = 0 ▨ = 4 ▨ = 8 ▨ = 12 ▨ = 16



MURDER RATES PER 100,000 POPULATION, 1978

Figure 29. Framed-rectangle chart.

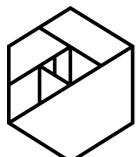
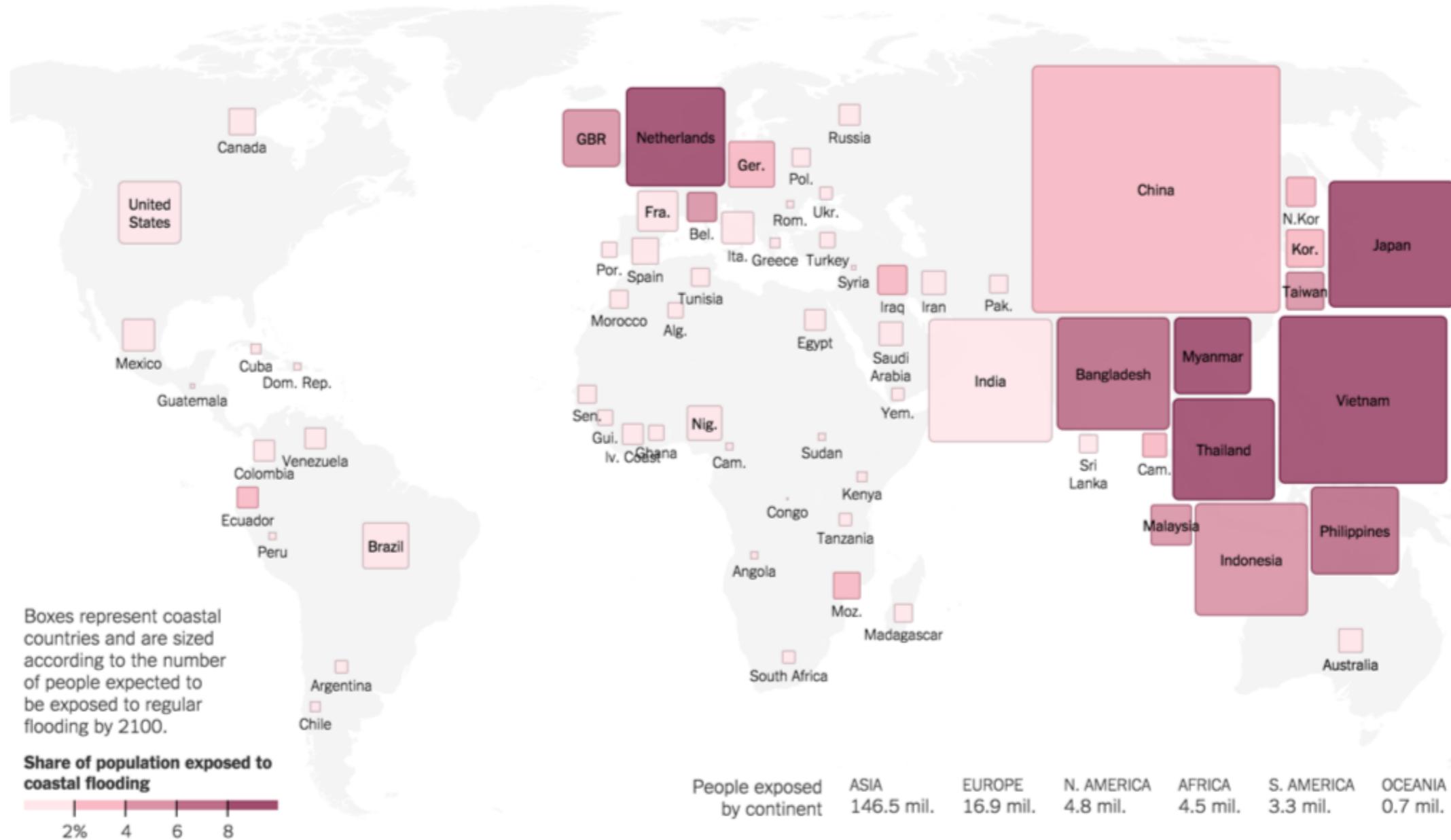


Maps – Cartograms

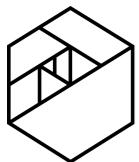
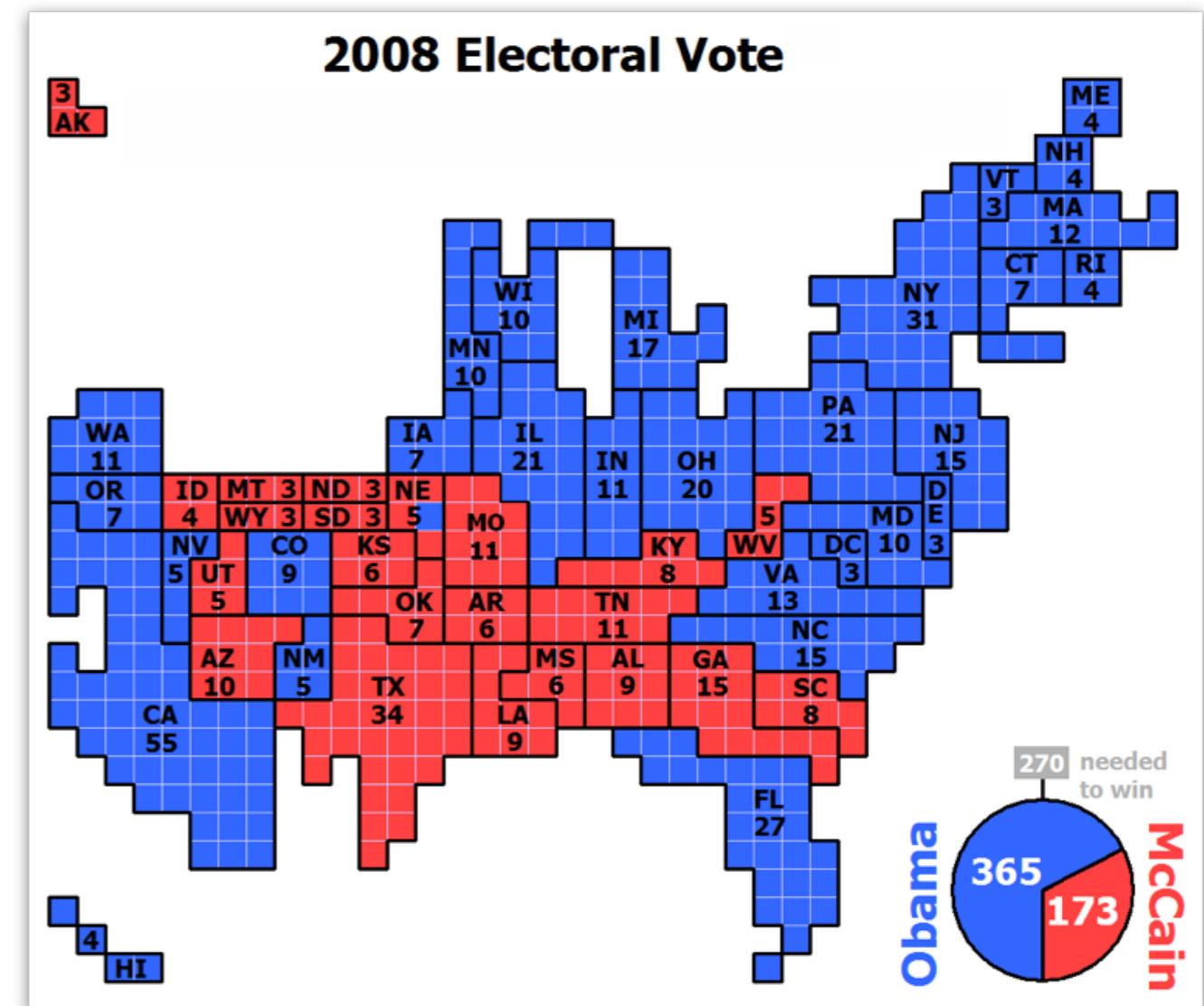
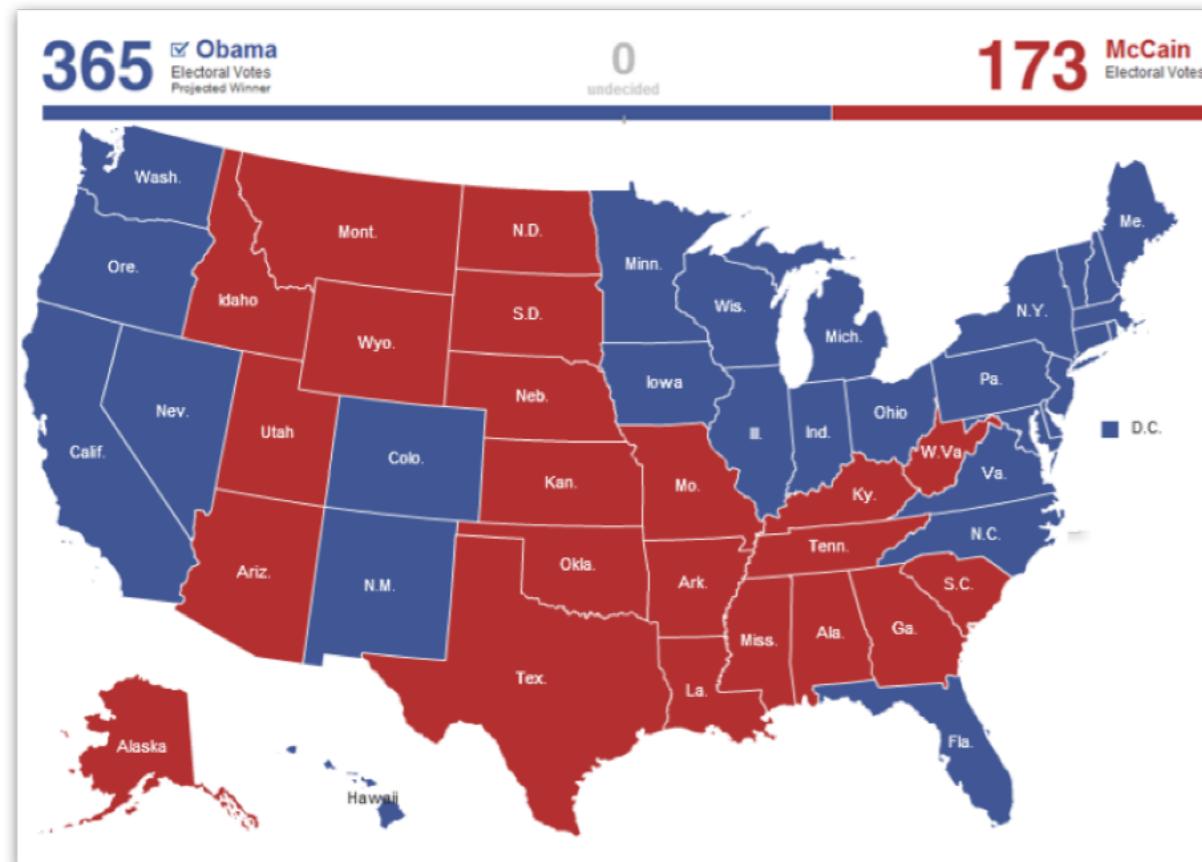
Flooding Risk From Climate Change, Country by Country

SEPT. 23, 2014

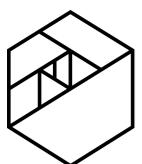
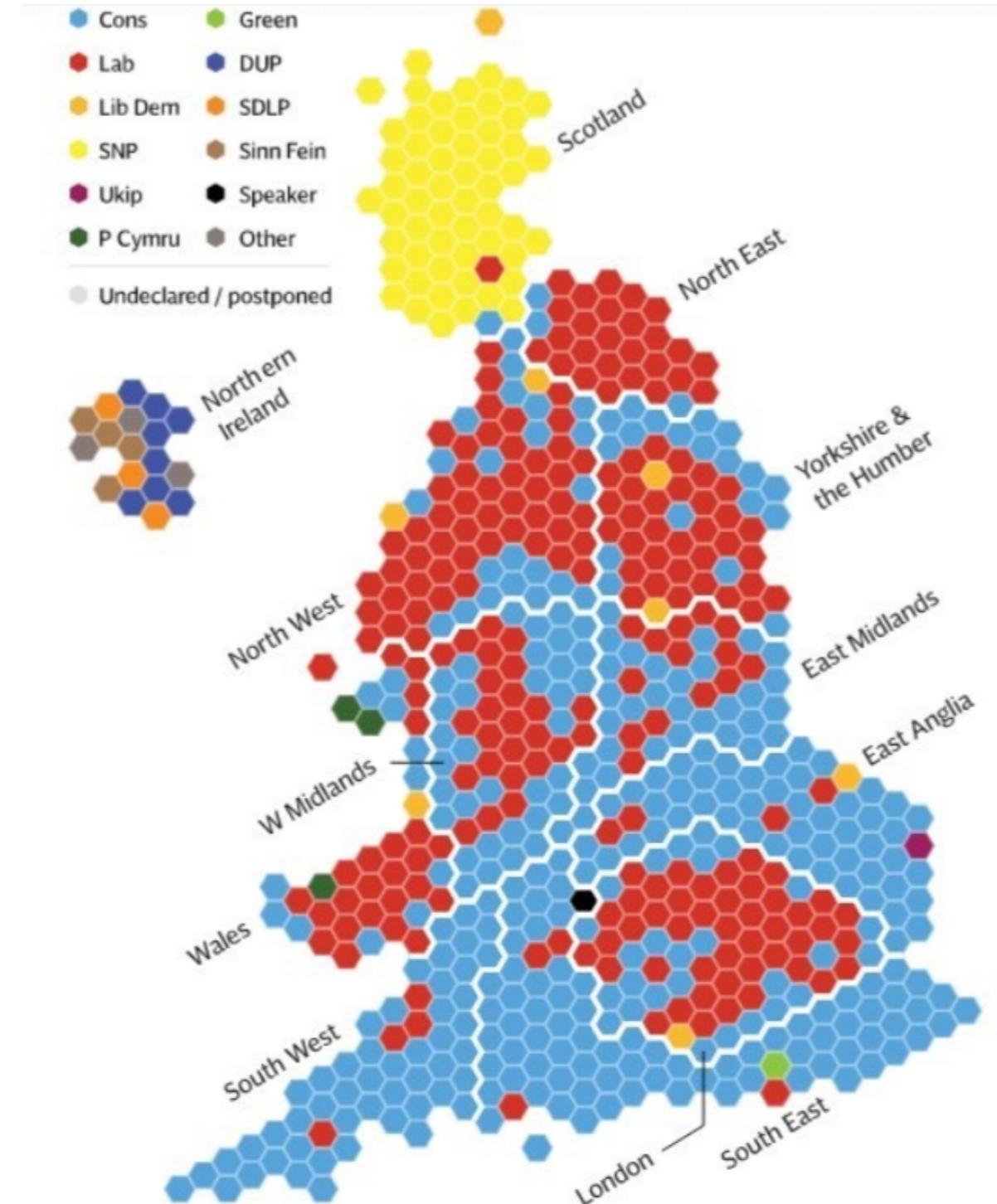
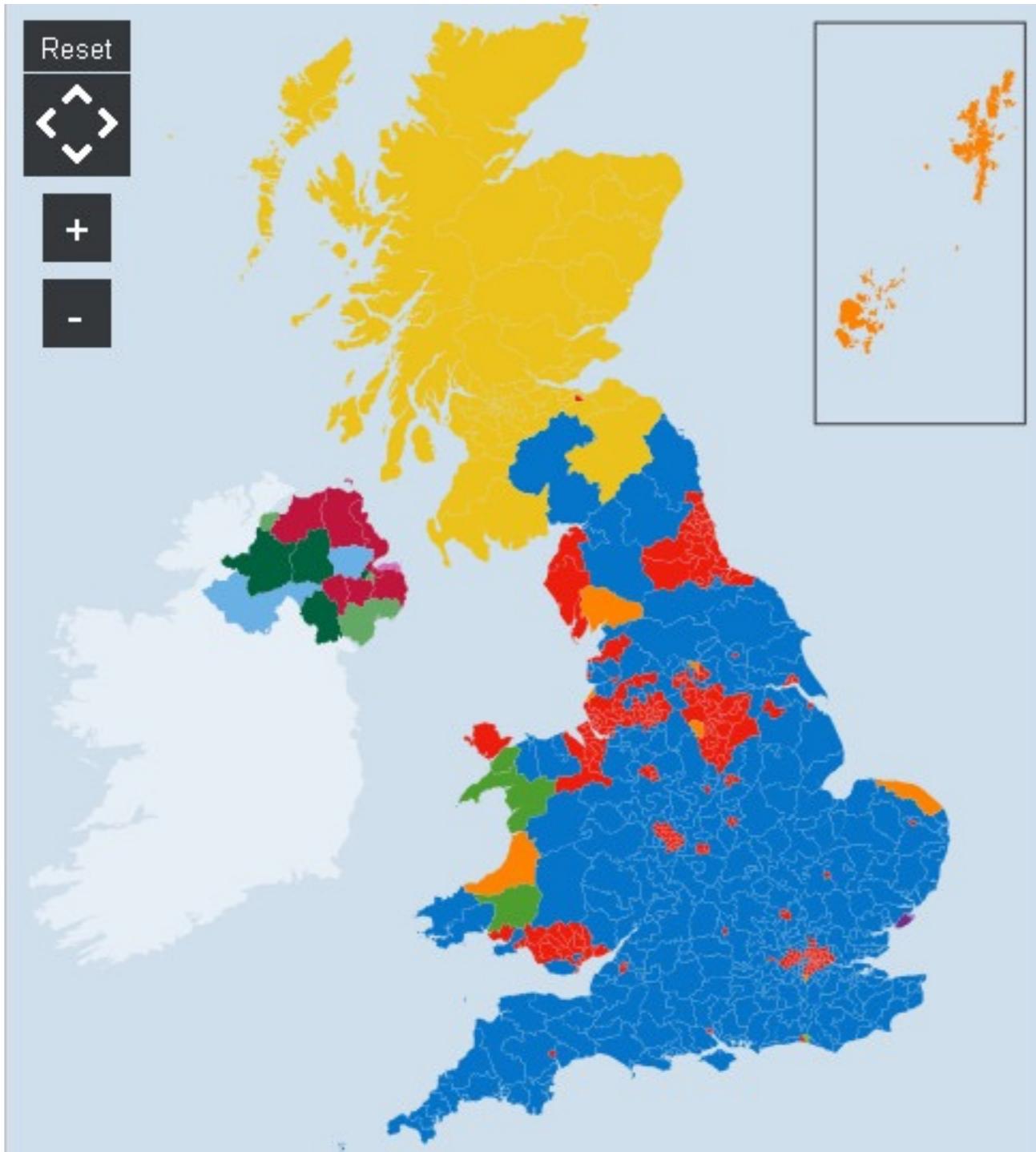
If global carbon emissions and sea levels are affected by climate change , about **2.6 percent of the global population** (about 177 million people) will be living in a place at risk of regular flooding.



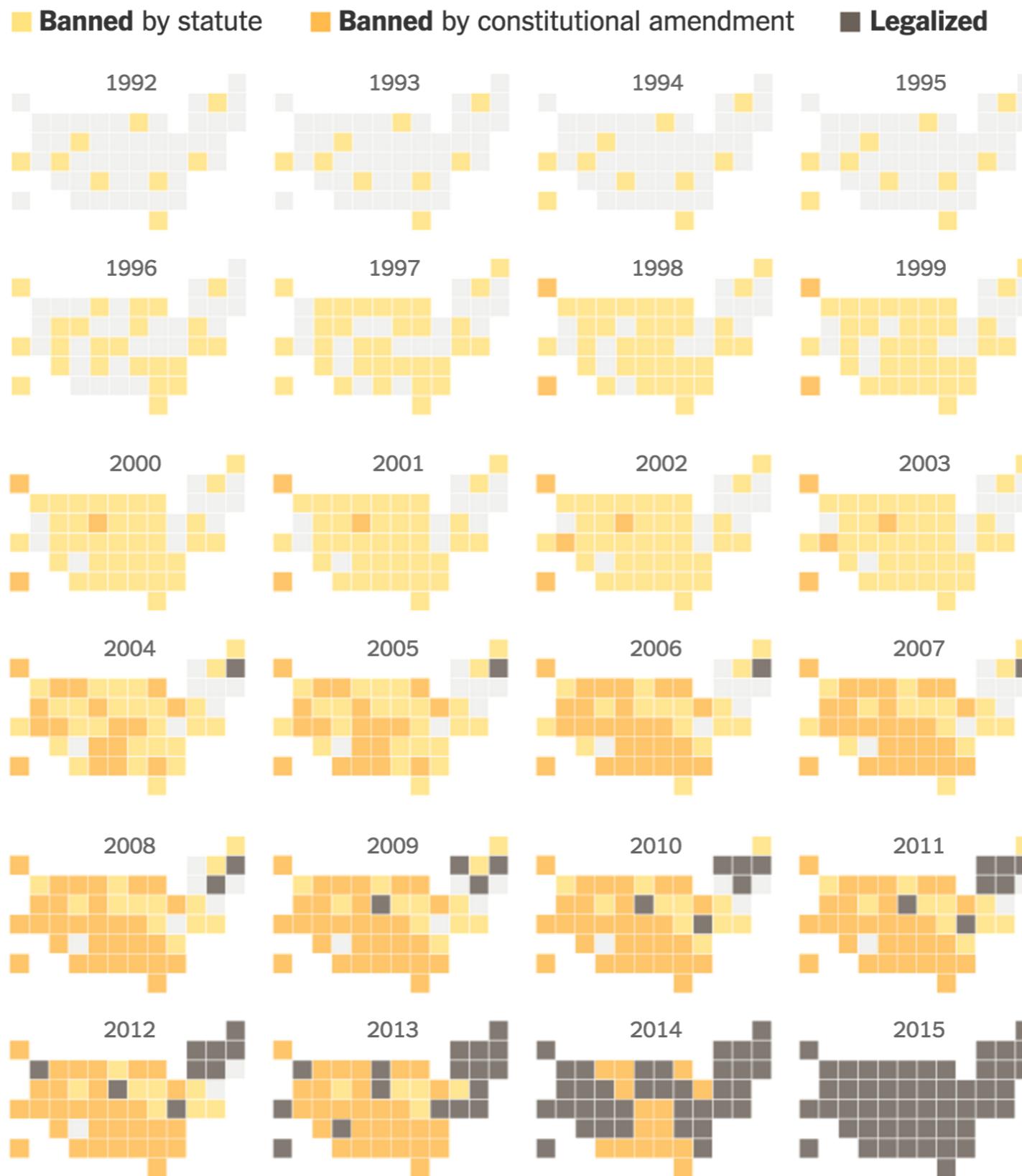
Maps – Cartograms



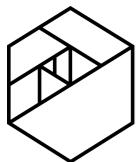
Maps – Cartograms



Maps – Cartograms

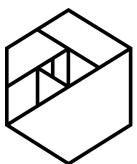
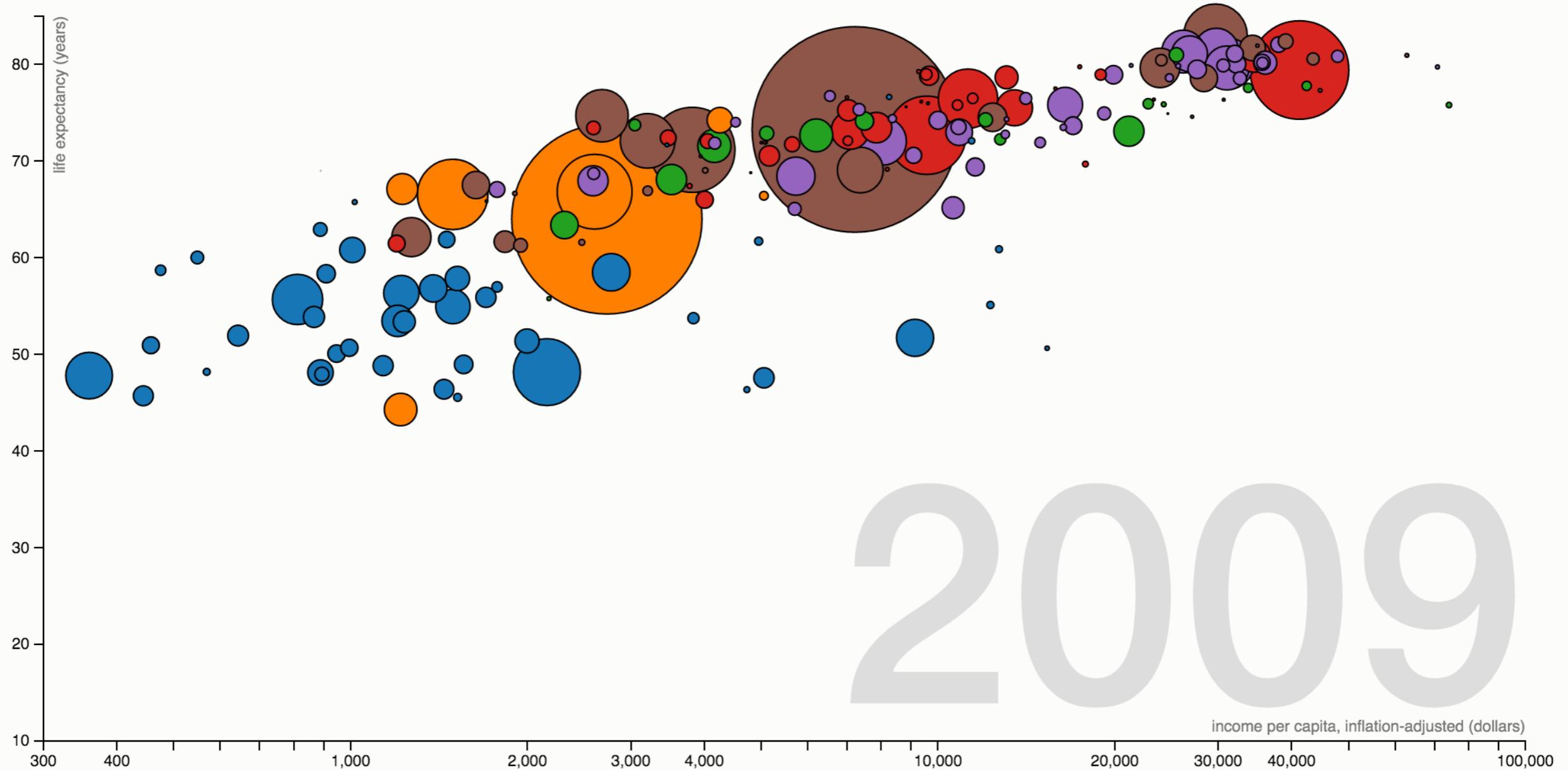


Gay Marriage Bans & Legalization
NY Times



Data Storytelling

The Wealth & Health of Nations



Company value
In billions of today's dollars

25 —

20 —

15 —

10 —

5 —

0 —

The Tech I.P.O.'s

Since 1980, there have been about 2,400 technology, Internet and telecom initial public offerings. Until this week, the largest by market capitalization was Google, which was valued at \$23 billion, or about \$28 billion in today's dollars.

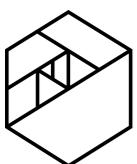
Google went public in 2004



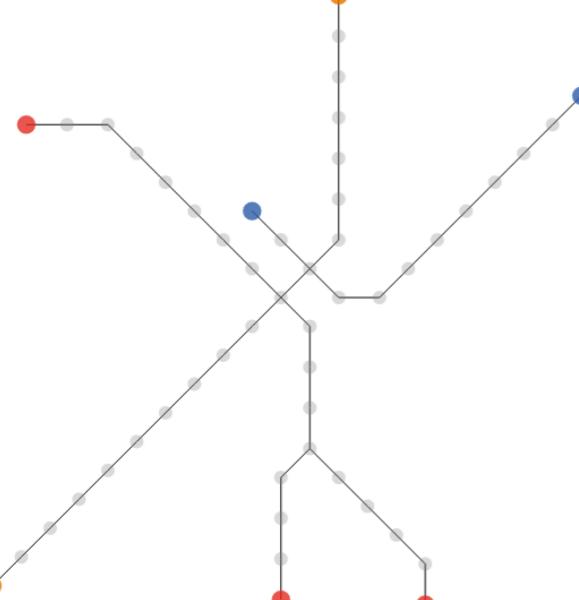
Apple went public in 1980

Microsoft

Year of I.P.O.



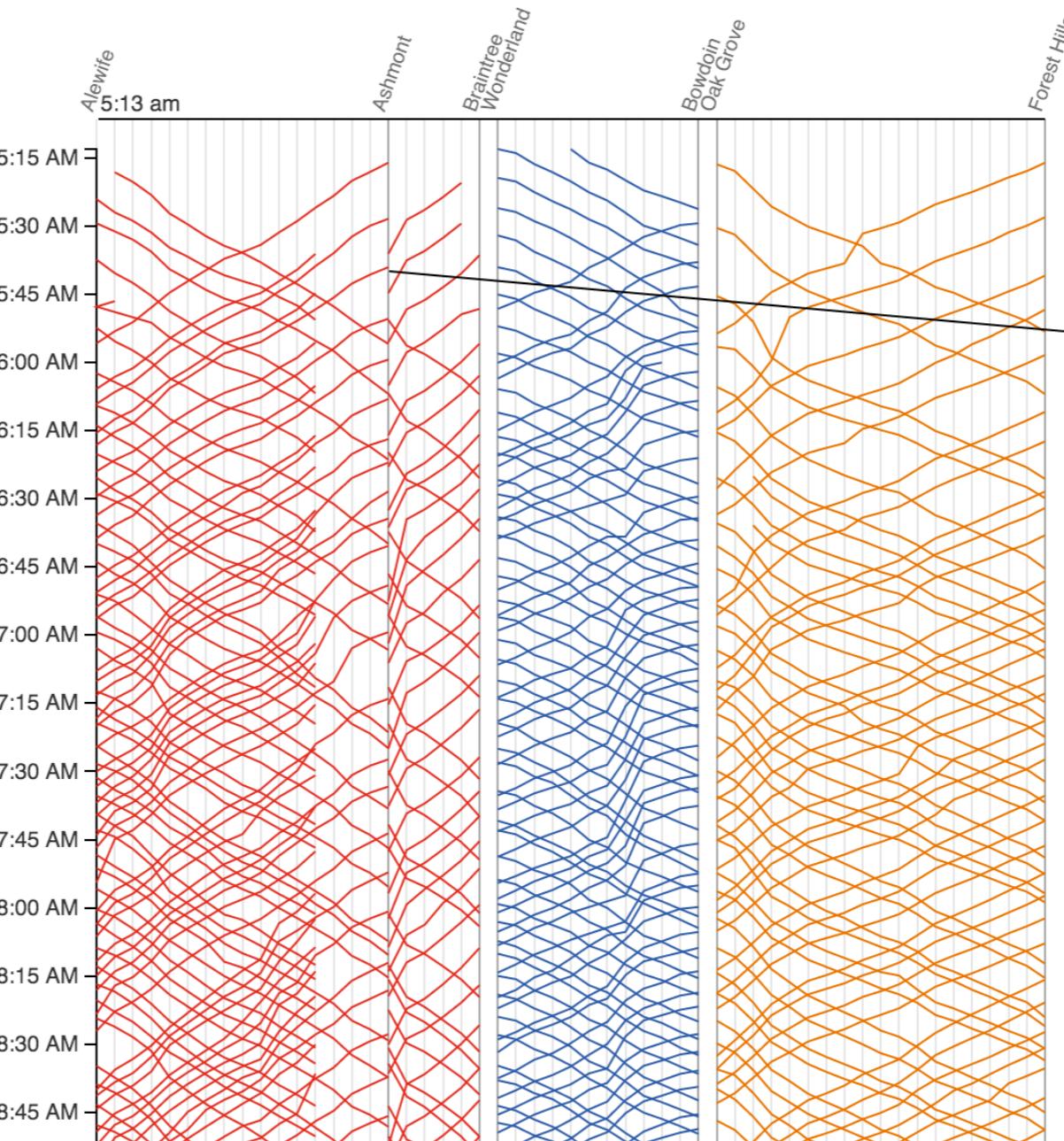
Subway Trips on Monday February 3, 2014



Locations of each train on the [red](#), [blue](#), and [orange](#) lines at 5:13 am. Hover over the diagram to the right to display trains at a different time.

Trains are on the right side of the track relative to the direction they are moving.

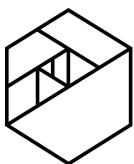
See the [morning rush-hour](#), [midday lull](#), [afternoon rush-hour](#), and the [evening lull](#).



Service starts at 5AM on Monday morning. Each line represents the path of one train. Time continues downward, so steeper lines indicate slower trains.

Since the red line splits, we show the Ashmont branch first then the Braintree branch. Trains on the Braintree branch "jump over" the Ashmont branch.

Train frequency increases around 6:30AM as morning rush hour begins.



Jump to a state:

Colorado

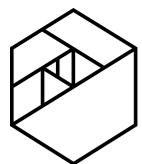
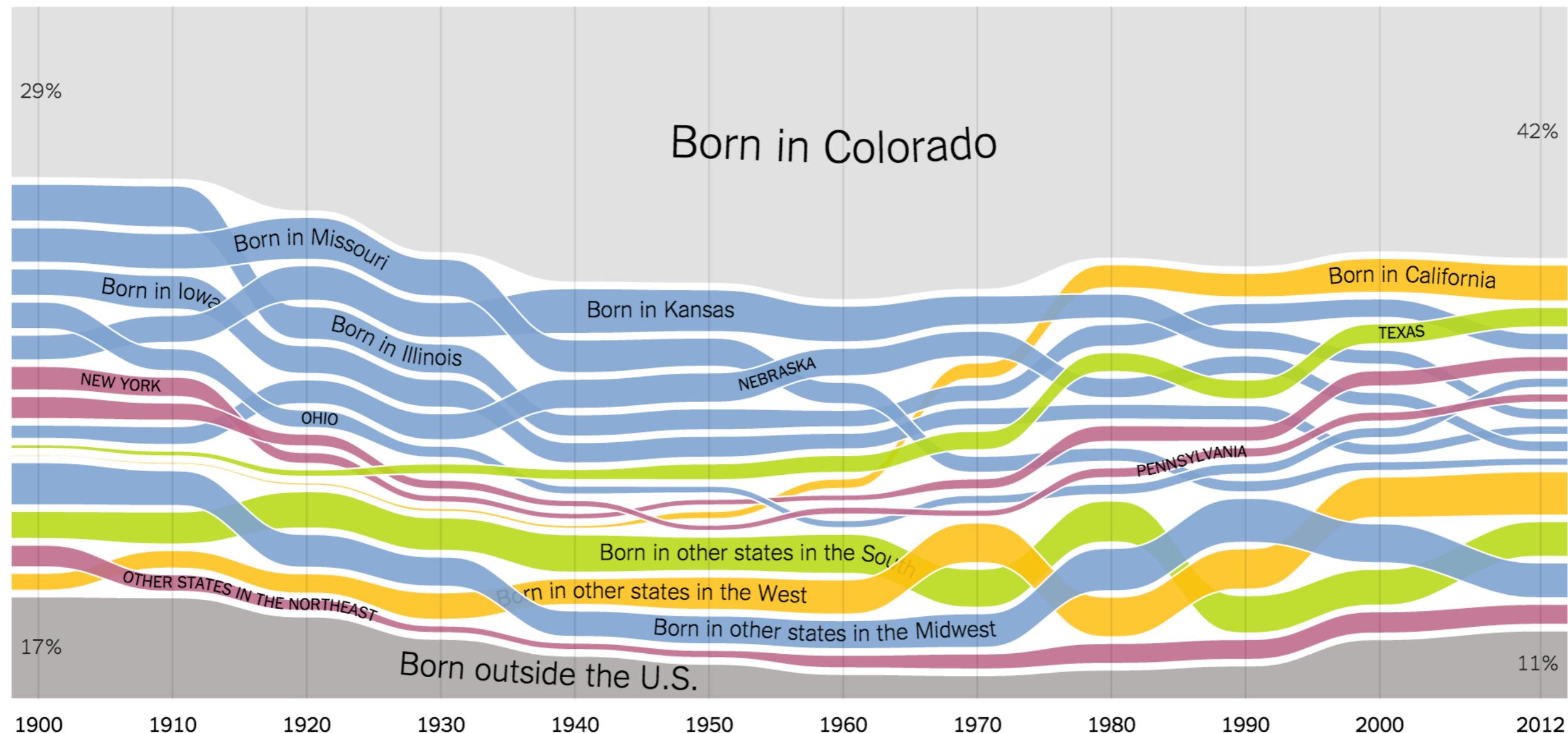


Where people living in Colorado **were born:**

New!



Switch to Diaspora Out of Colorado



2014 Was the Hottest Year on Record

By Tom Randall  and Blacki Migliozi  | January 16, 2015

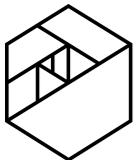
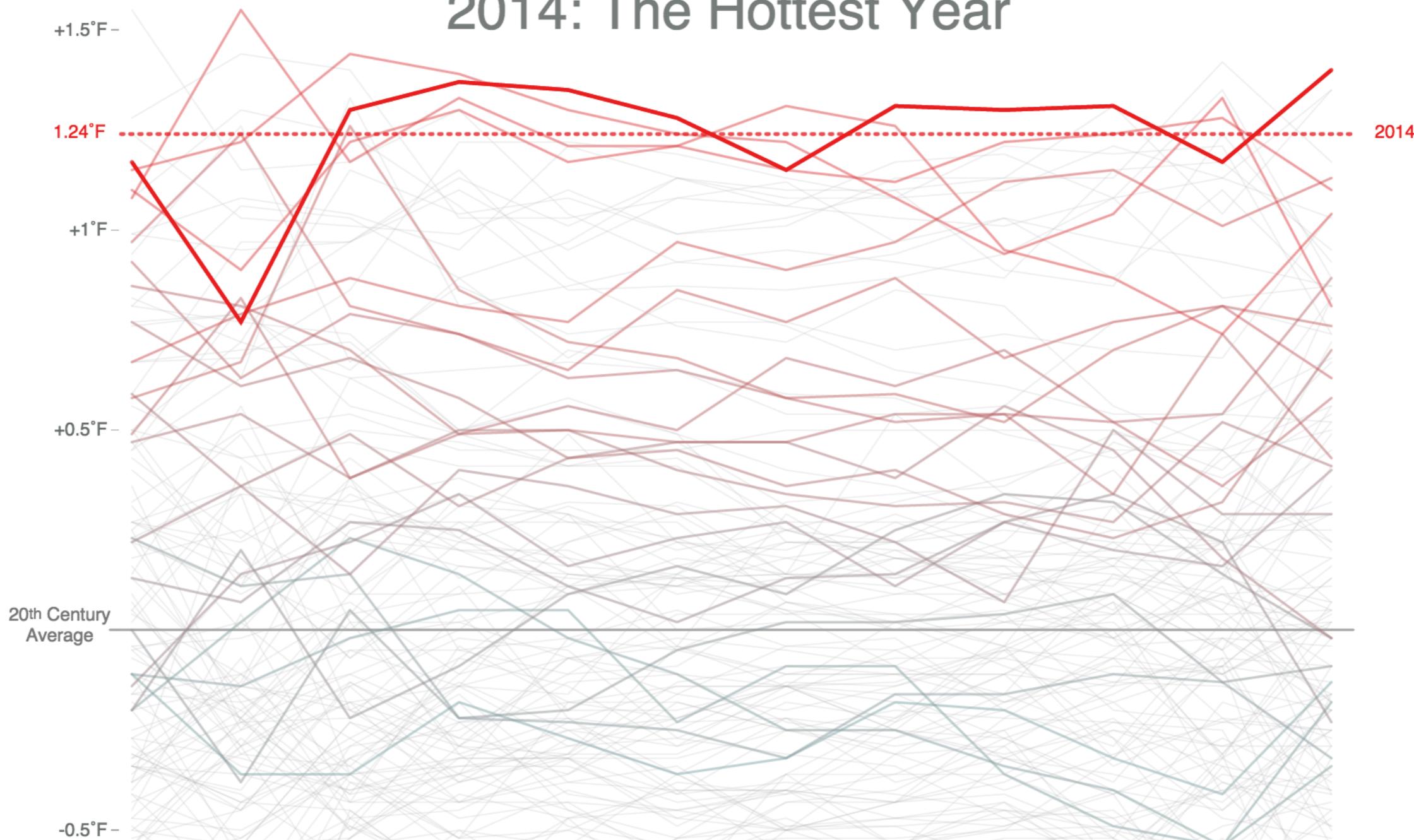
Deny this. The **animation below** shows the Earth's warming climate, recorded in monthly measurements from land and sea over 135 years. Temperatures are displayed in degrees above or below the 20th-century average. Thirteen of the 14 hottest years are in the 21st century.

Record Years

All Years

See It Again

2014: The Hottest Year



Data Viz Tools





Google

My Awesome Spreadsheet



p.buffa@gmail.com ▾

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

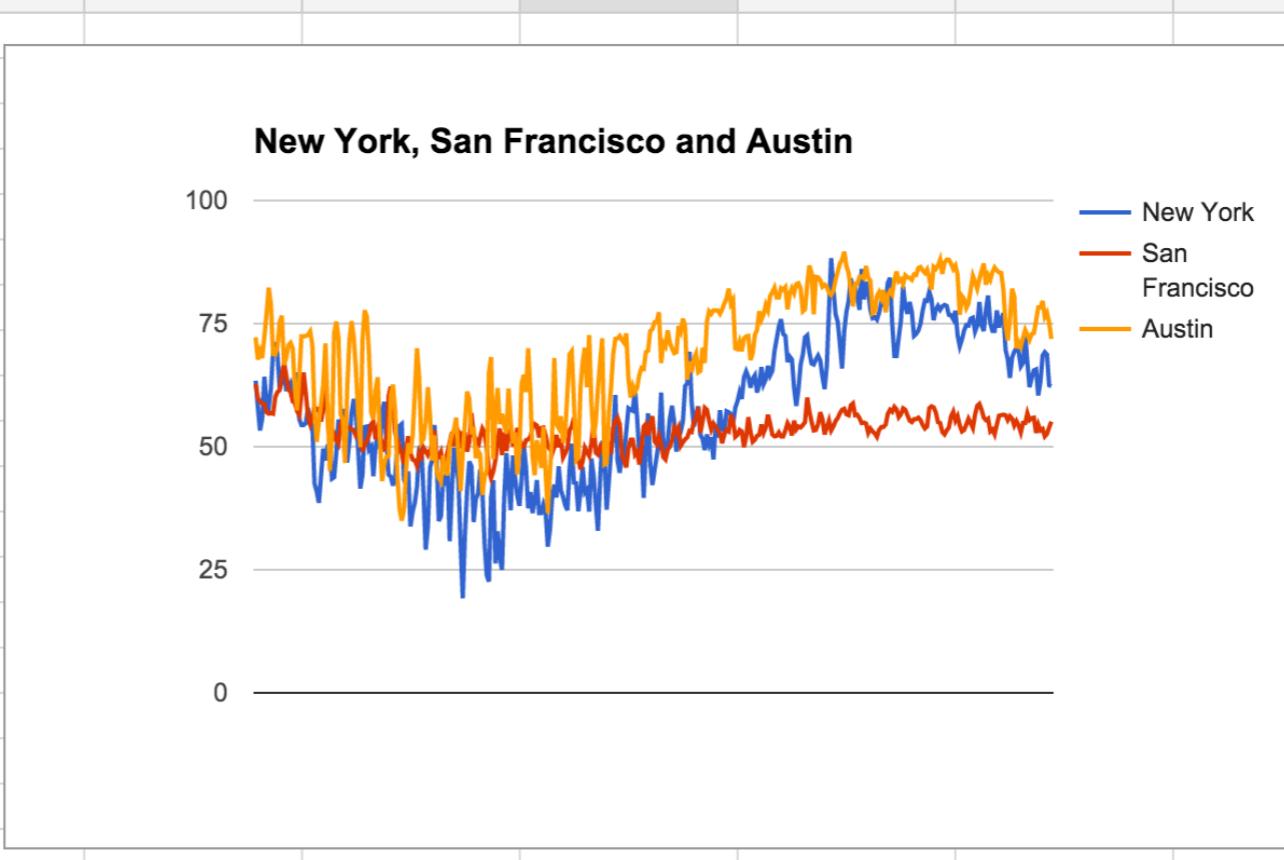
Comments

Share

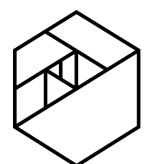
Print Refresh Undo Redo \$ % .0 .00 123 Arial 10 **B** *I* ~~S~~ A

fx

	A	B	C	D	E	F	G	H	I	J	K	L
1	date	New York	San Francisco	Austin								
2	20111001	63.4	62.7	72.2								
3	20111002	58	59.9	67.7								
4	20111003	53.3	59.1	69.4								
5	20111004	55.7	58.8	68								
6	20111005	64.2	58.7	72.4								
7	20111006	58.8	57	77								
8	20111007	57.9	56.7	82.3								
9	20111008	61.8	56.8	78.9								
10	20111009	69.3	56.7	68.8								
11	20111010	71.2	60.1	68.7								
12	20111011	68.7	61.1	70.3								
13	20111012	61.8	61.5	75.3								
14	20111013	63	64.3	76.6								
15	20111014	66.9	67.1	66.6								
16	20111015	61.7	64.6	68								
17	20111016	61.8	61.6	70.6								
18	20111017	62.8	61.1	71.1								
19	20111018	60.8	59.2	70								
20	20111019	62.1	58.9	61.6								
21	20111020	65.1	57.2	57.4								
22	20111021	55.6	56.4	64.3								



+ Sheet1 Sheet2



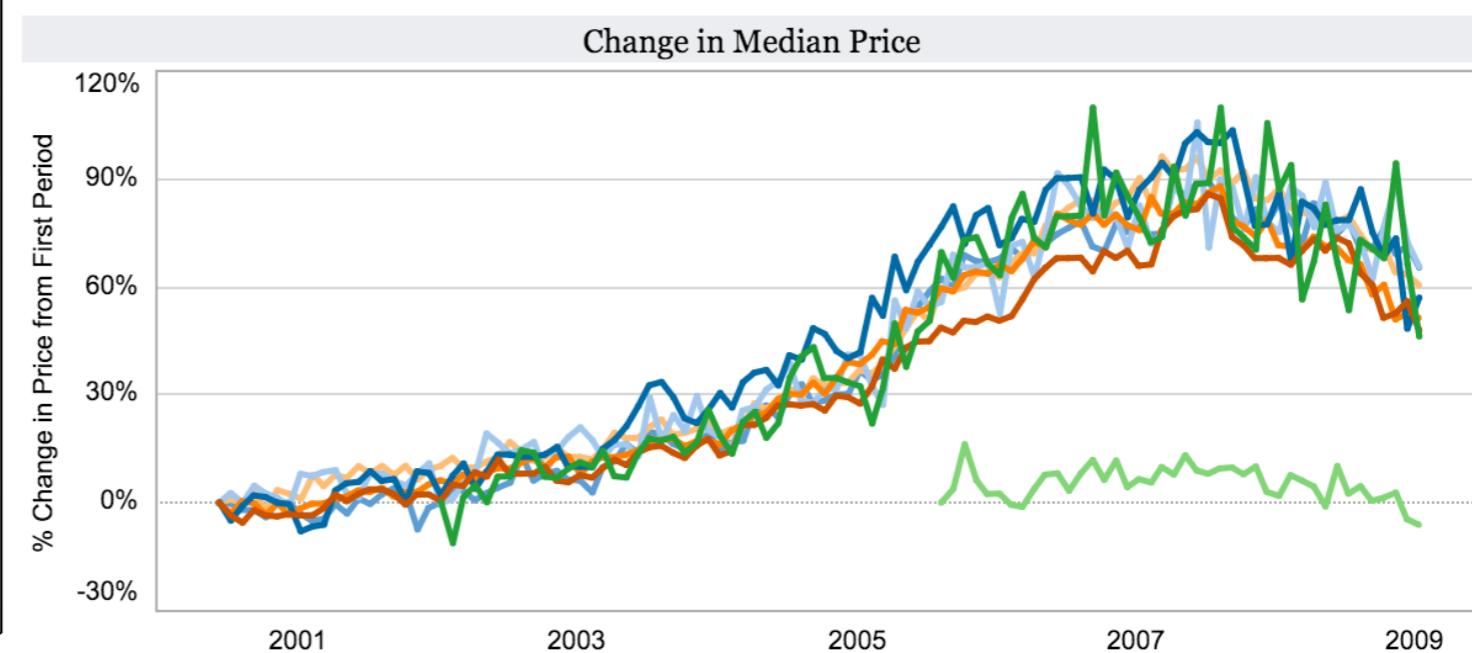
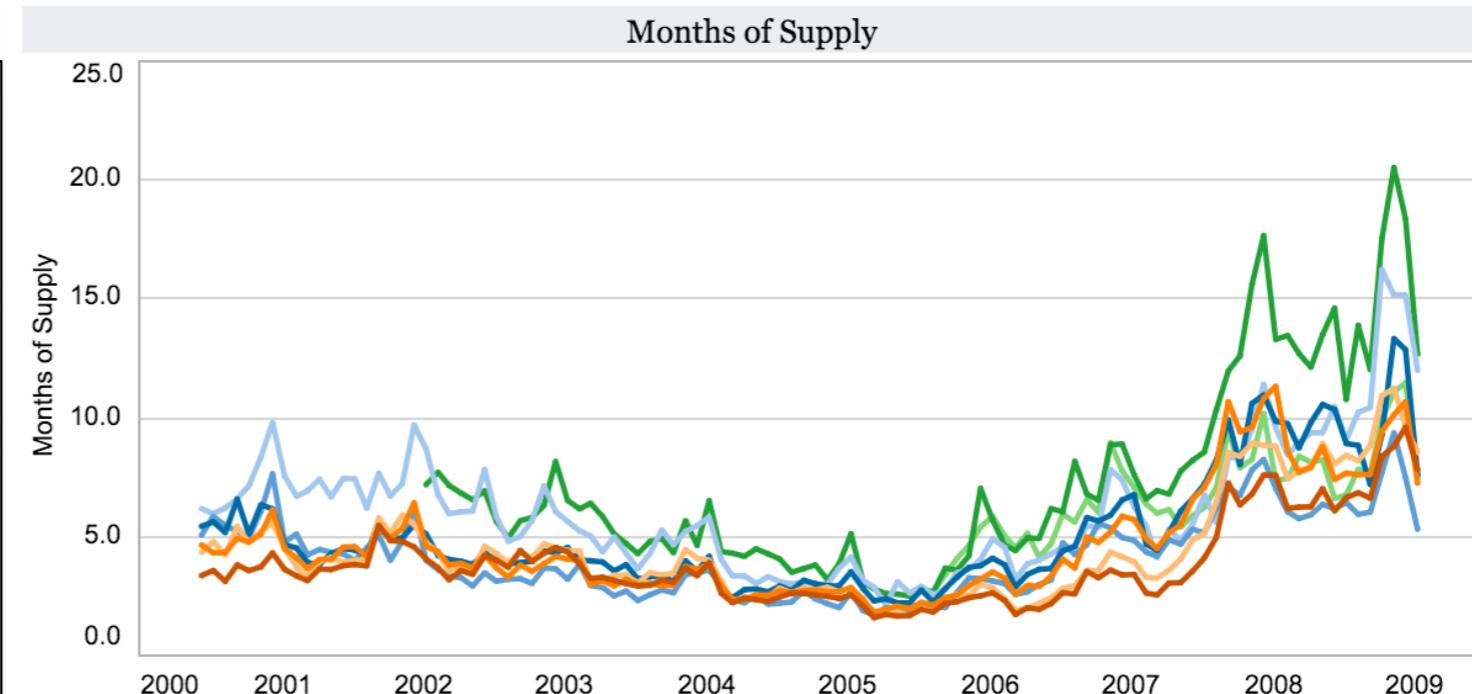
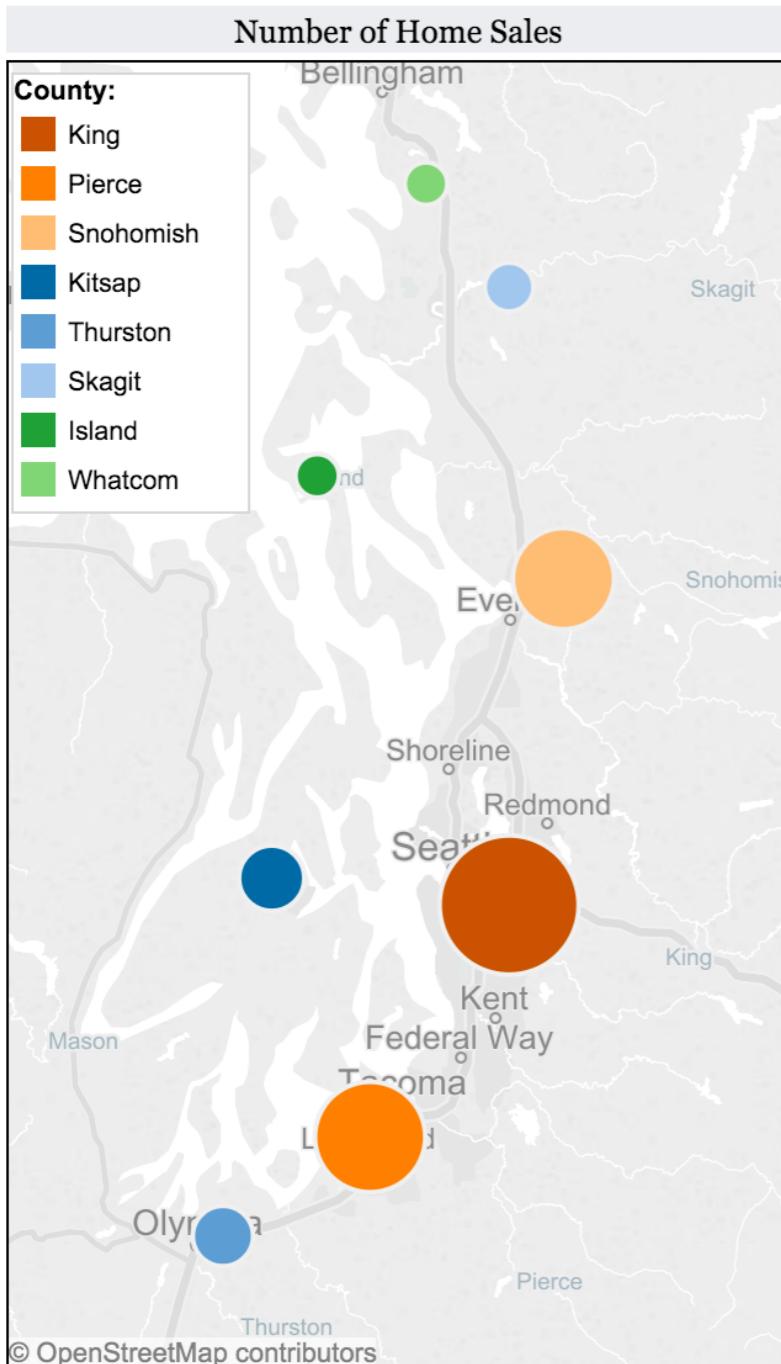


Seattle Real Estate: Overview

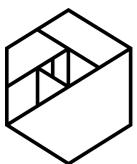
Select Date:

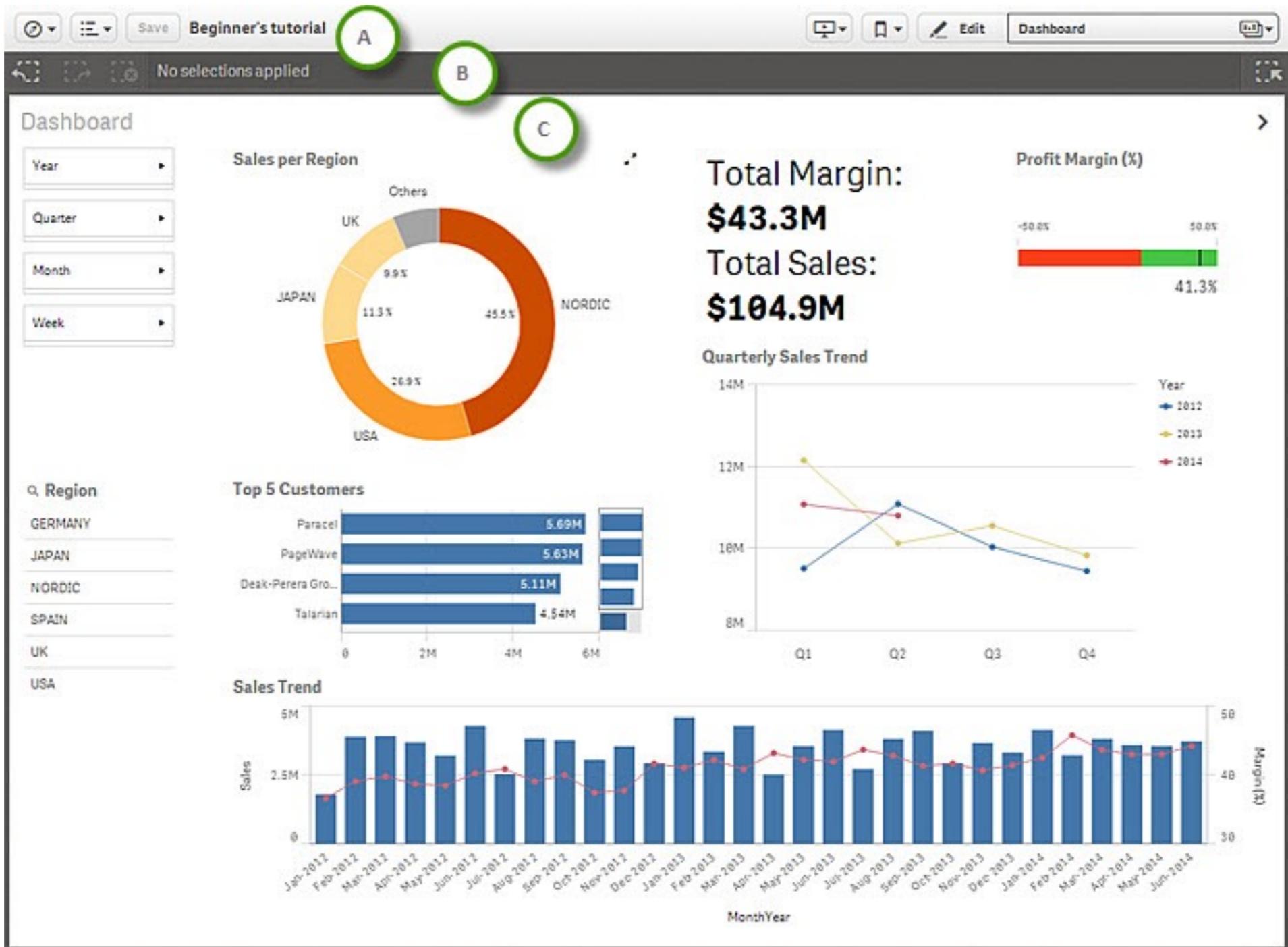
May, 2000

January, 2009



Size shows relative number of closed sales.





The missing link between spreadsheets and vector graphics.

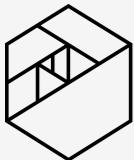
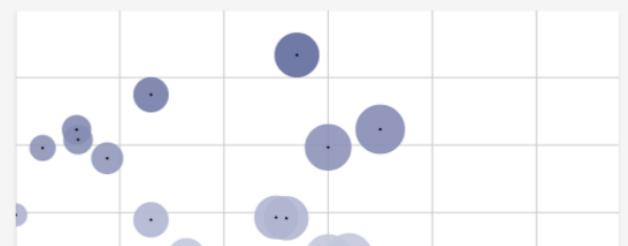
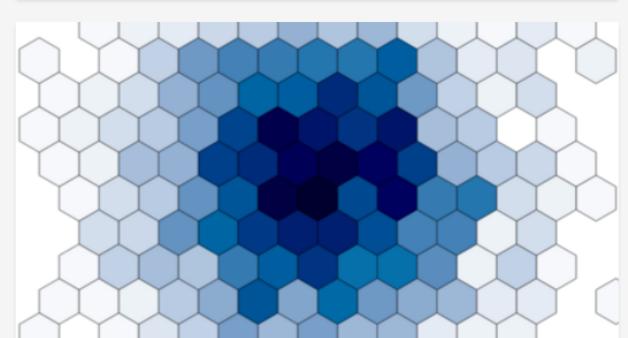
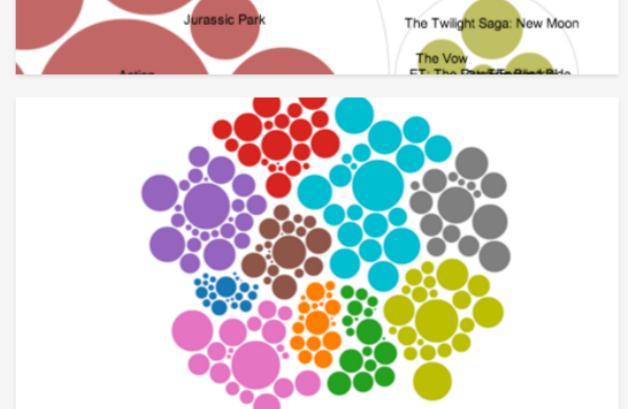
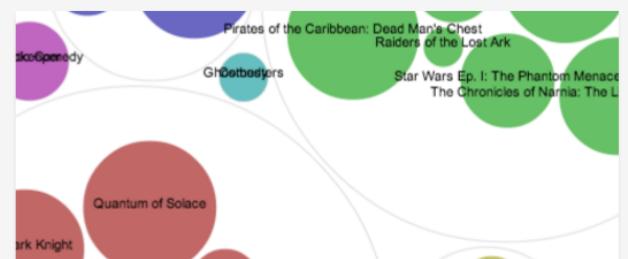
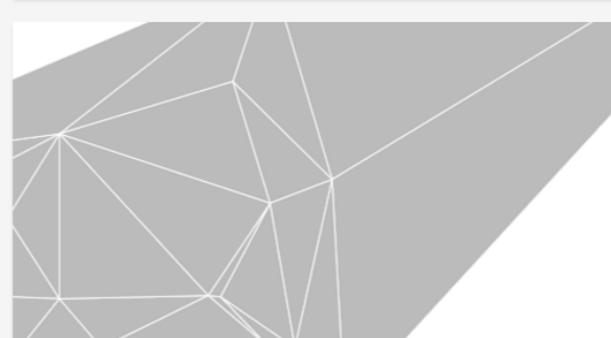
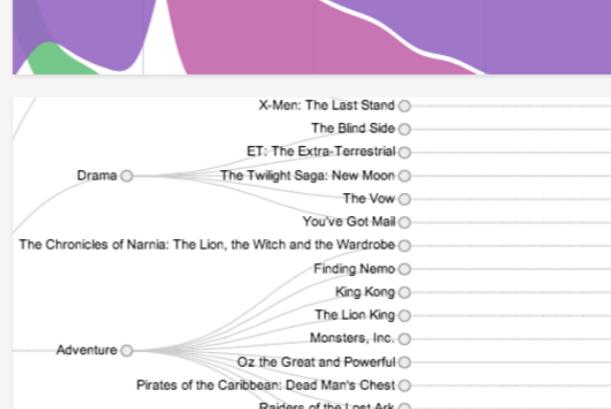
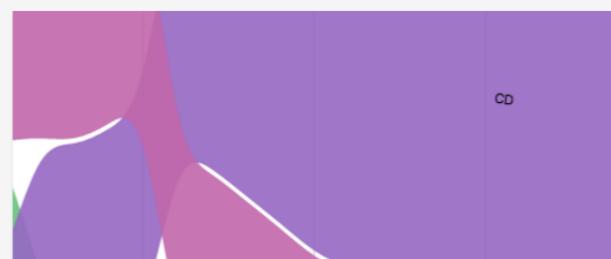
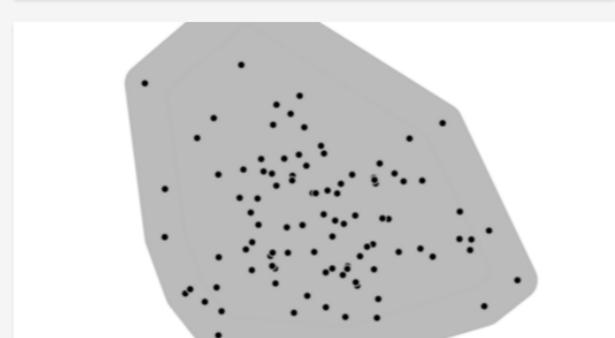
Choose a Chart

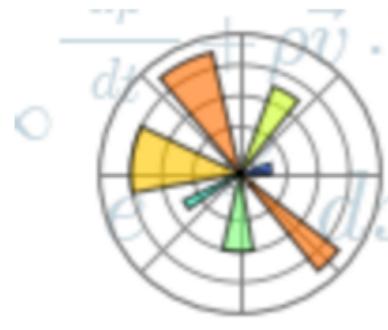
Alluvial Diagram (Fineo-like)

Alluvial diagrams allow to represent flows and to see correlations between categorical dimensions, visually linking to the number of elements sharing the same categories. It is useful to see the evolution of cluster (such as the number of people belonging to a specific group). It can also be used to represent bipartite graphs, using each node group as dimensions.

Mainly based on our previous work with Fineo, it is inspired by

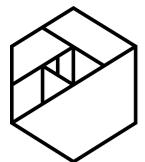
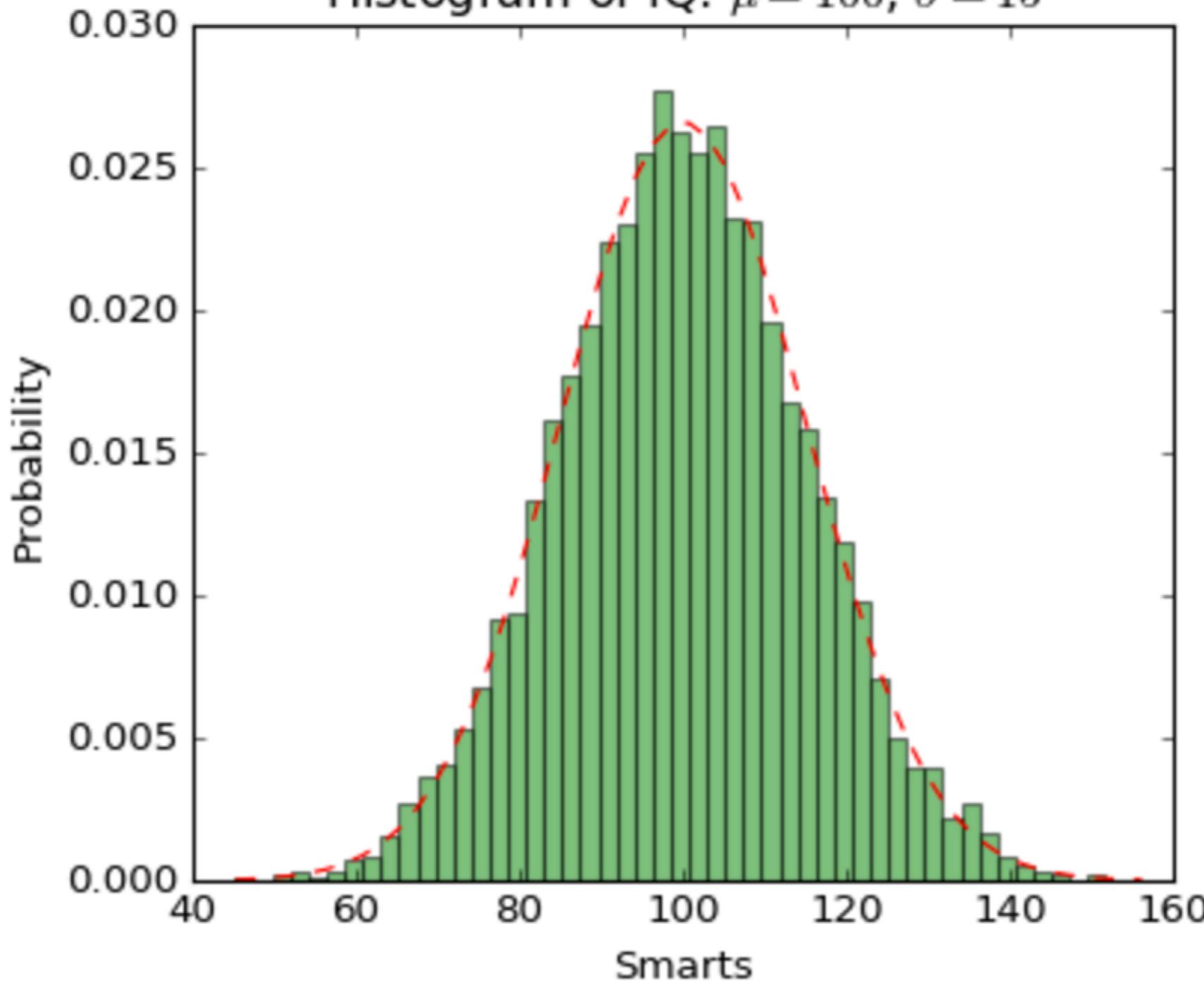
<http://bostocks.org/mike/sankey/>





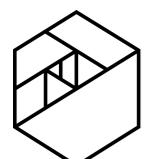
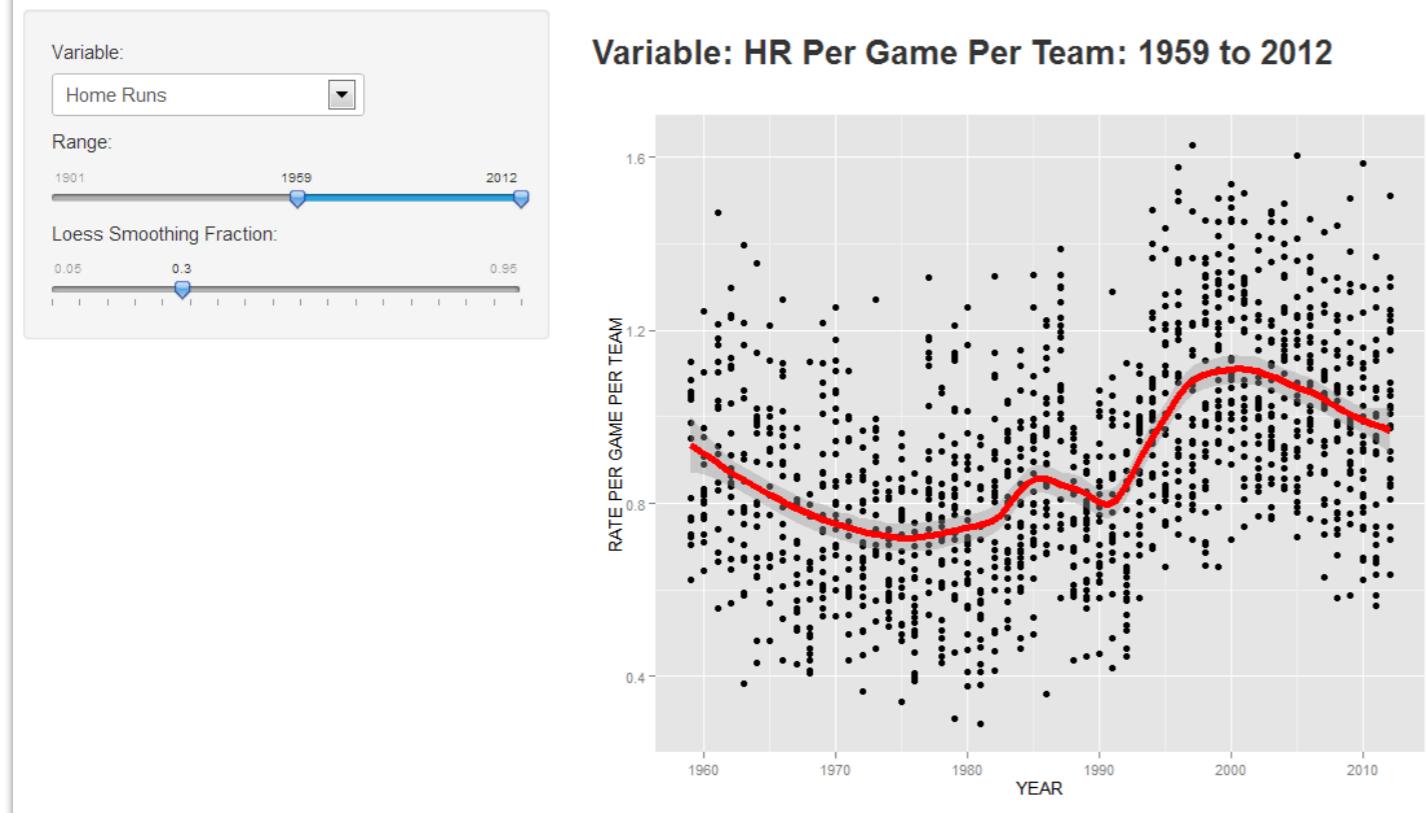
matplotlib

Histogram of IQ: $\mu = 100, \sigma = 15$



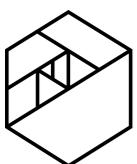


Offensive Production in Baseball History





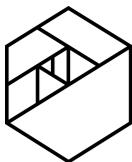
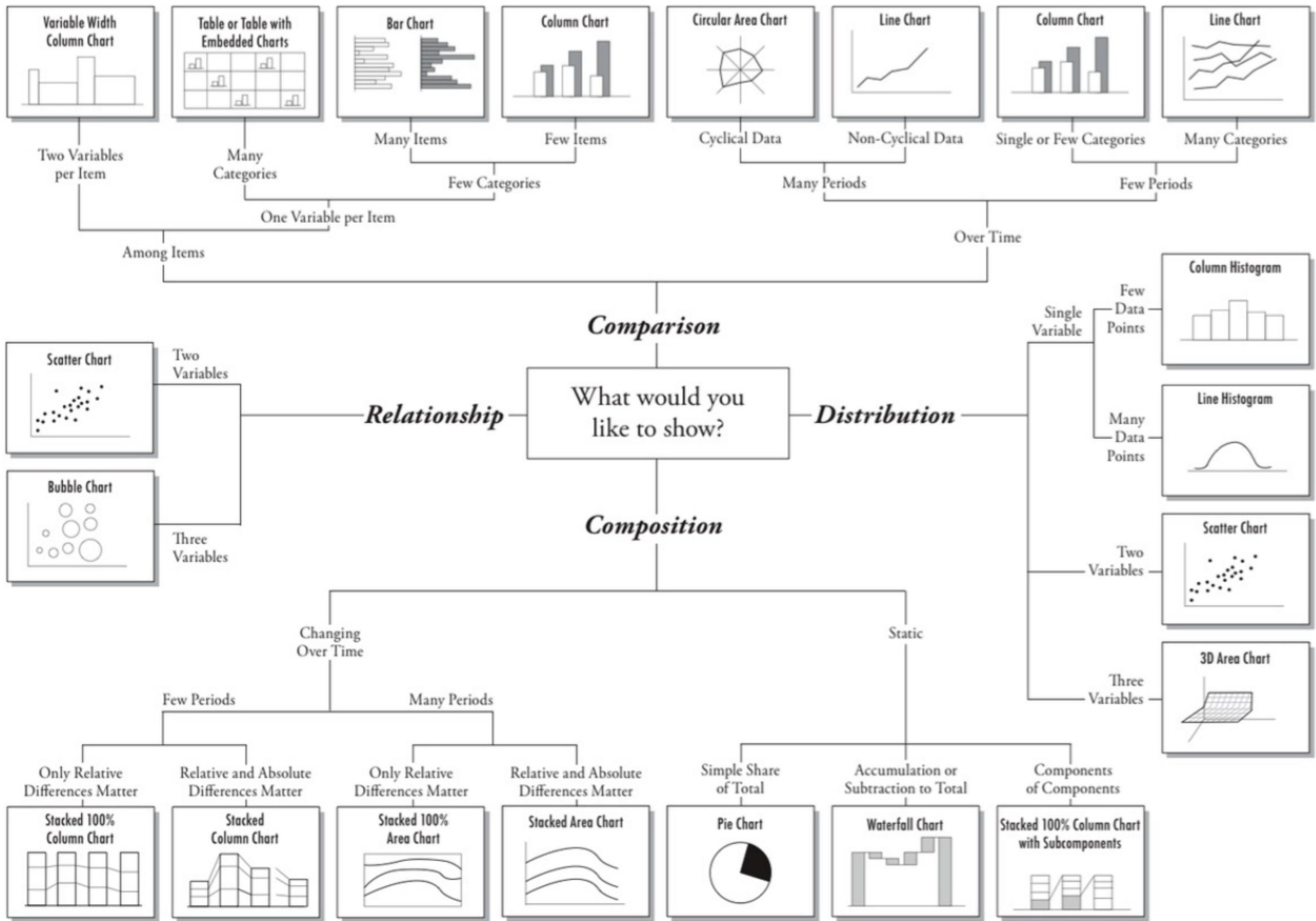
Data-Driven Documents



Test Time!



Chart Suggestions—A Thought-Starter



NYC Air Quality

2771 lines (2770 sloc) | 341 KB

Raw Blame History   

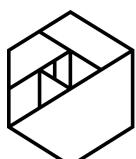
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2	130728	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	Borough	1
3	130729	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	Borough	2
4	130730	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	Borough	3
5	130731	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	Borough	4
6	130732	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	Borough	5
7	130727	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	Citywide	1
8	130685	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	UHF42	101
9	130686	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	UHF42	102
10	130687	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	UHF42	103
11	130688	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	UHF42	104
12	130689	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	UHF42	105
13	130690	646	Air Toxics Concentrations- Average Benzene Concentrations	Average Concentration	UHF42	106



NYC Public Restrooms

618 lines (617 sloc)	49.5 KB	Raw	Blame	History			
<input type="text"/> Search this file...							
1	Name	Location					
2	100% Playground	Glenwood Road, East 100 & East 101 streets					
3	174th Street Playground	East 174 Street, Stratford Avenue, Bronx River Avenue					
4	227 Street Playground	Bronx Boulevard between East 226 and East 228 streets					
5	Abe Lincoln	East 135 Street, between Madison & 5 avenues					
6	Abigail Playground	East 156 Street, Tinton Avenue					
7	Agnes Haywood Playground	East 215 Street, Barnes Avenue, East 216 Street					
8	Albemarle Park	Albermarle Road & Dahill Road					
9	Albert J. Parham Playground	Adelphi Street, Clermont, DeKalb & Willoughby avenues					
10	Alexander Hamilton Playground	Hamilton Place, West 140 to West 141 streets					
11	Alfred E. Smith Park	Catherine Slip, Madison & South streets					
12	Alice Kornegay Triangle	Lexington Avenue, East 128 & East 129 streets					
13	Allerton Playground	Anrow Avenue, Bouck Avenue, Throop Avenue, Streetedman Place, Allerton Avenue					
14	Alley Park (PS 213)	67 Avenue & 230 Street					
15	Alley Pond Park	Entrance off Grand Central Parkway, includes athletic fields and picnic areas					
16	Alley Pond Park (Alley Athletic Field)	Grand Central Parkway, Winchester Boulevard, &Union Turnpike					



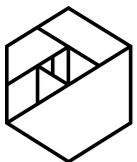
NYC Social Media Usage

5901 lines (5900 sloc) | 456 KB

[Raw](#) [Blame](#) [History](#)   

 Search this file...

Line	Agency	Platform	Url
1	nycgov	Google+	https://plus.google.com/u/0/b/104030911277642419611/104030911277642419611/posts/p/pub
2	TLC	Facebook	http://www.facebook.com/pages/NYC-Taxi-and-Limousine-Commission/101679939900978?v=wall
3	DRIS	YouTube	http://www.youtube.com/nycdeptofrecords
4	Veteran's Affairs	Youtube	http://www.youtube.com/channel/UCi6lvOszb3hHPMUsaNKyXA
5	NYC Water	Youtube	http://www.youtube.com/nycwater
6	NYC Gov	YouTube	http://www.youtube.com/nycgov
7	MOAE	YouTube	http://www.youtube.com/YouCanTooNYC
8	Mayor's Fund	Youtube	http://www.youtube.com/mayorsfundnyc
9	Materials for the Arts	YouTube	http://www.youtube.com/user/MaterialsForTheArts
10	DSNY	YouTube	http://www.youtube.com/nycrecyclemore
11	DOH	Youtube	http://www.youtube.com/user/drinkingsugar
12	DOC	YouTube	http://www.youtube.com/user/OFFICIALNYCDOC
13	DCA	YouTube	http://www.youtube.com/nycdca
14	DOH	Android	Condom Finder
15	DOT	Android	You The Man
16	MOME	Android	MiNY Venor app
17	DOT	Broadcastr	



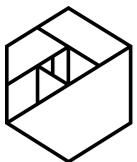
NYC SAT Results

480 lines (479 sloc) | 27.7 KB

[Raw](#) [Blame](#) [History](#)   

 Search this file...

1	DBN	SCHOOL NAME	Num of SAT Test Takers	SAT Critical Read
2	01M292	HENRY STREET SCHOOL FOR INTERNATIONAL STUDIES	29	355
3	01M448	UNIVERSITY NEIGHBORHOOD HIGH SCHOOL	91	383
4	01M450	EAST SIDE COMMUNITY SCHOOL	70	377
5	01M458	FORSYTH SATELLITE ACADEMY	7	414
6	01M509	MARTA VALLE HIGH SCHOOL	44	390
7	01M515	LOWER EAST SIDE PREPARATORY HIGH SCHOOL	112	332
8	01M539	NEW EXPLORATIONS INTO SCIENCE, TECHNOLOGY AND MATH HIGH SCHOOL	159	522
9	01M650	CASCADES HIGH SCHOOL	18	417
10	01M696	BARD HIGH SCHOOL EARLY COLLEGE	130	624
11	02M047	47 THE AMERICAN SIGN LANGUAGE AND ENGLISH SECONDARY SCHOOL	16	395
12	02M288	FOOD AND FINANCE HIGH SCHOOL	62	409
13	02M294	ESSEX STREET ACADEMY	53	394
14	02M296	HIGH SCHOOL OF HOSPITALITY MANAGEMENT	58	374
15	02M298	PACE HIGH SCHOOL	85	423
16	02M300	URBAN ASSEMBLY SCHOOL OF DESIGN AND CONSTRUCTION, THE	48	404
17	02M303	FACING HISTORY SCHOOL, THE	76	353



NYC Water Consumption

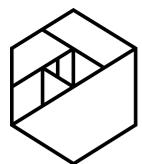
33 lines (32 sloc) | 635 Bytes

[Raw](#) [Blame](#) [History](#)



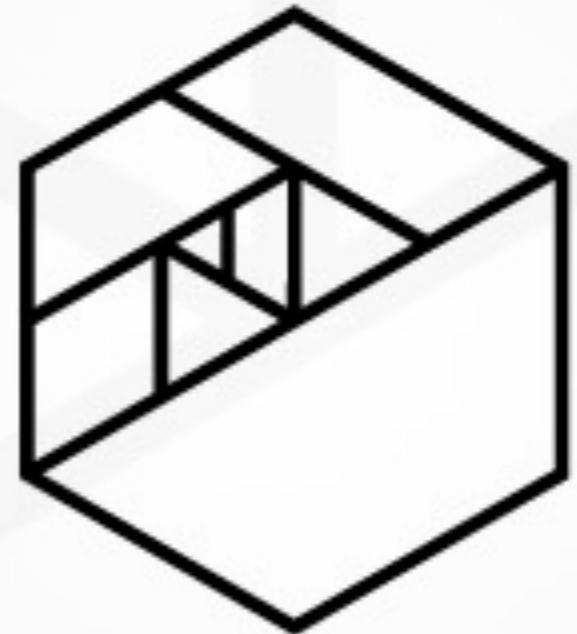
Search this file...

1	Year	NYC Consumption(Million gallons per day)	Per Capita(Gallons per person per day)
2	2009	1007.2	125.8
3	2008	1082.9	135.2
4	2007	1113.9	139.1
5	2006	1068.7	133.5
6	2005	1107.4	138.3
7	2004	1099.5	137.3
8	2003	1093.7	136.6
9	2002	1135.6	141.8
10	2001	1184	154.6
11	2000	1240.4	169.4
12	1999	1237.2	168.9
13	1998	1219.5	166.5
14	1997	1205.5	164.6
15	1996	1297.9	177.2
16	1995	1325.7	181
17	1994	1357.7	185.4



Thanks!

11.30.2015

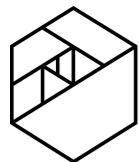
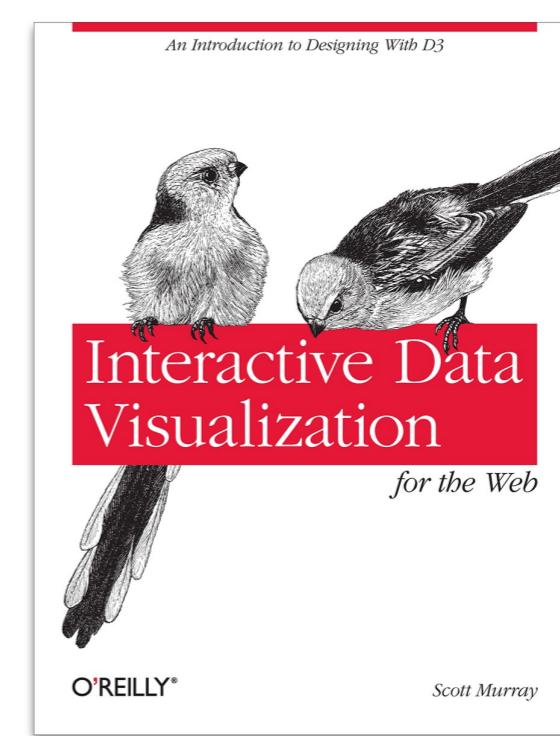
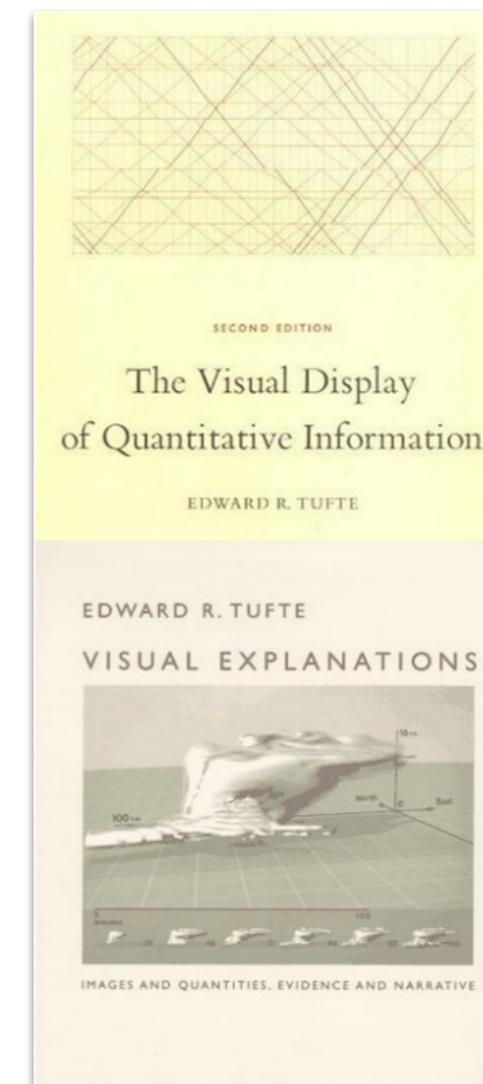
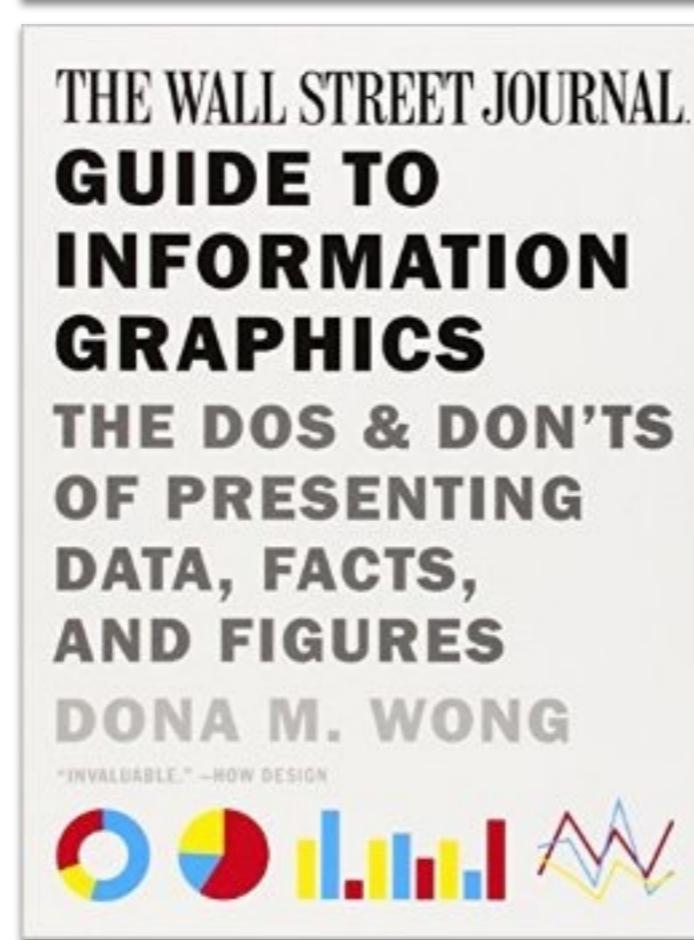
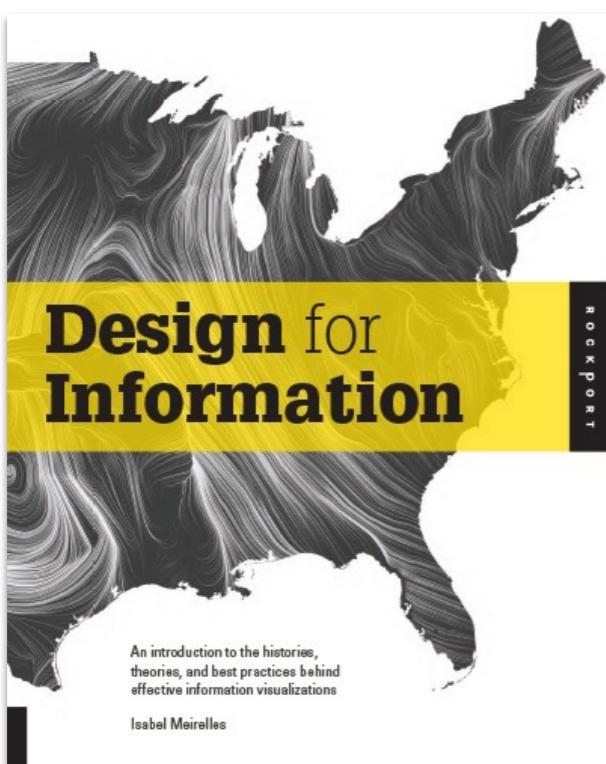
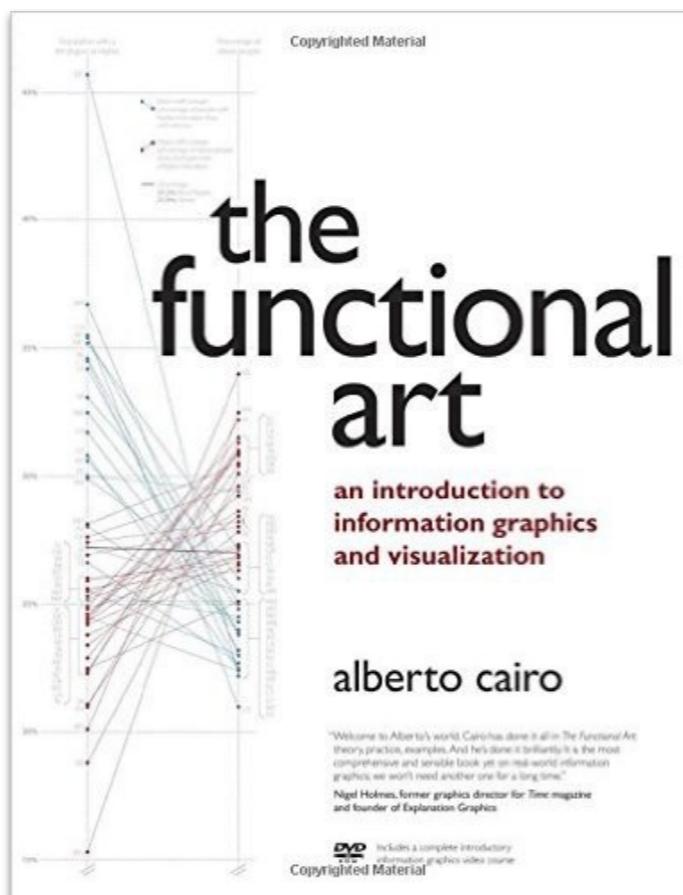
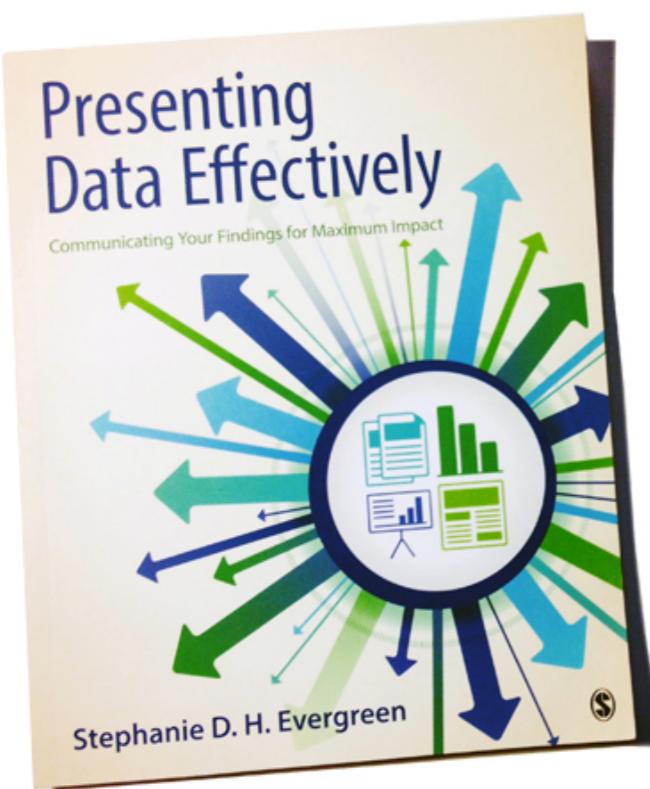


METIS

footnotes



Further Reading



- Flowing Data: <http://flowingdata.com/>
- Visualizing Data: <http://www.visualisingdata.com/>
- Edward Tufte: <http://www.edwardtufte.com/tufte/>
- Alberto Cairo: <http://www.thefunctionalart.com/>

