Ethical and Deceptive Visualization

Michael Correll
Tableau Research

Questions

What Makes A Visualization *Deceptive?*

What Makes a Visualization *Ethical*?

Questions

What Makes A Visualization *Deceptive?*

What Makes a Visualization *Ethical*?

"A great introduction to the use of statistics, and a great refresher for anyone who's already well versed in it." —BILL GATES

HOW TO LIE WITH STATISTICS

DARRELL HUFF

Illustrated by Irving Geis

An Honest-to-Goodness Bestseller

HOW TO LIE WITH MAPS

3rd Edition

MARK MONMONIER

Bad Visualizations

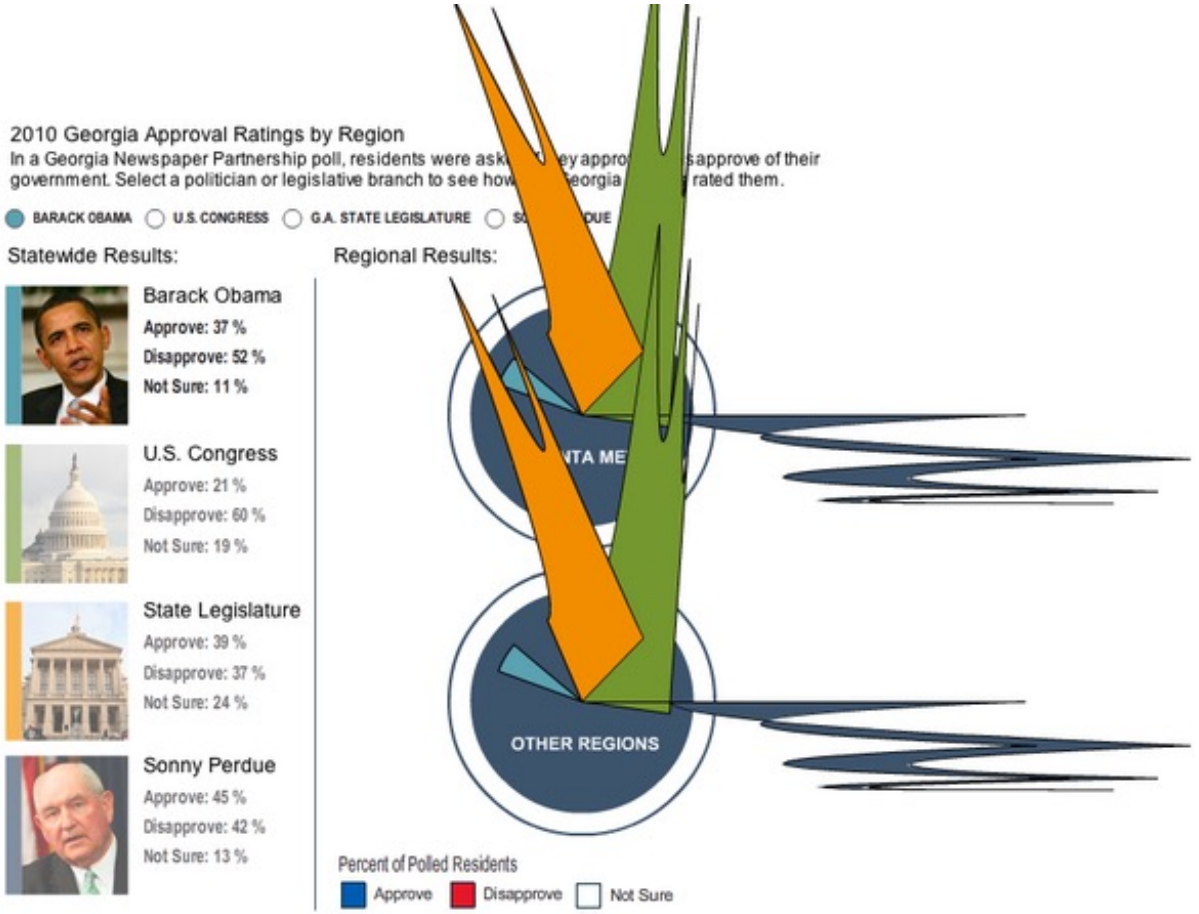
Incorrect Visualizations

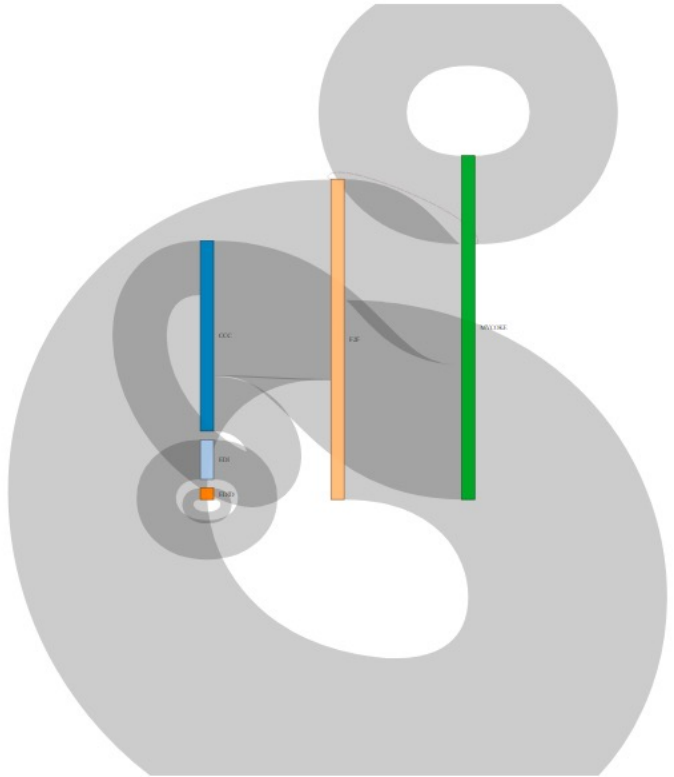
Illegible Visualizations

Bullshit Visualizations

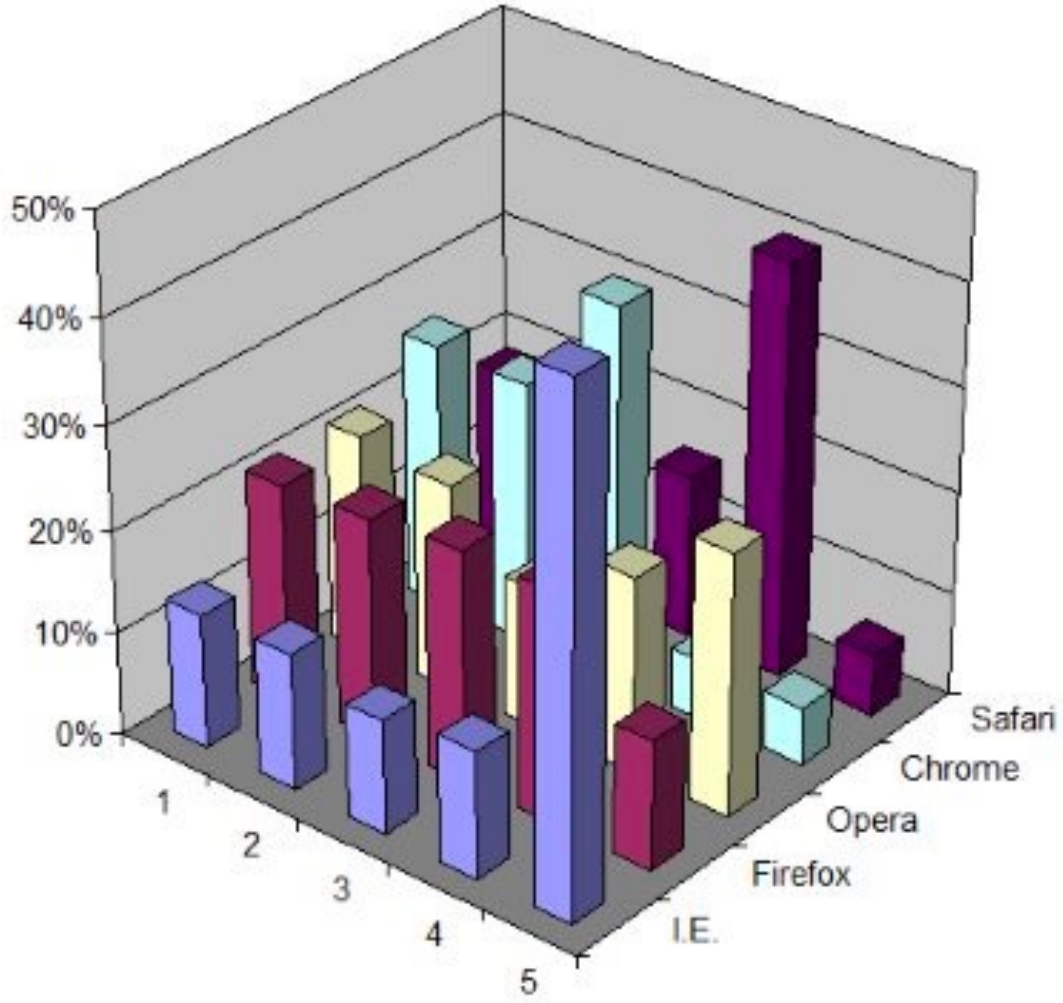
Deceptive Visualizations

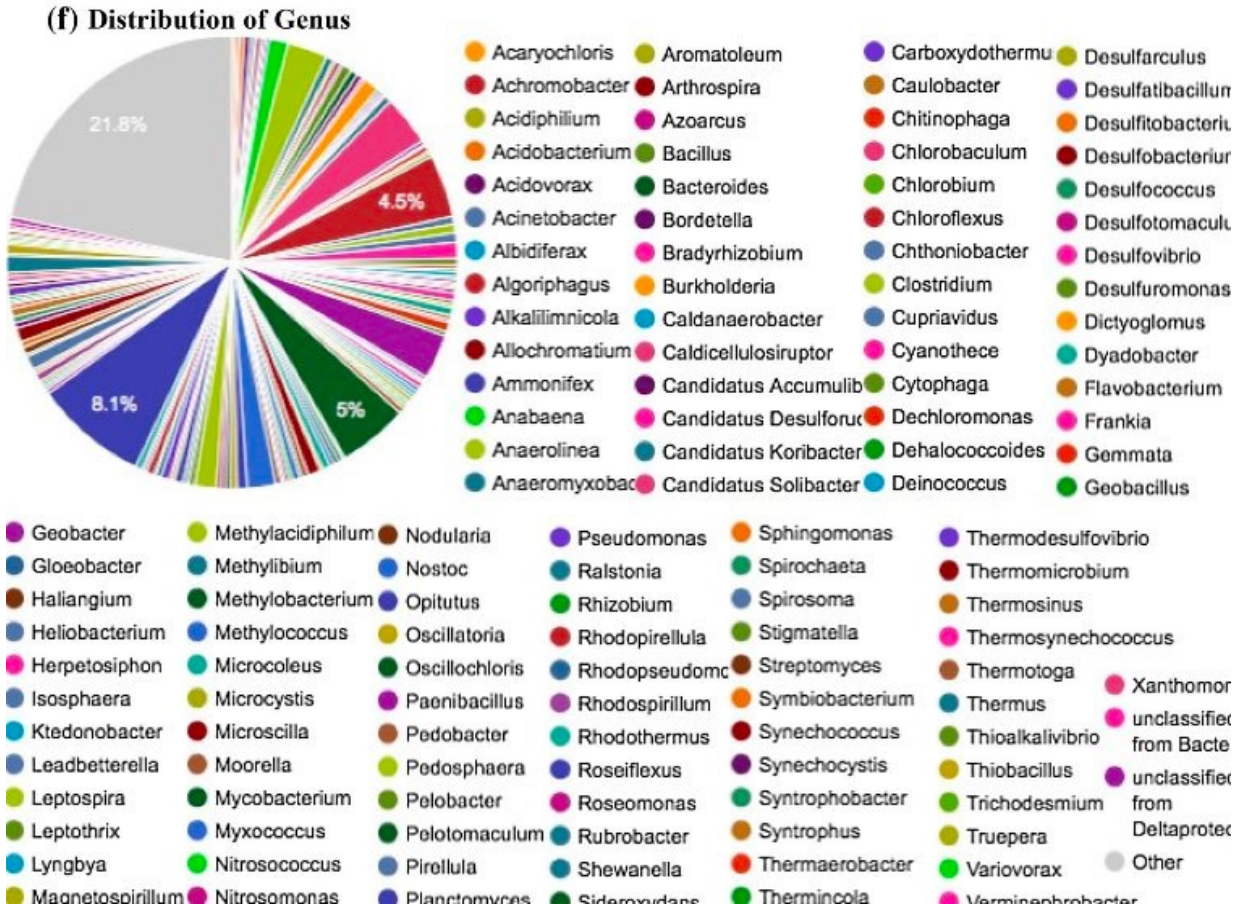
Incorrect Visualization



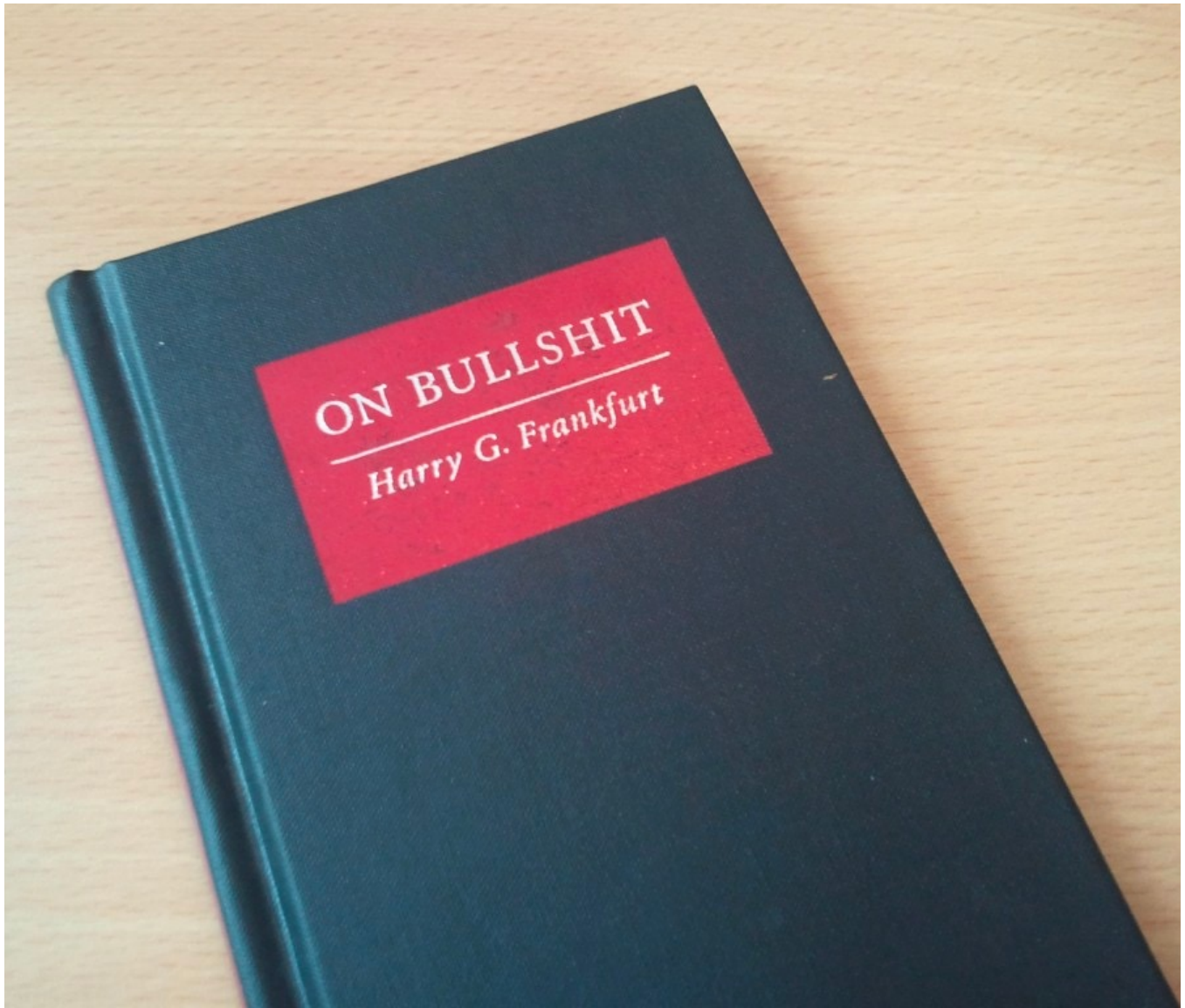


Illegible Visualization





Bullshit Visualization



Lie:

"No, officer, I wasn't speeding"

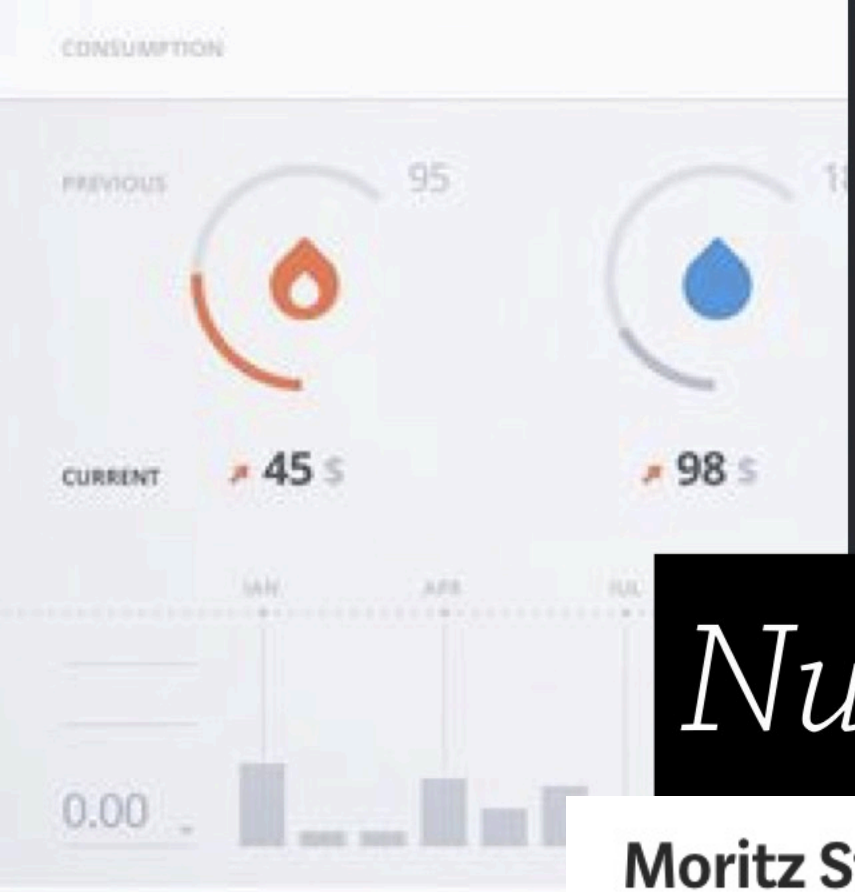
(you know the truth, but intentionally say something you know is untrue)

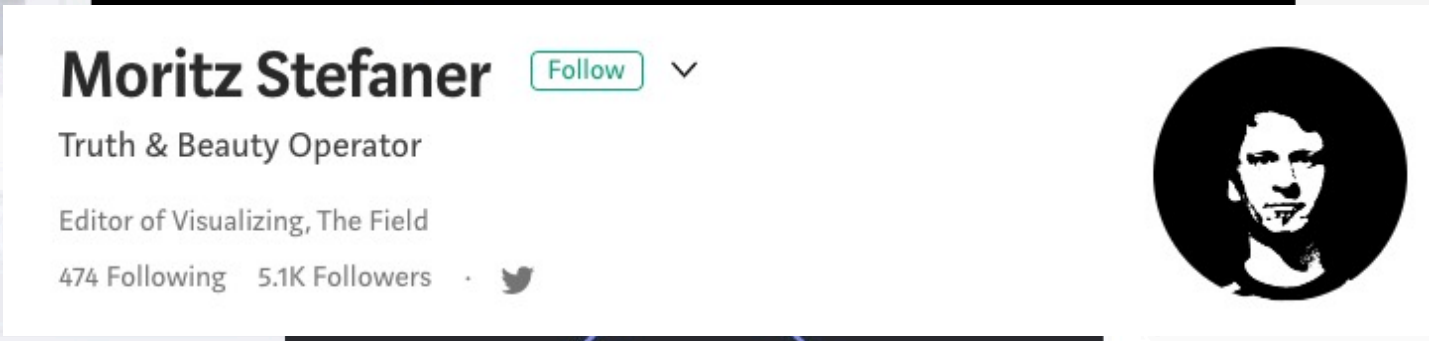
Bullshit:

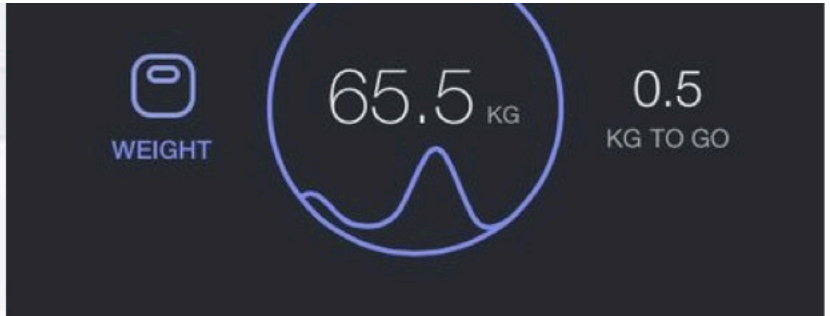
"The party was lame anyways, it's good I wasn't invited"

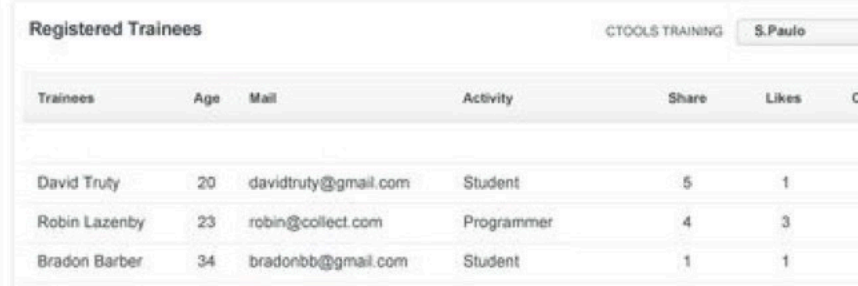
(you don't know or don't care about the truth, but intentionally say something you hope is persuasive)

Number decoration



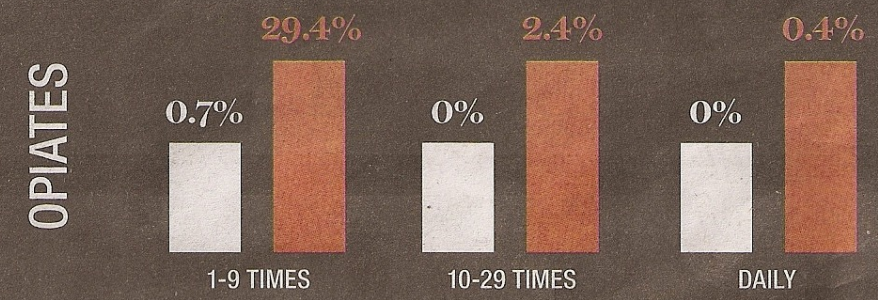


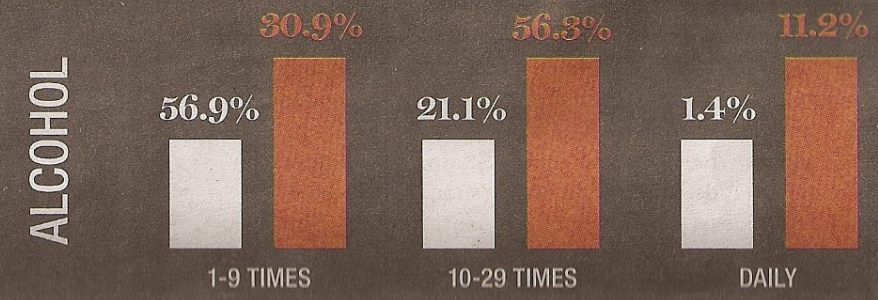


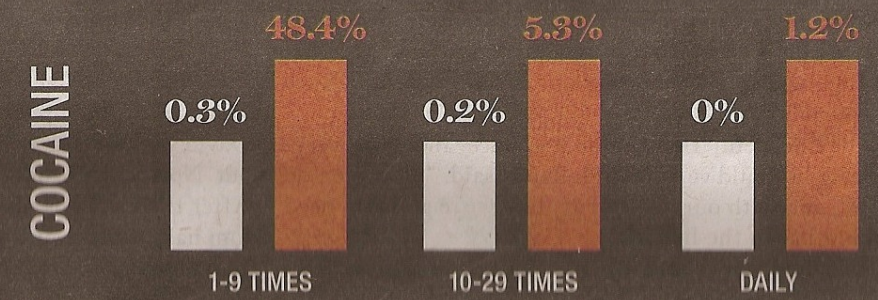


BY THE NUMBERS

The National Collegiate Health Assessment was taken by 1,000 UCSB students in Spring 2009. Participants were asked how frequently they used substances over the past 30 days. Numbers in white reflect actual student use, while red numbers indicate perceived substance use. The average age of participants was 20 years and approximately 99 percent were full-time students.







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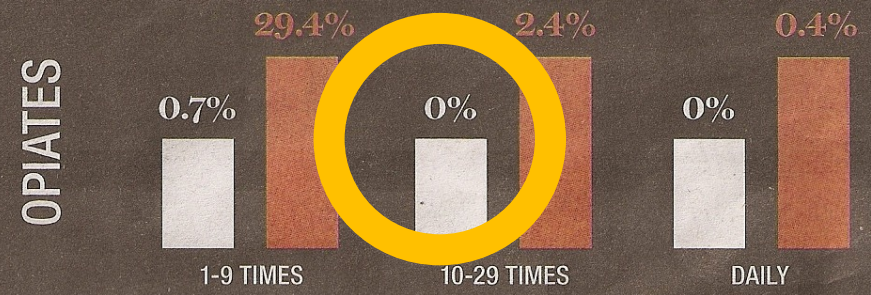

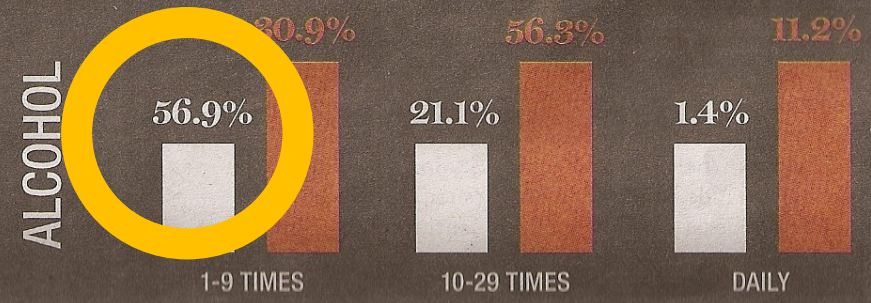

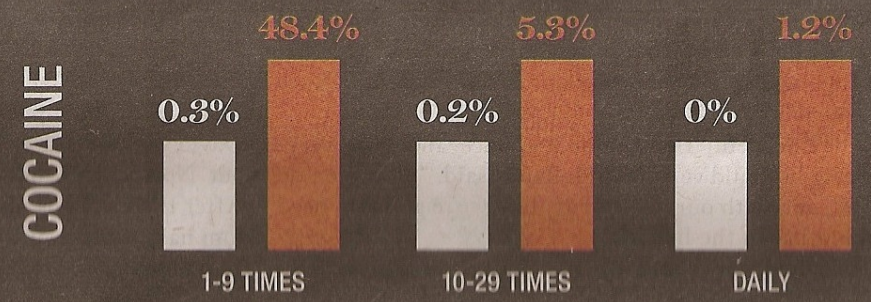

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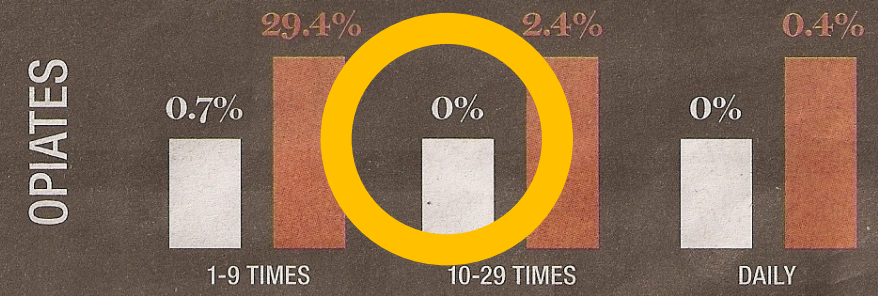
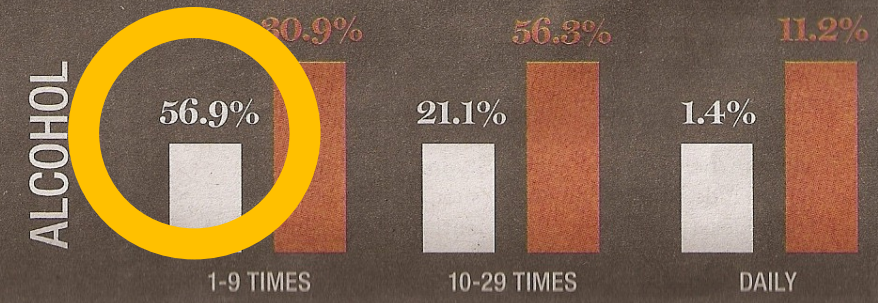
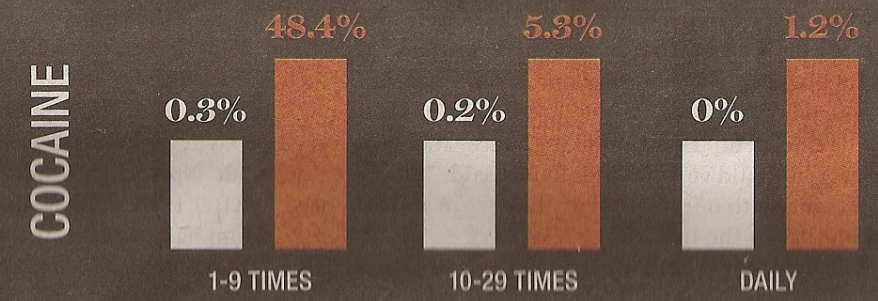
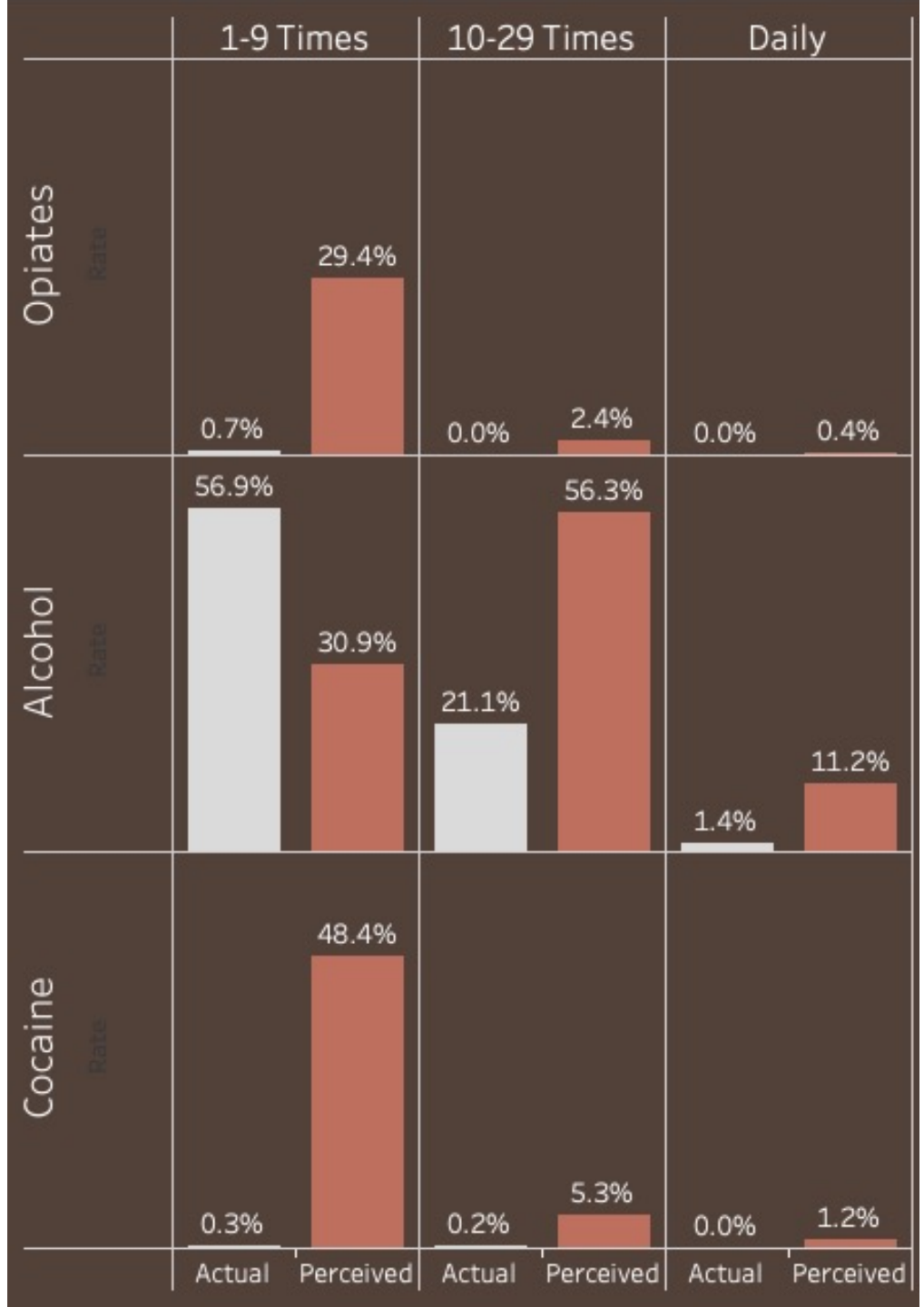
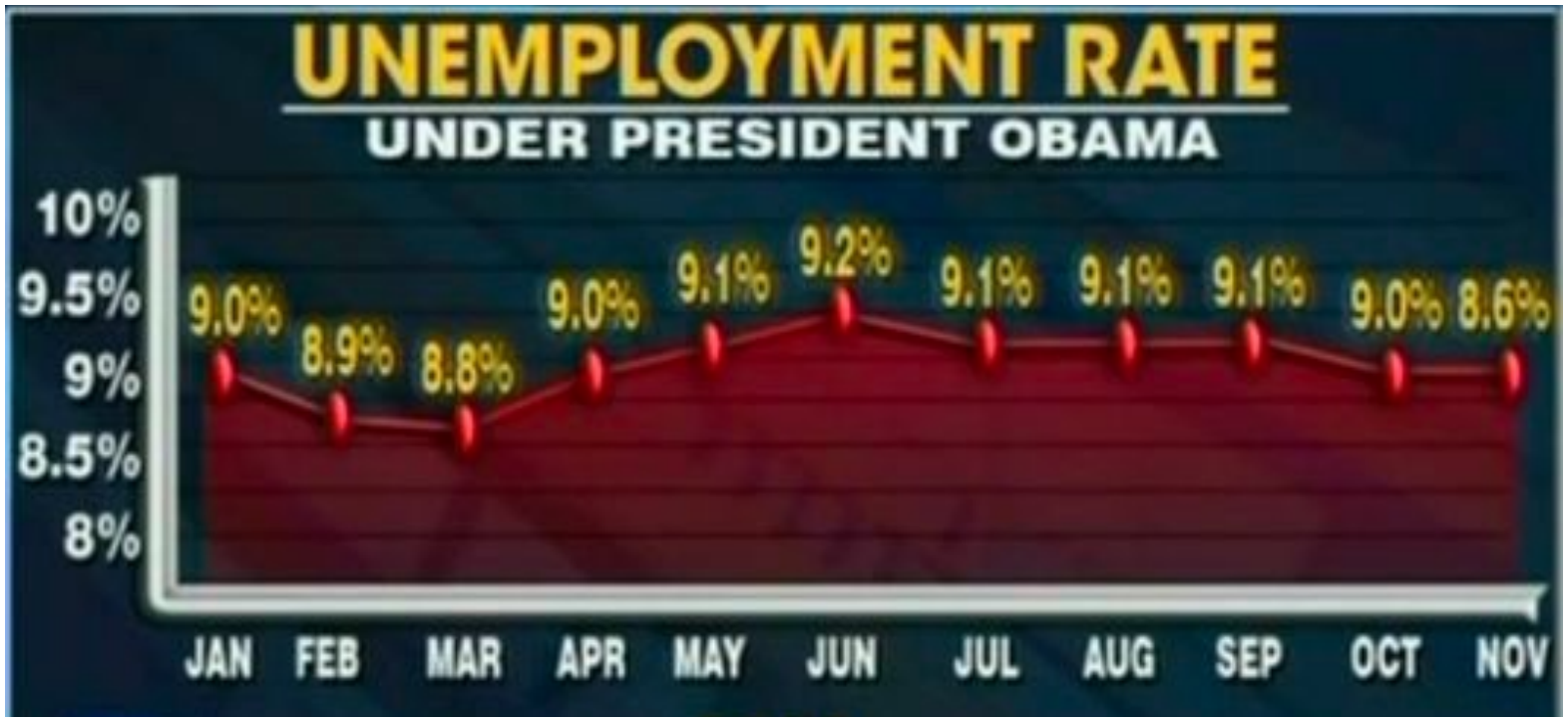
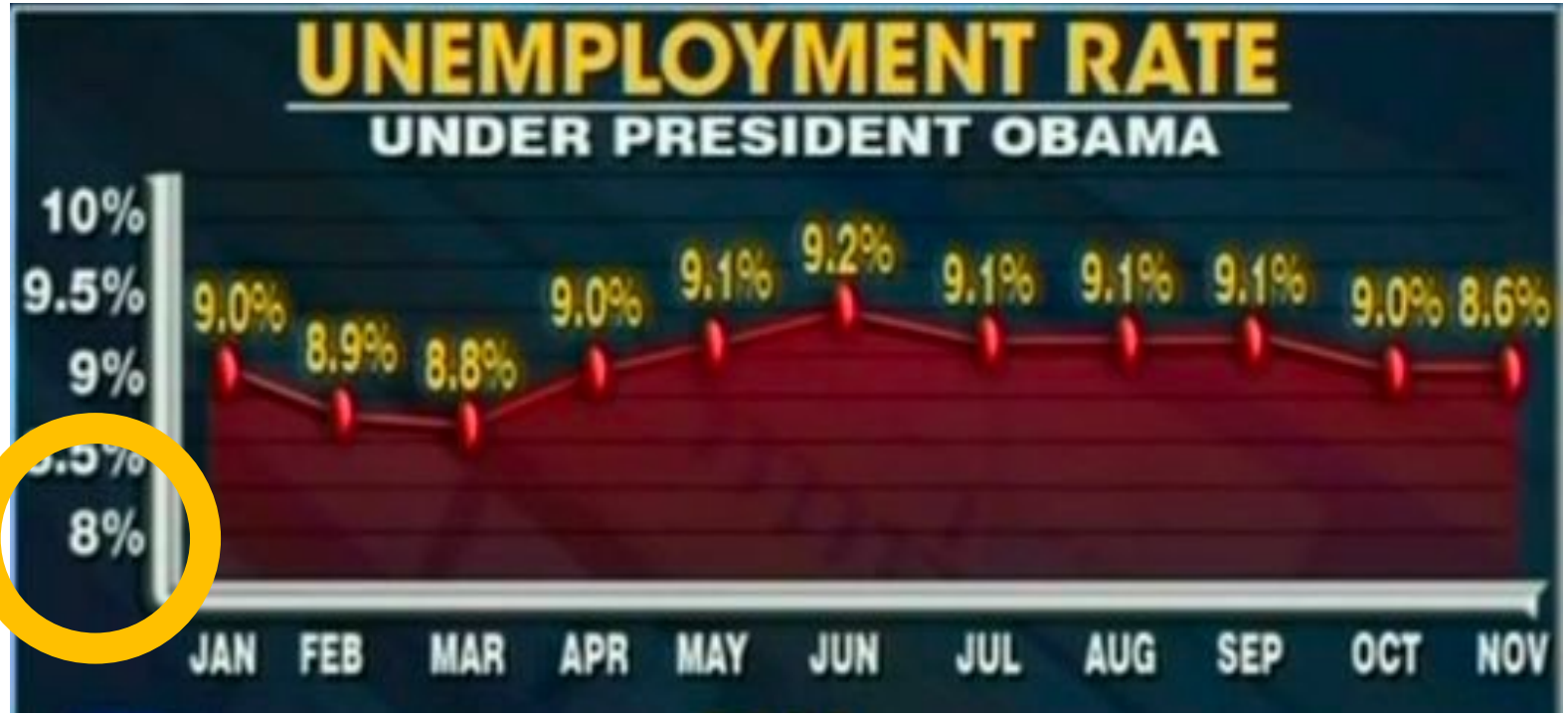









UNEMPLOYMENT RATE
UNDER PRESIDENT OBAMA
10%
9.5%
9%
8.5%
8%
9.0%
8.9%
8.8%
9.0%
9.1%
9.2%
9.1%
9.1%
9.1%
9.0%
8.6%
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV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MAY
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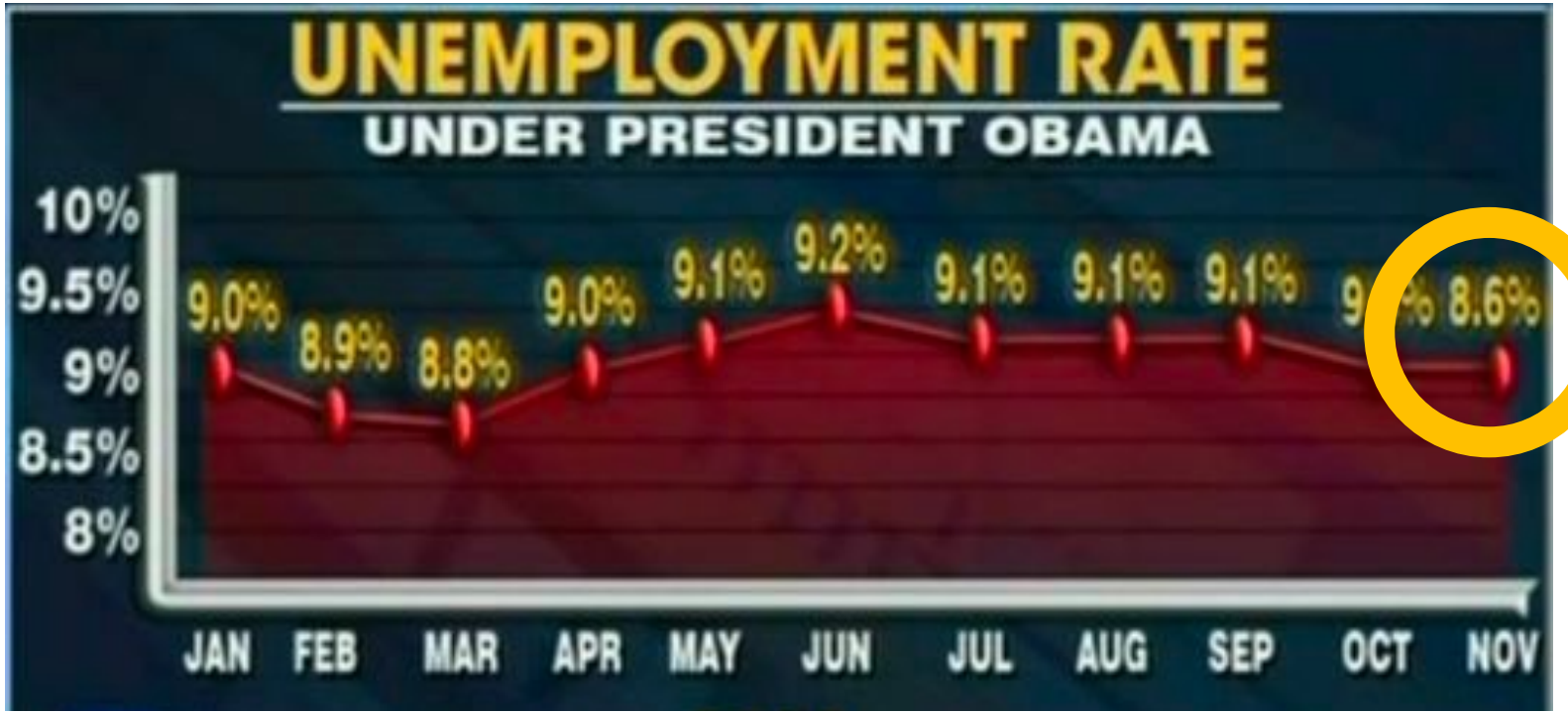
AUG
SEP
OCT
NOV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10%
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9.2%
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9.1%
9.1%
8.6%
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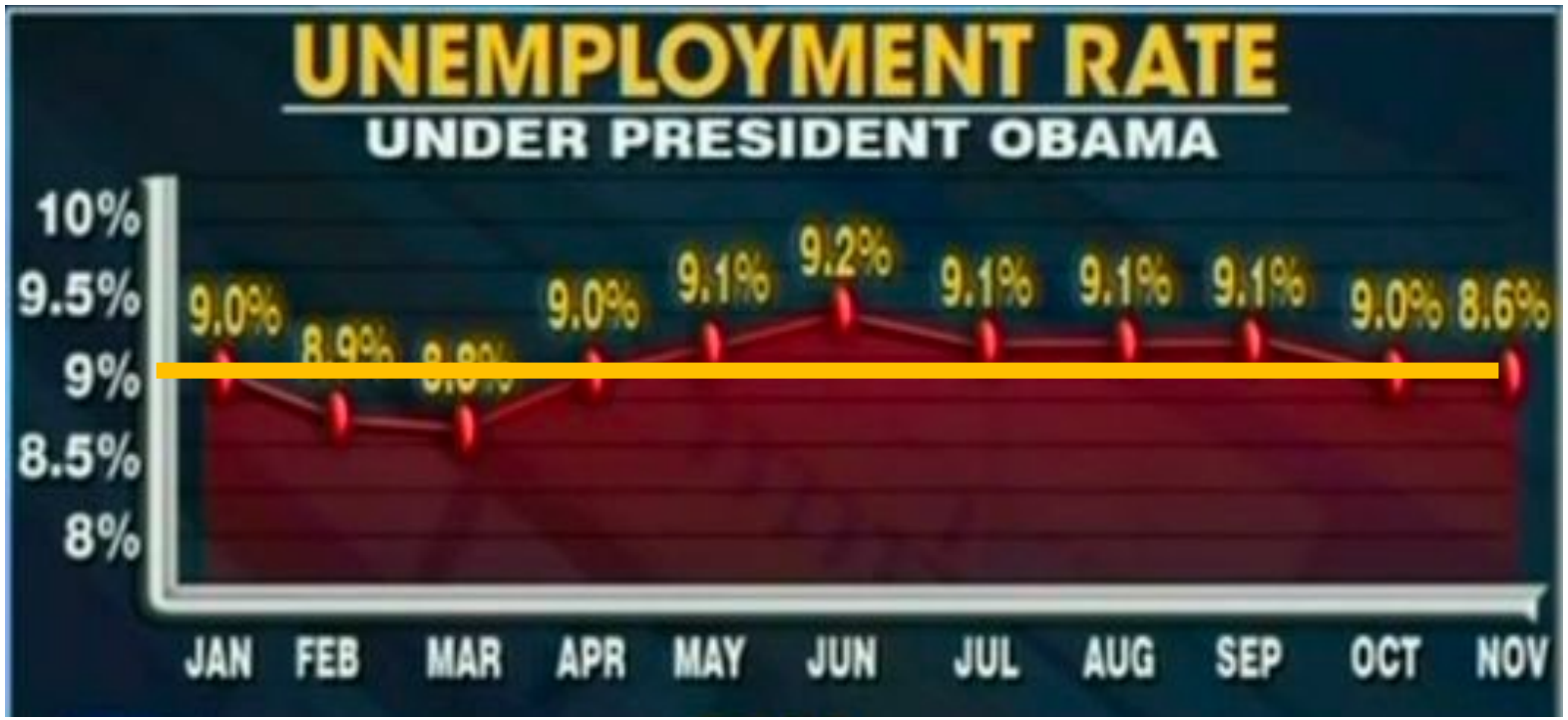
SEP
OCT
NOV


UNEMPLOYMENT RATE
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10%
9.5%
9%
8.5%
8%
9.0%
9.0%
9.1%
9.2%
9.1%
9.1%
9.1%
9.0%
8.6%
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
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NOV

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10%
9.5%
9%
8.5%
8%
9.0%
8.9%
8.8%
9.0%
9.2%
9.1%
9.1%
9.0%
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JAN
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10%
9.5%
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8.8%
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9.1%
9.1%
9.0%
8.6%
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FEB
MAR
APR
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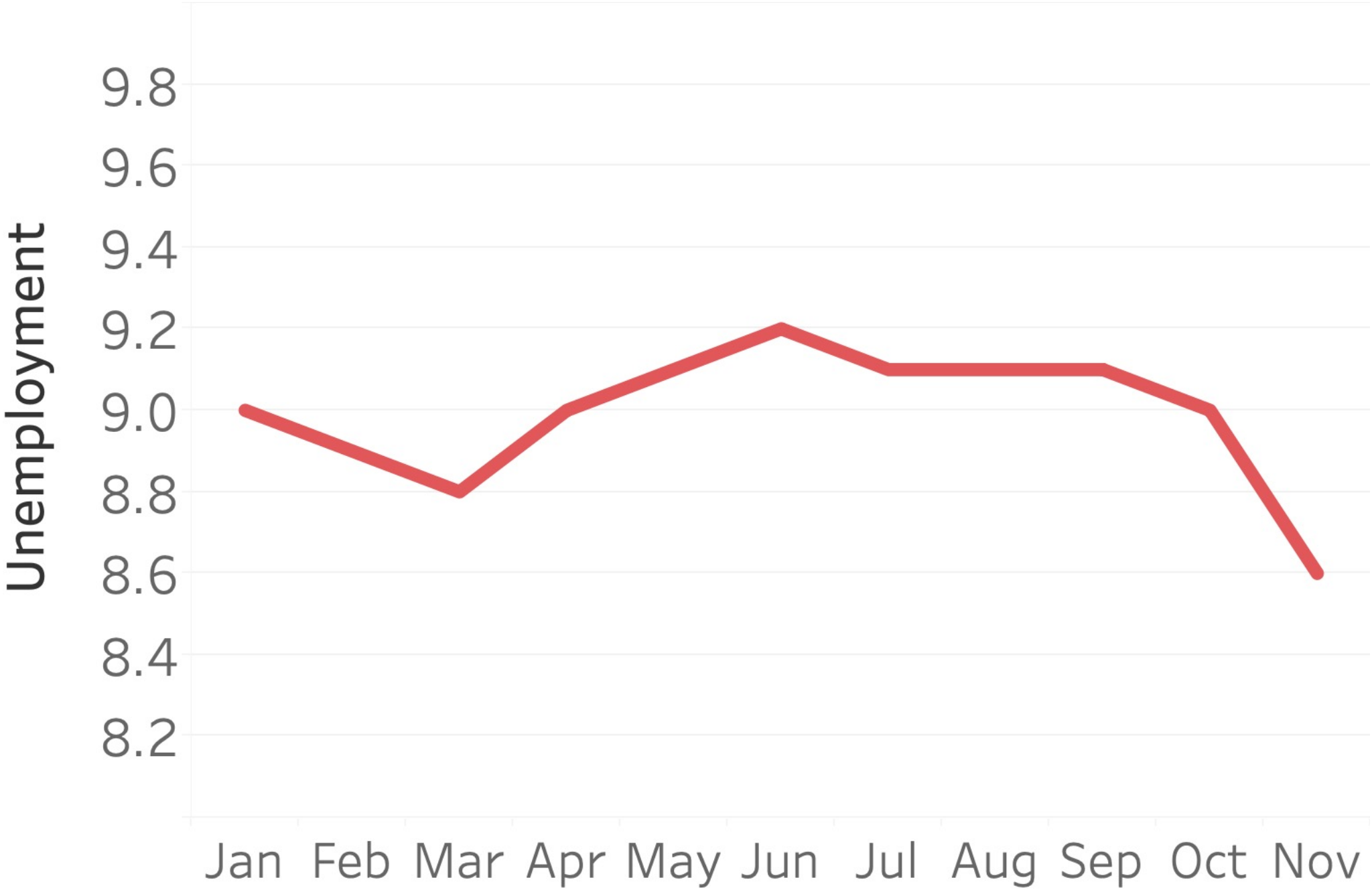
SEP
OCT
NOV

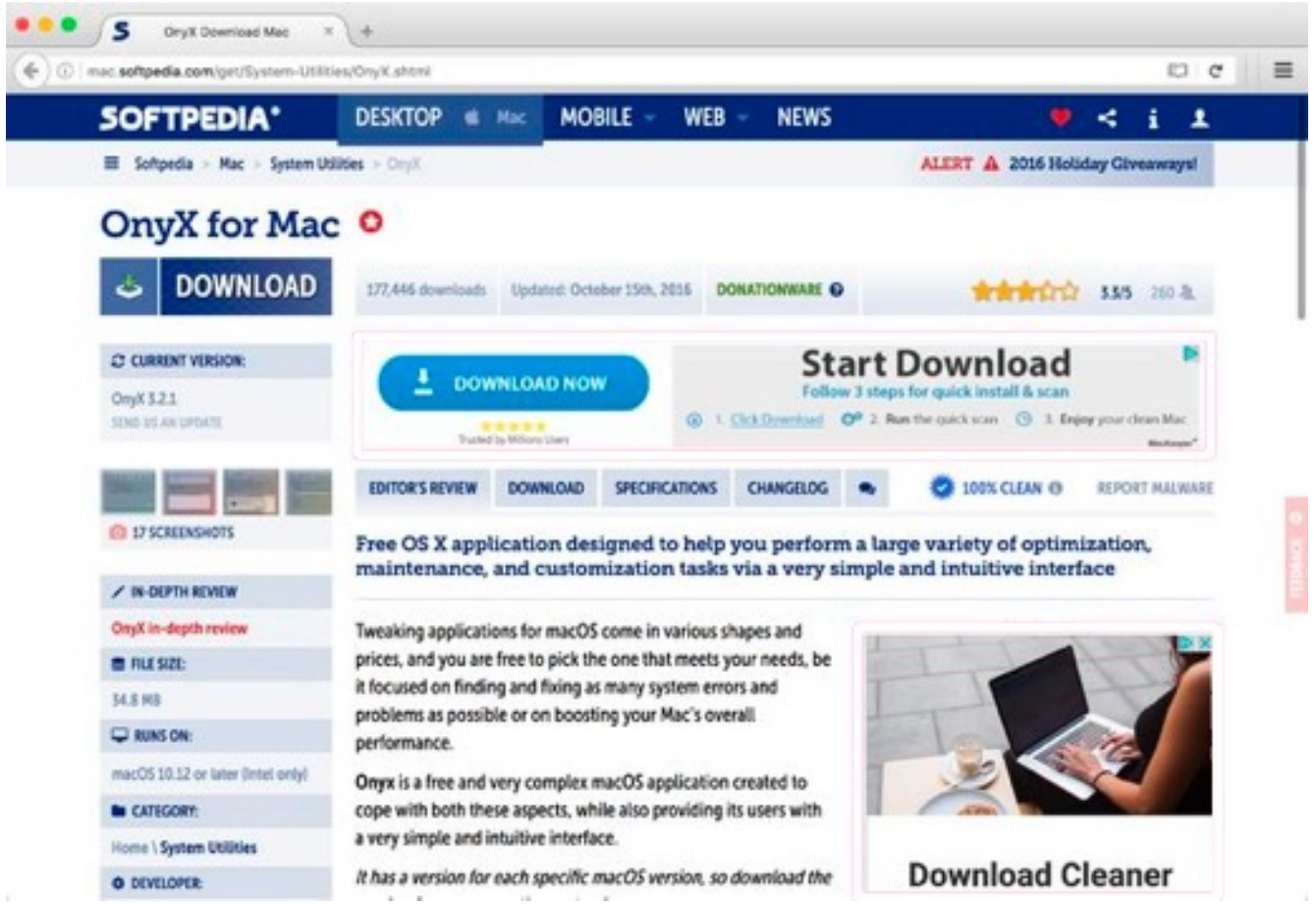

Unemployment
9.8
9.6
9.4
9.2
9.0
8.8
8.6
8.4
8.2
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov

Deceptive Visualization

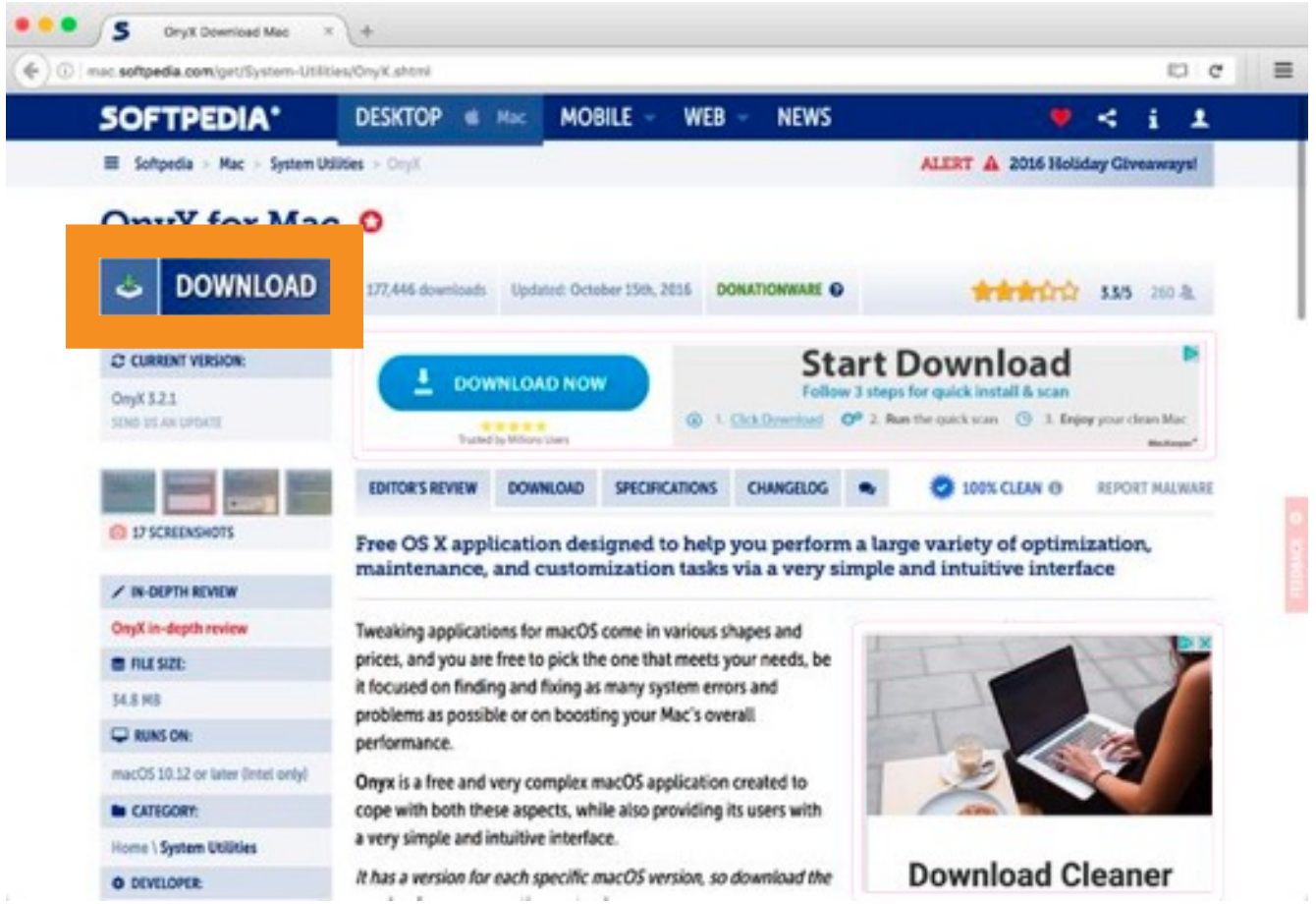
DARK PATTERNS

(They're Everywhere)

Dark Patterns



Dark Patterns



Zone Kaiwei Ni factory

Sponsored

80% OFF

BLACK FRIDAY SALE

Shop Now

Dark Patterns in Visualization

Lie Factors

Scale Manipulation

Convention Manipulation

Metric Manipulation

Dehumanization

Tufte's Lie Factor

$$\text{Lie Factor} = \frac{\text{The size of the effect shown in the graphic}}{\text{The size of the effect in the data}}$$

LF ≅ 1 Good!
LF >> 1 or LF << 1 Bad!

Tufte's Lie Factor

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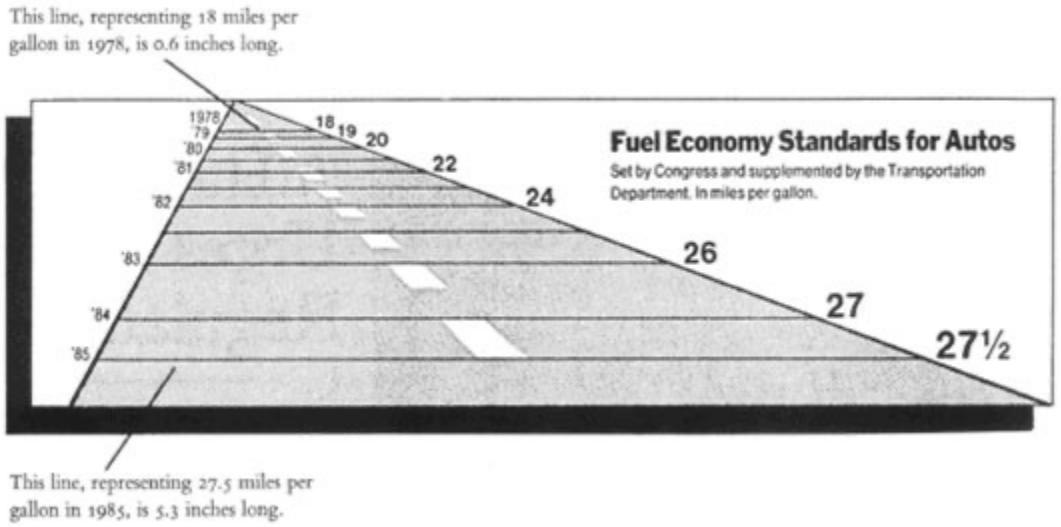


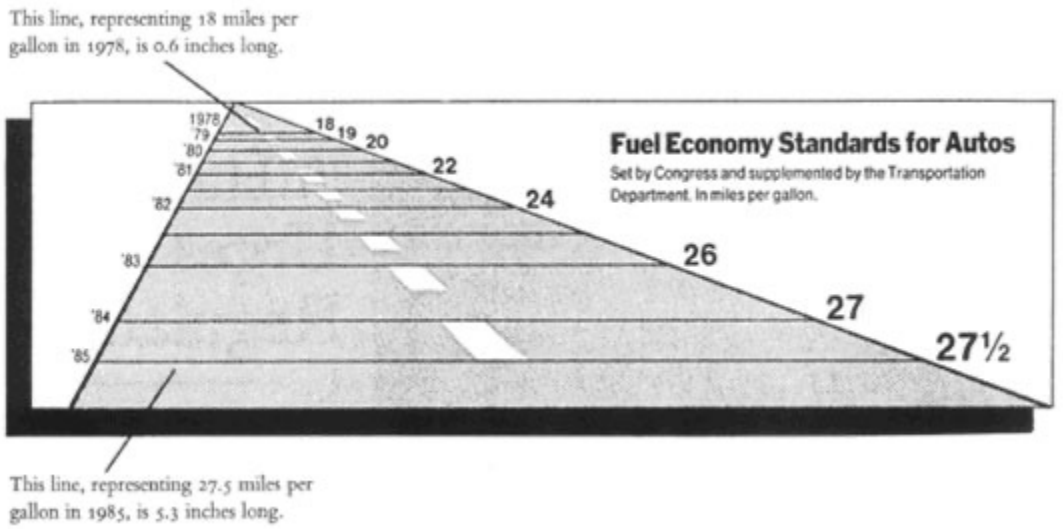
Tufte's Lie Factor

$$\text{Lie Factor} = \frac{\text{The size of the effect shown in the graphic}}{\text{The size of the effect in the data}}$$

LF ≅ 1 Good!
LF >> 1 or LF << 1 Bad!

LF = [(5.3 – 0.6)/0.6] / [(27.5-18)/18]

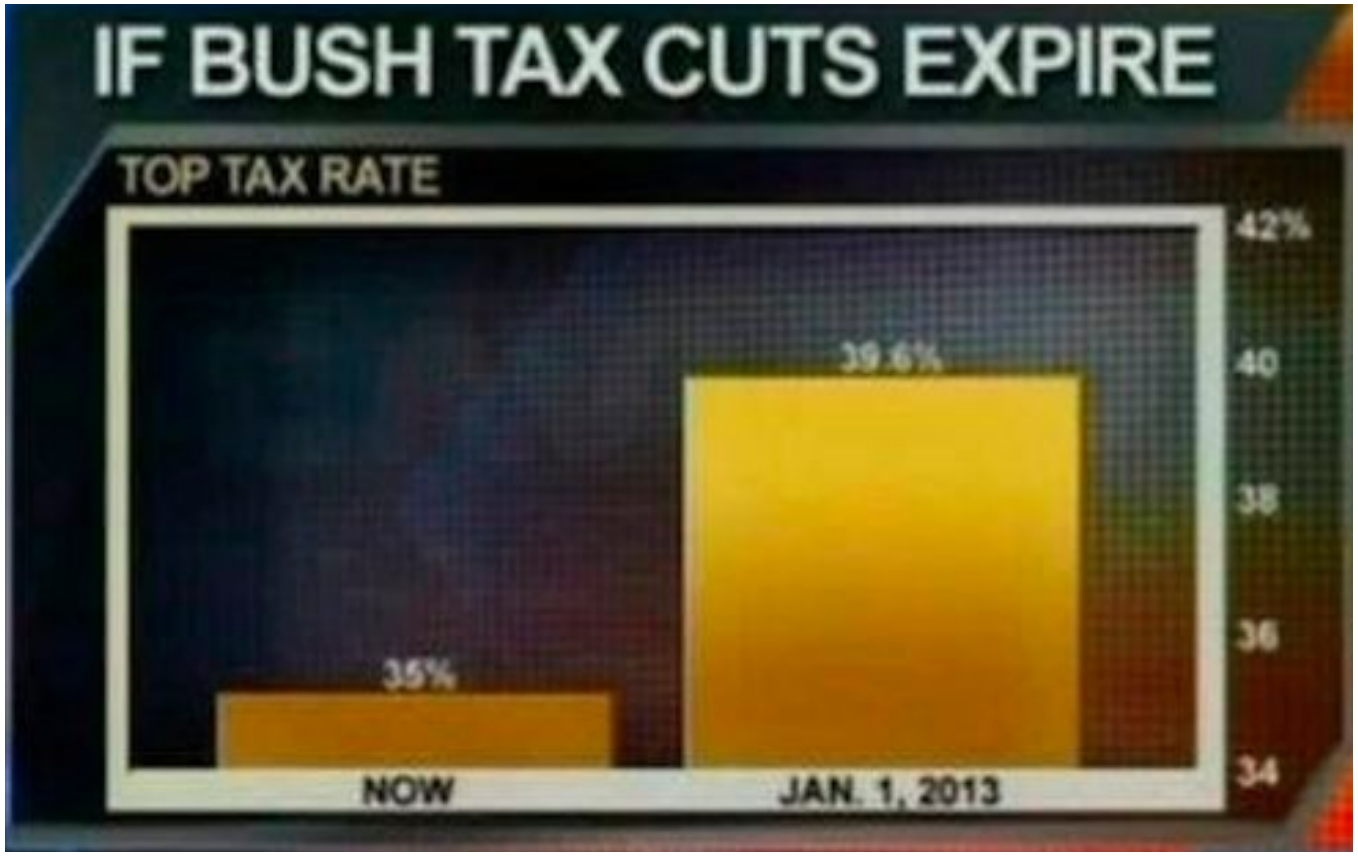
LF = **14.8!**

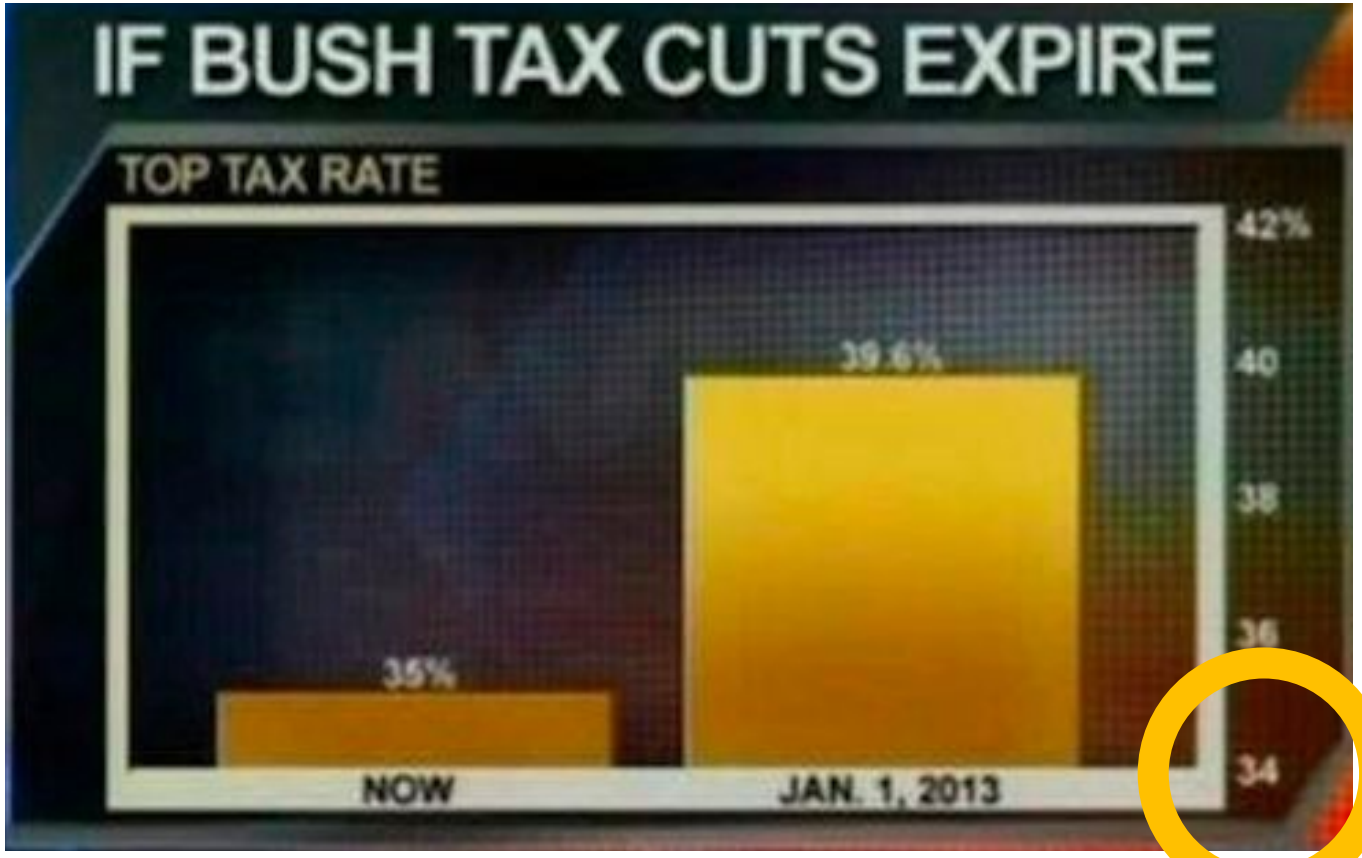


Lie Factor

Distorting the apparent size of the effect in your data, often through choosing ambiguous or non-standard encodings.

Scale Manipulation


IF BUSH TAX CUTS EXPIRE
TOP TAX RATE
42%
40
38
36
34
39.6%
35%
NOW
JAN. 1, 2013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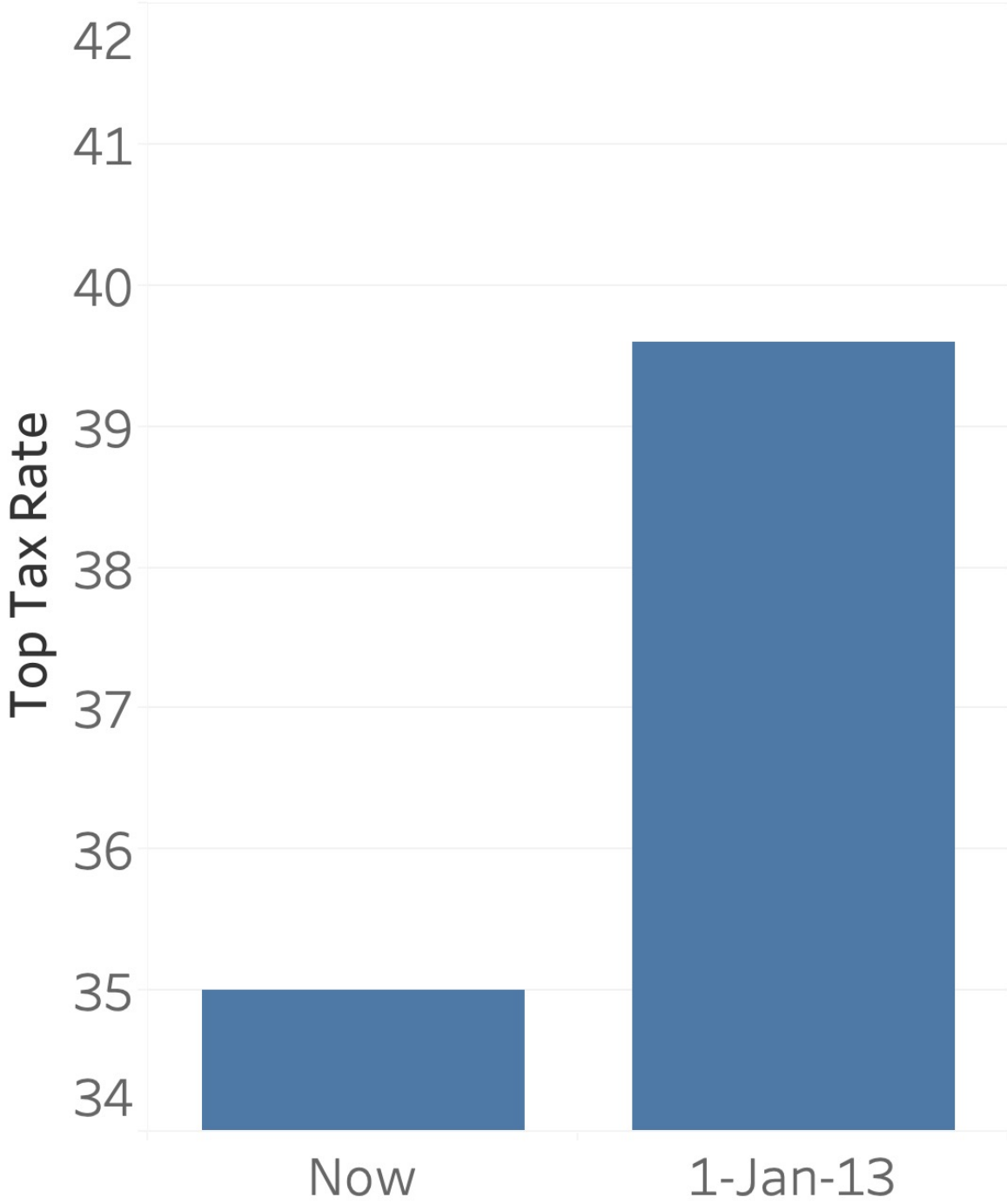
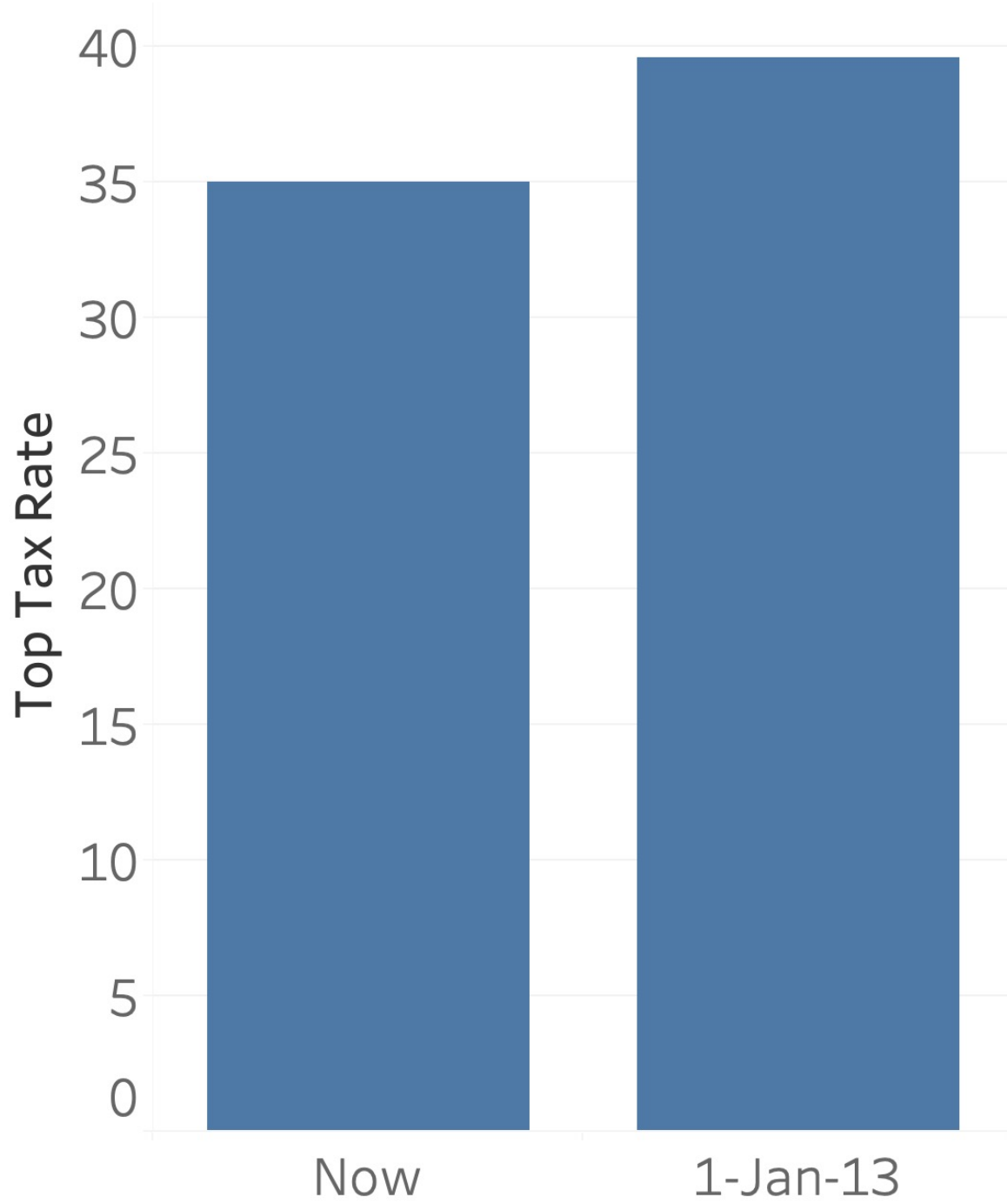
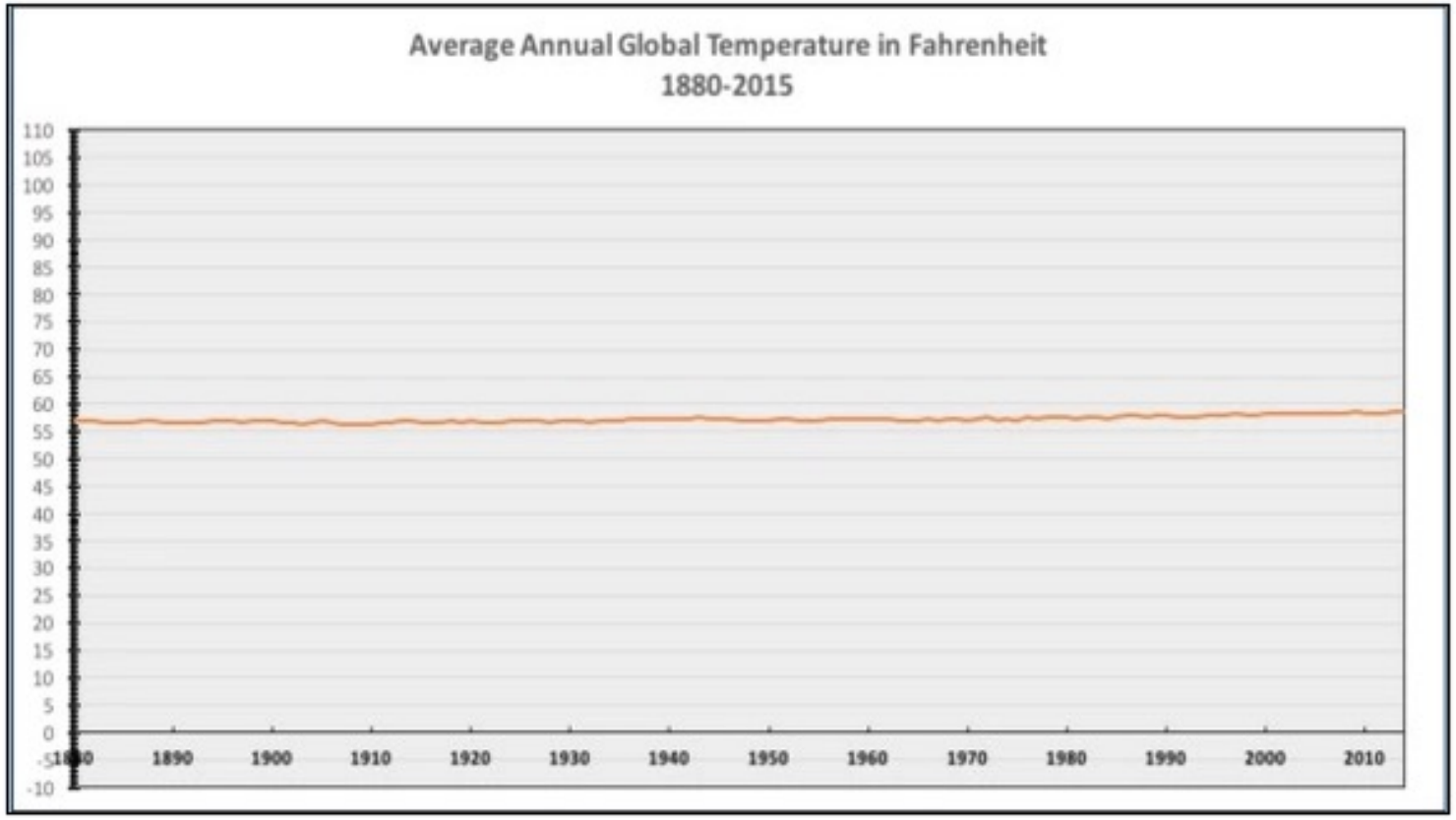
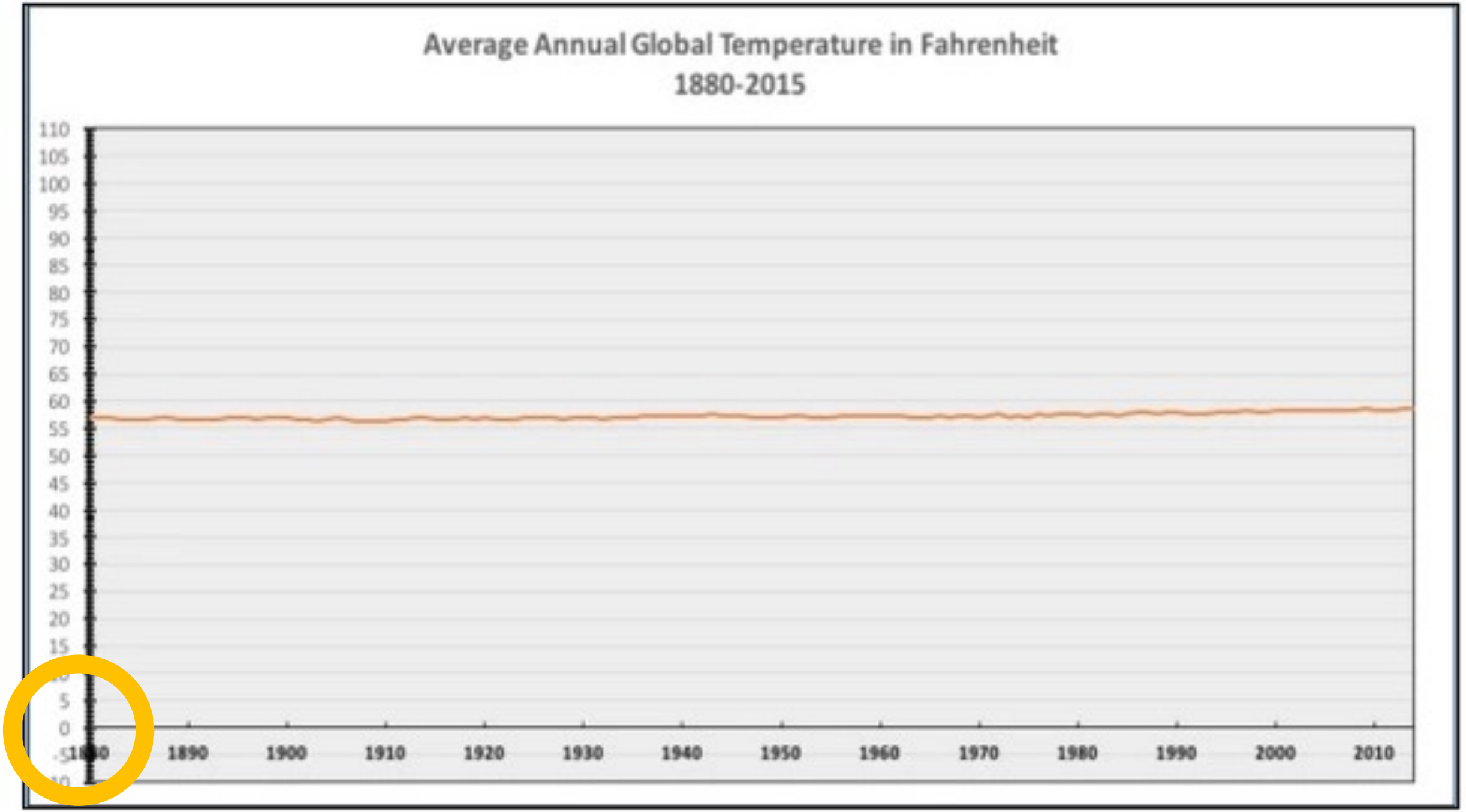

Top Tax Rate
42
41
40
39
38
37
36
35
34
Now
1-Jan-13

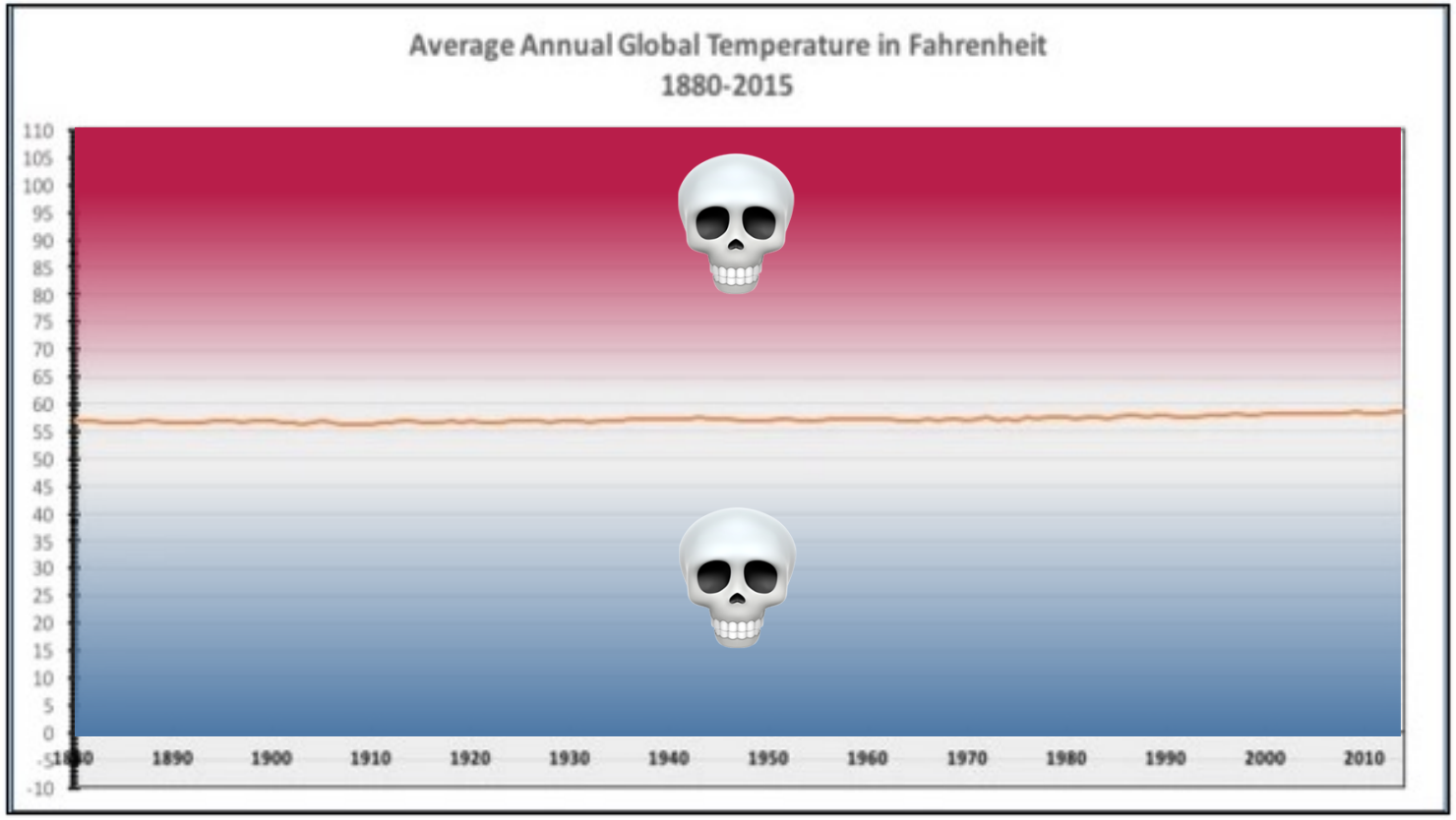

Top Tax Rate
40
35
30
25
20
15
10
5
0
Now
1-Jan-13

“The Only Climate Change Graph You’ll Ever Need”

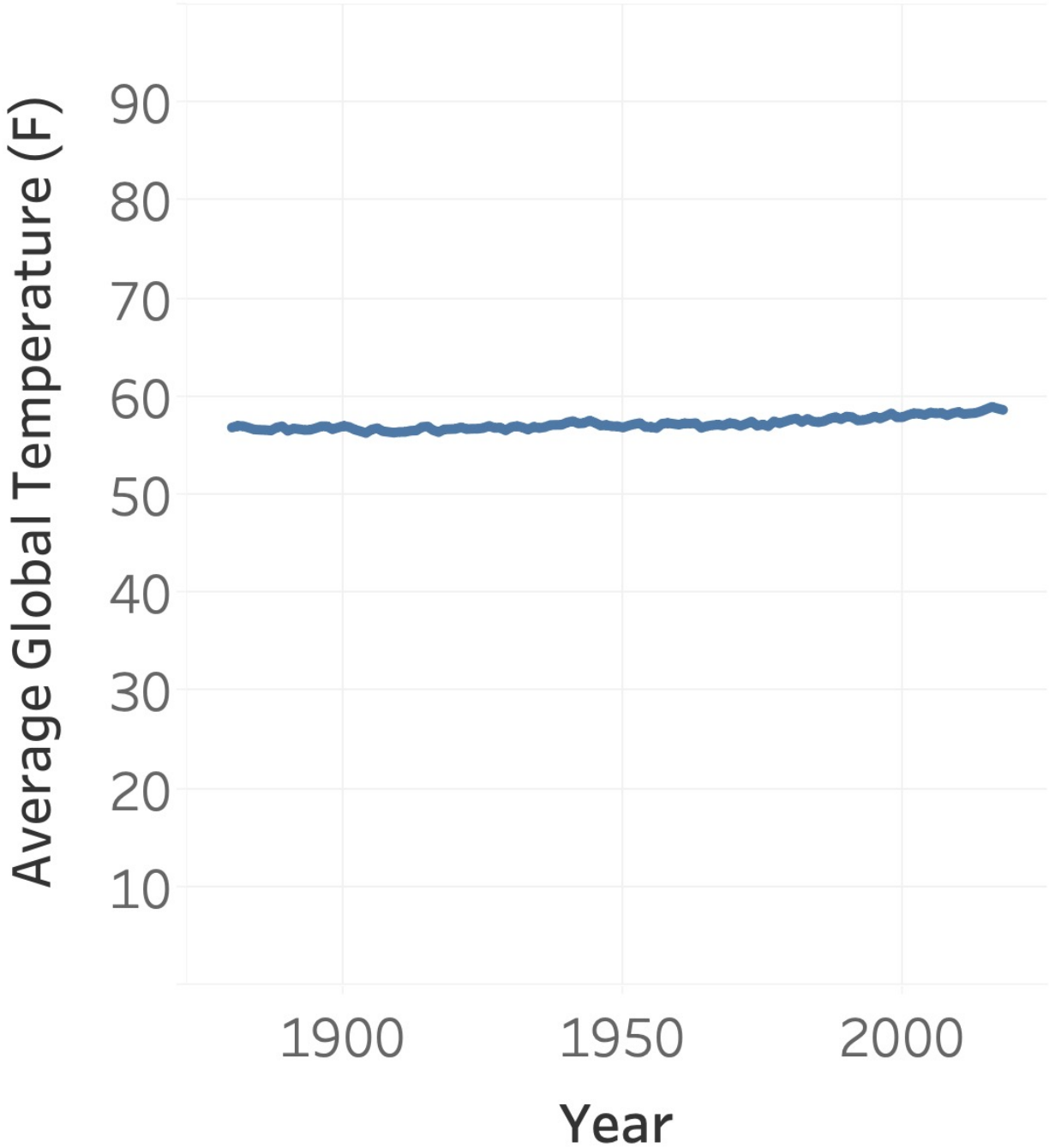



Average Annual Global Temperature in Fahrenheit
1880-2015
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
5
0
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010

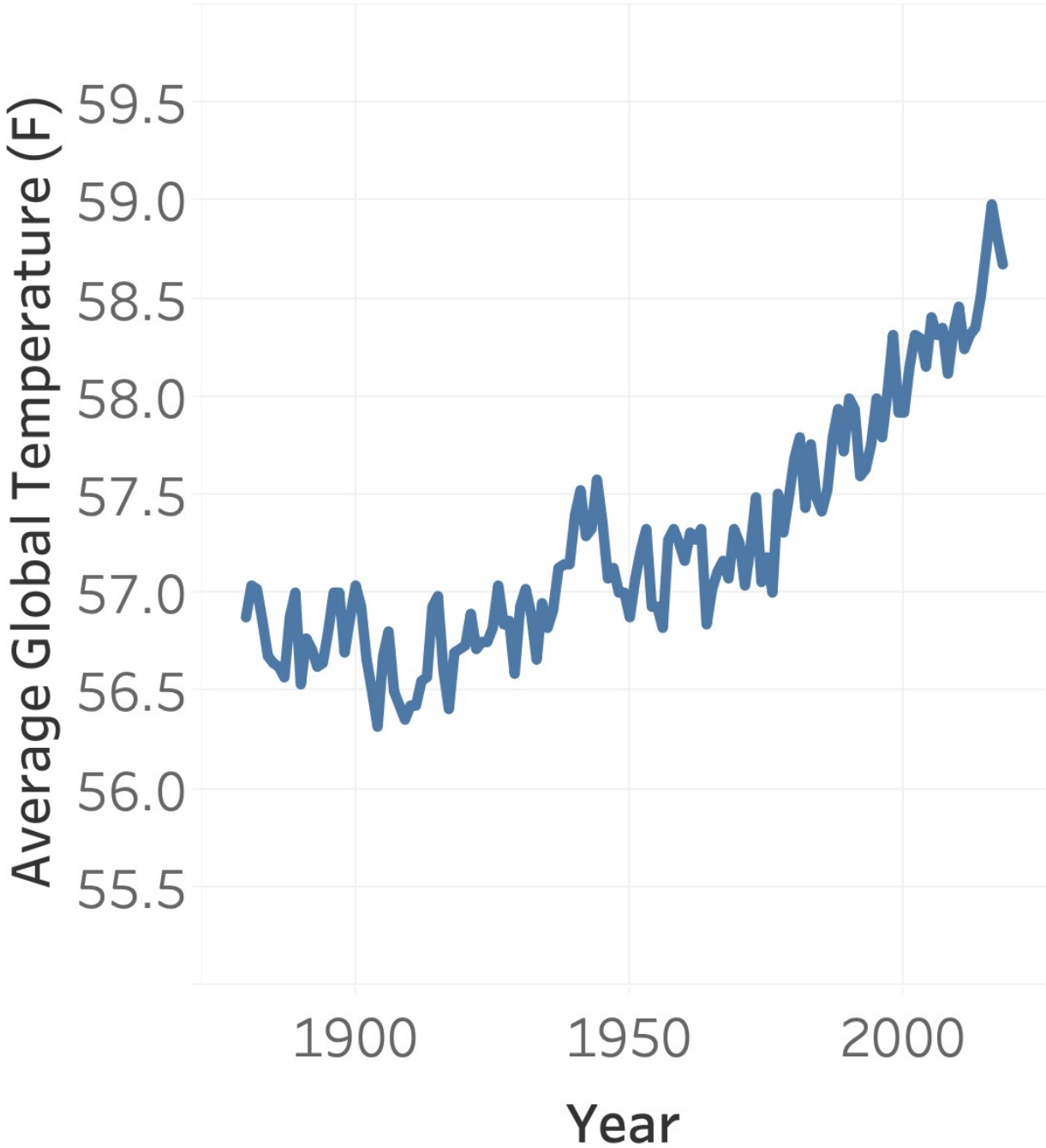
“The Only Climate Change Graph You’ll Ever Need”



NRO



NRO (Truncated)

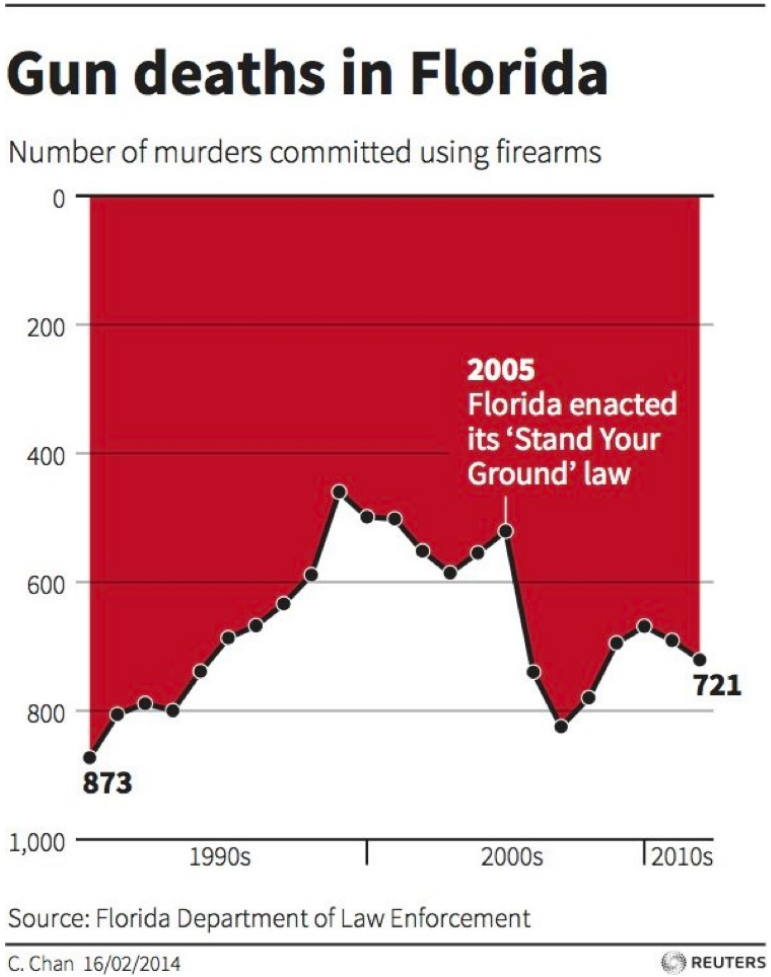


Scale Manipulation

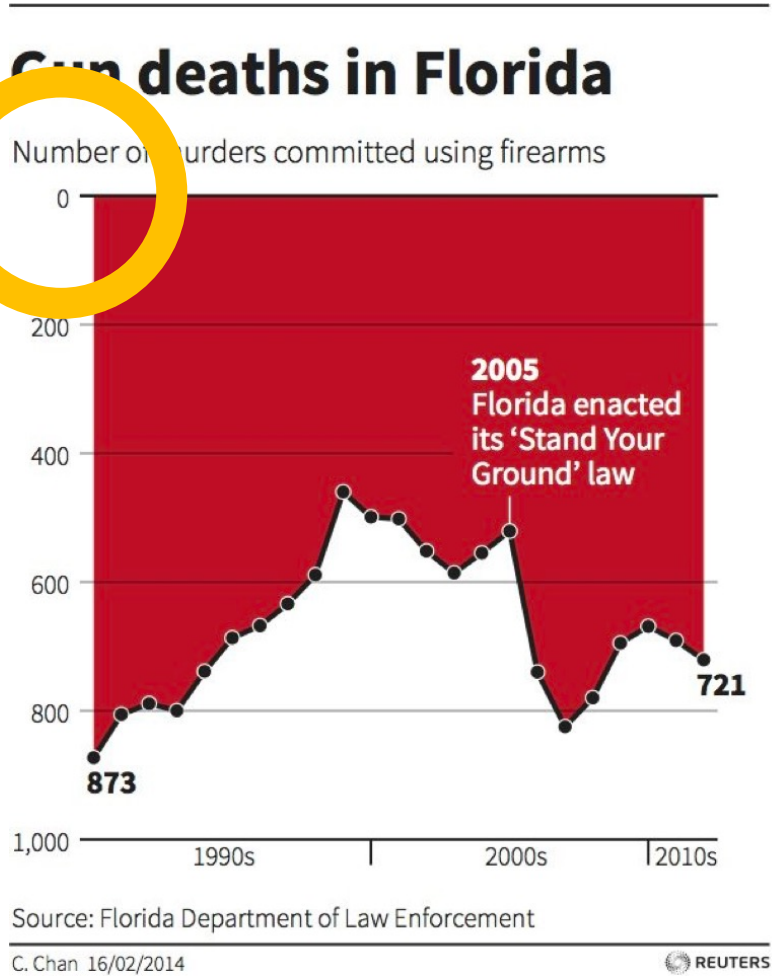
Changing with the scales of your chart to minimize, magnify, or invert the change in the data.

Convention Manipulation

Convention Manipulation



Convention Manipulation



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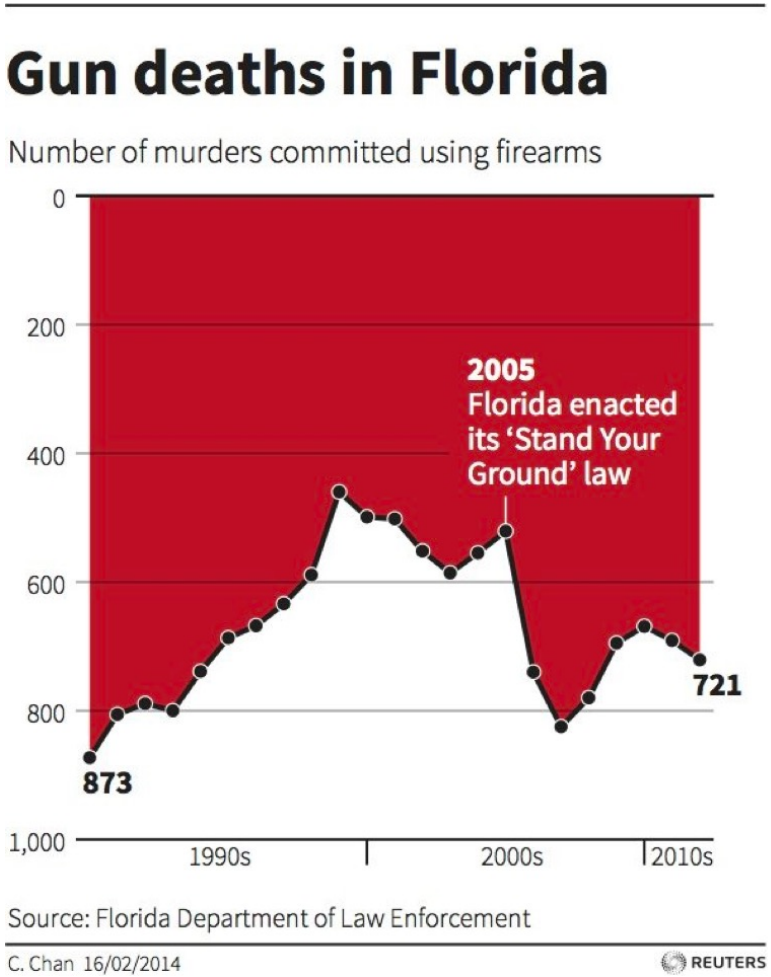
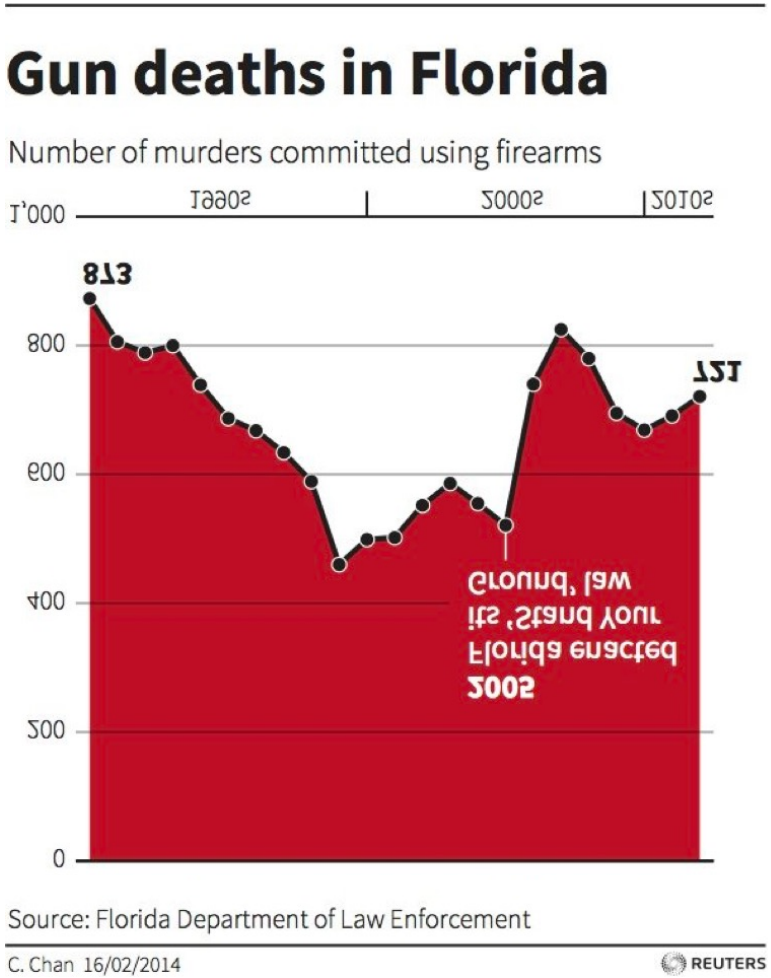
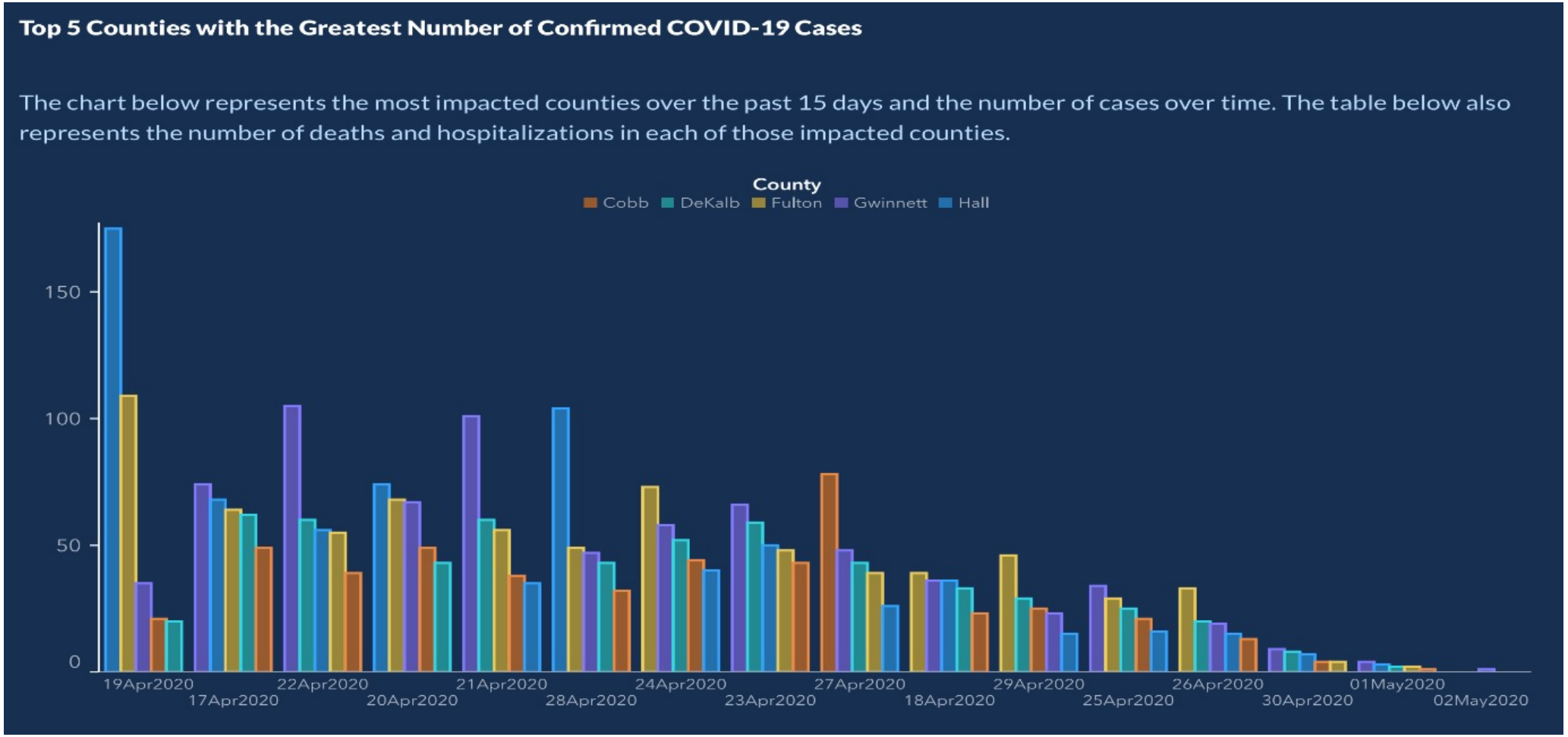
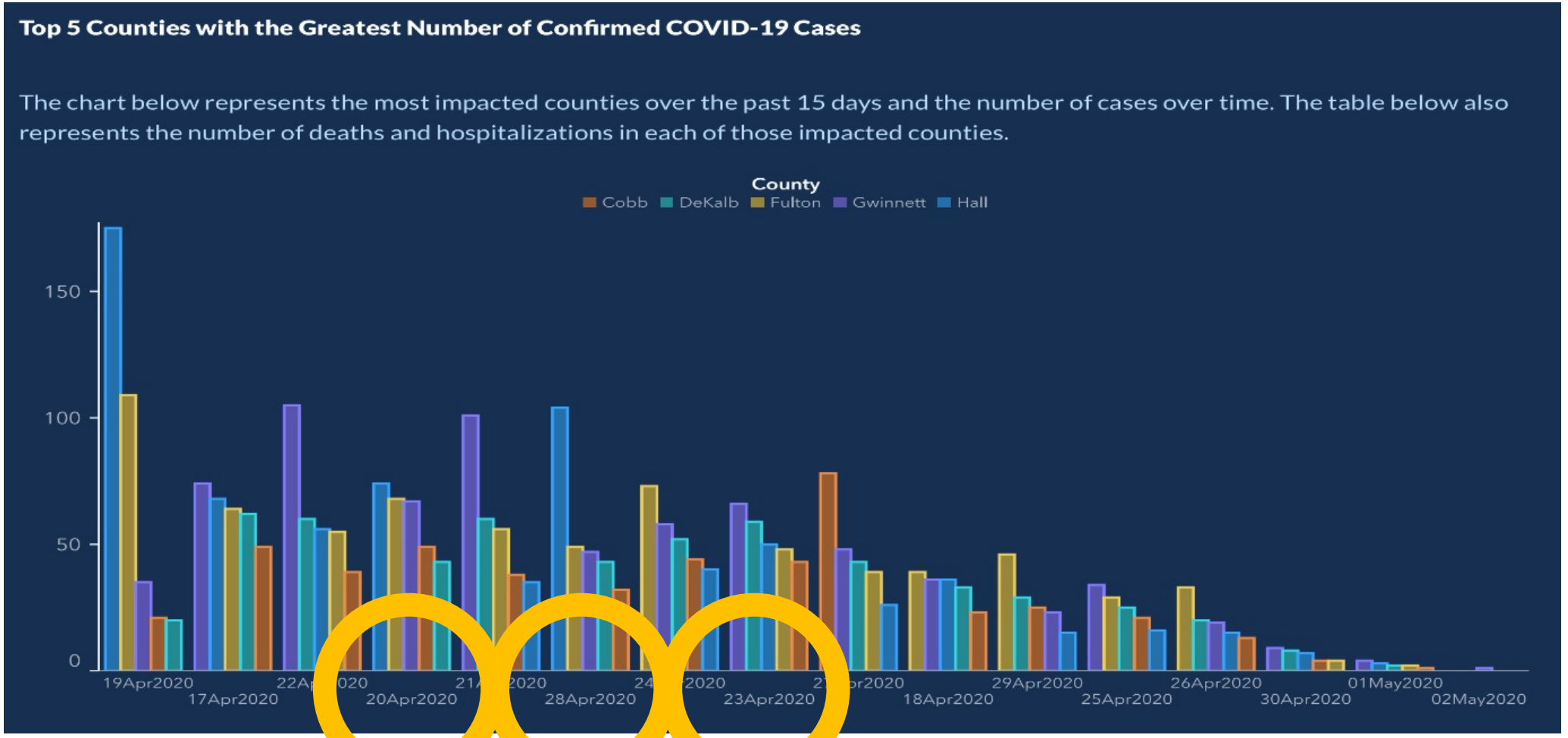




Convention Manipulation



Convention Manipulation



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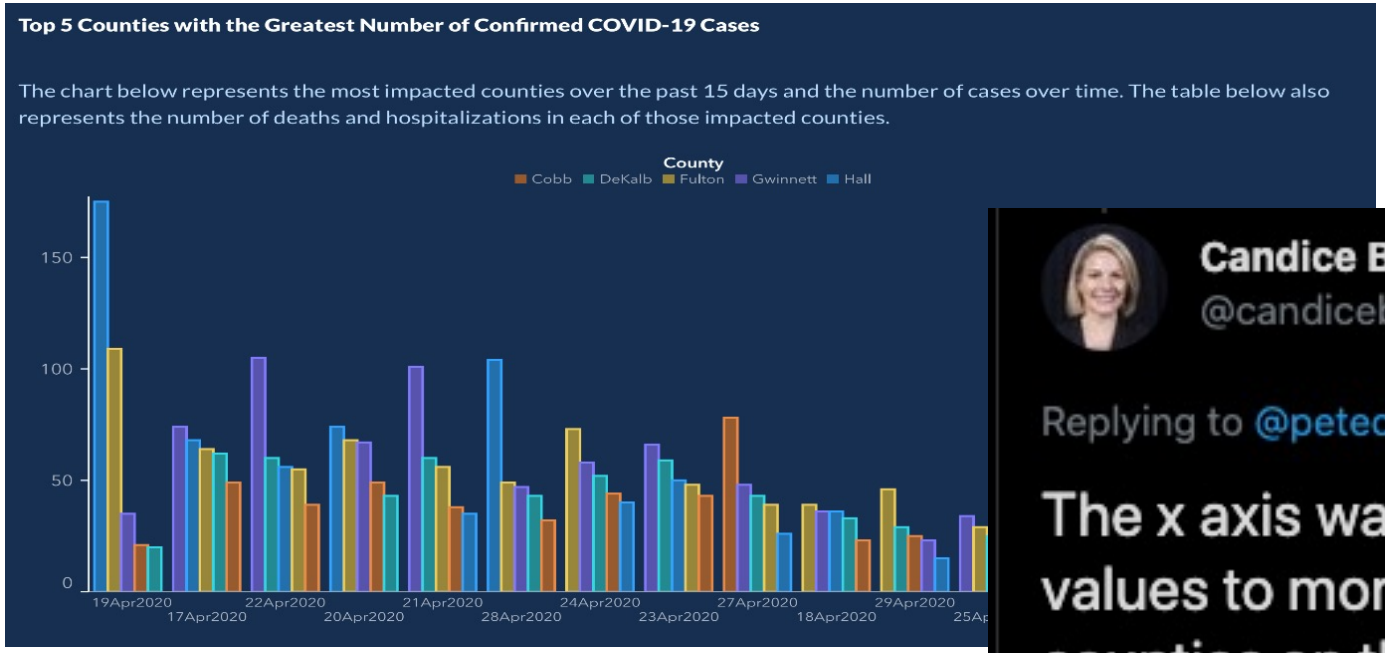

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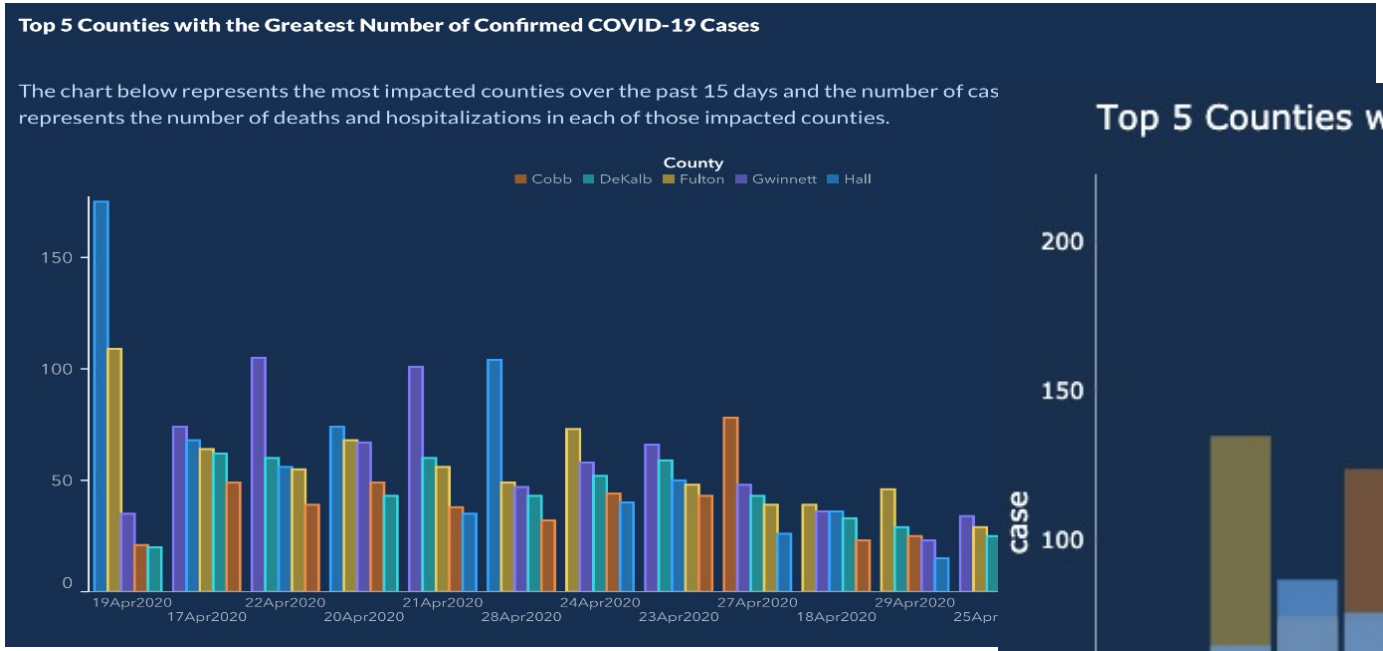
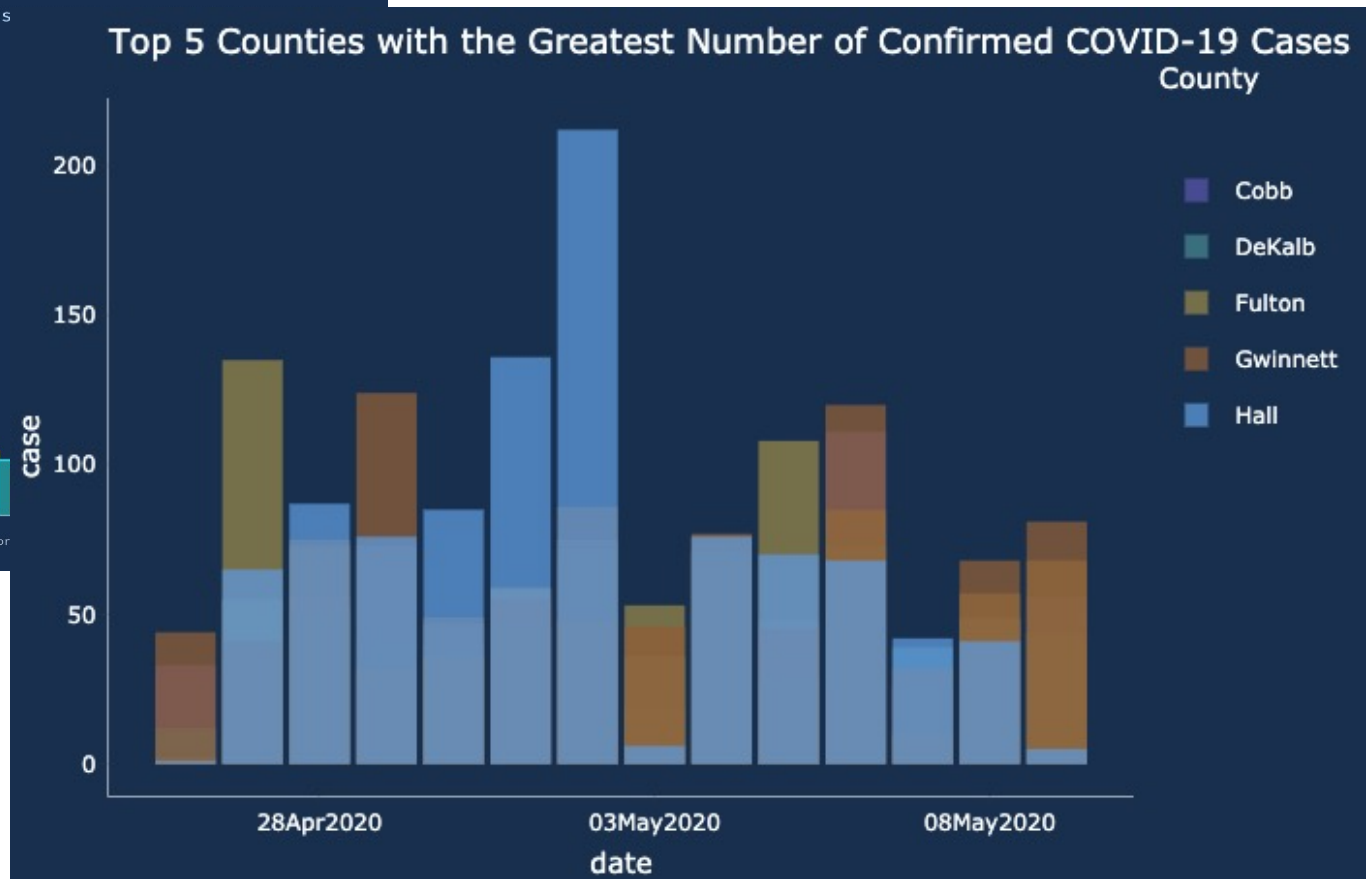
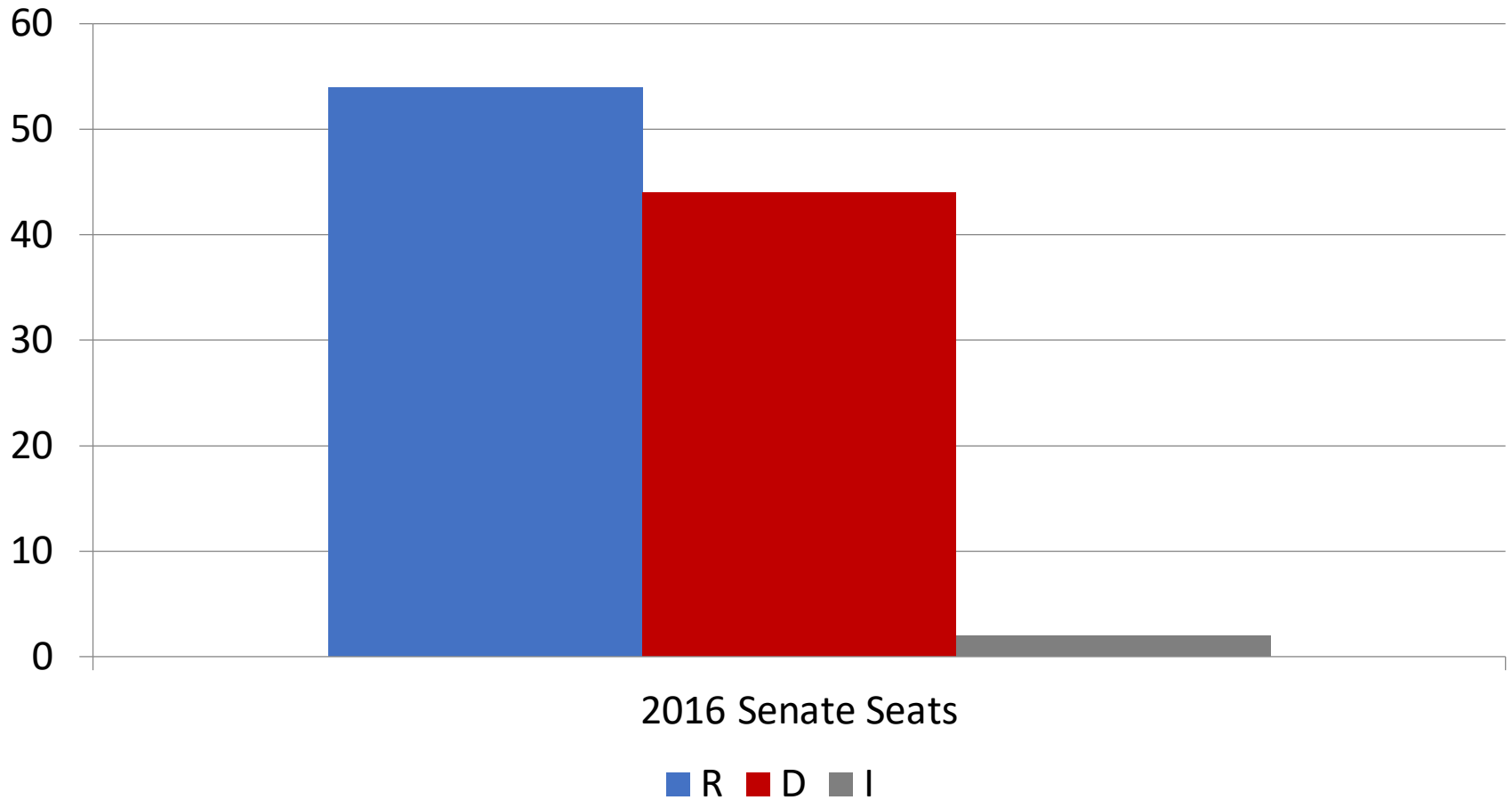




Redesign from Lucy D'Agostino McGowan
https://livefreeordichotomize.com/2020/05/17/graph-detective/

Convention Manipulation



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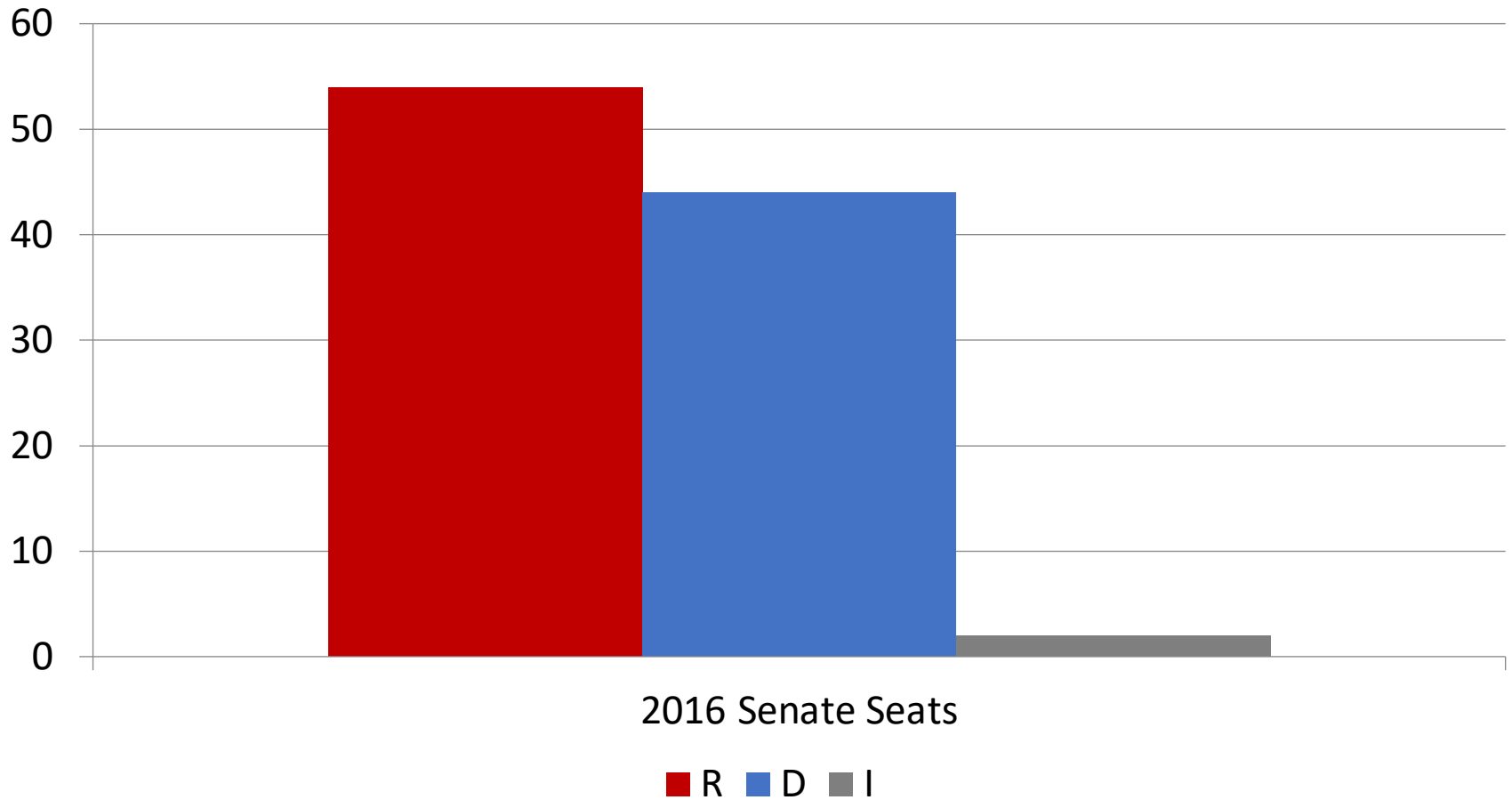

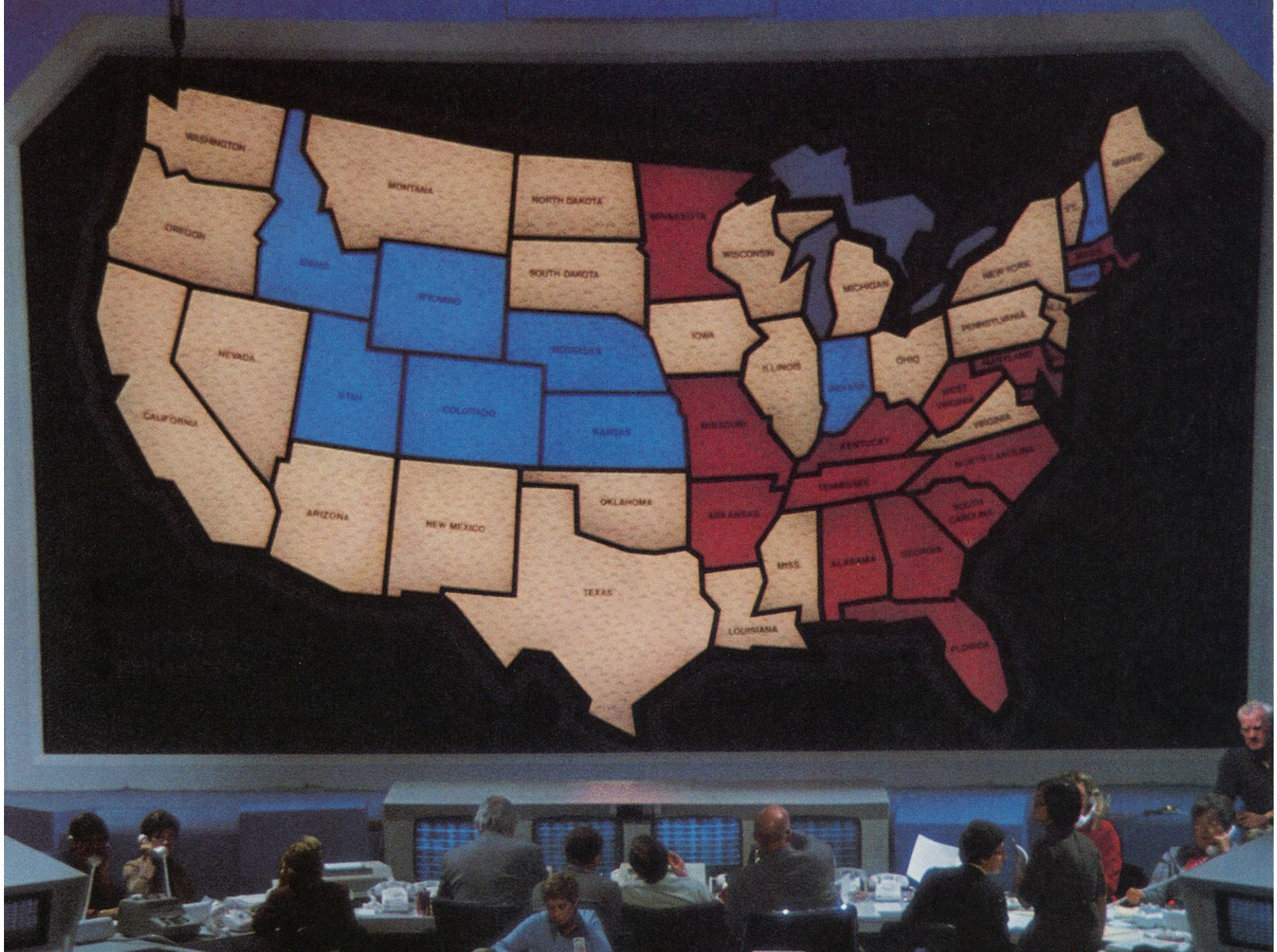
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NEBRASKA
IOWA
ILLINOIS
OHIO
NEVADA
UTAH
COLORADO
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MISSOURI
KENTUCKY
VIRGINIA
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OKLAHOMA
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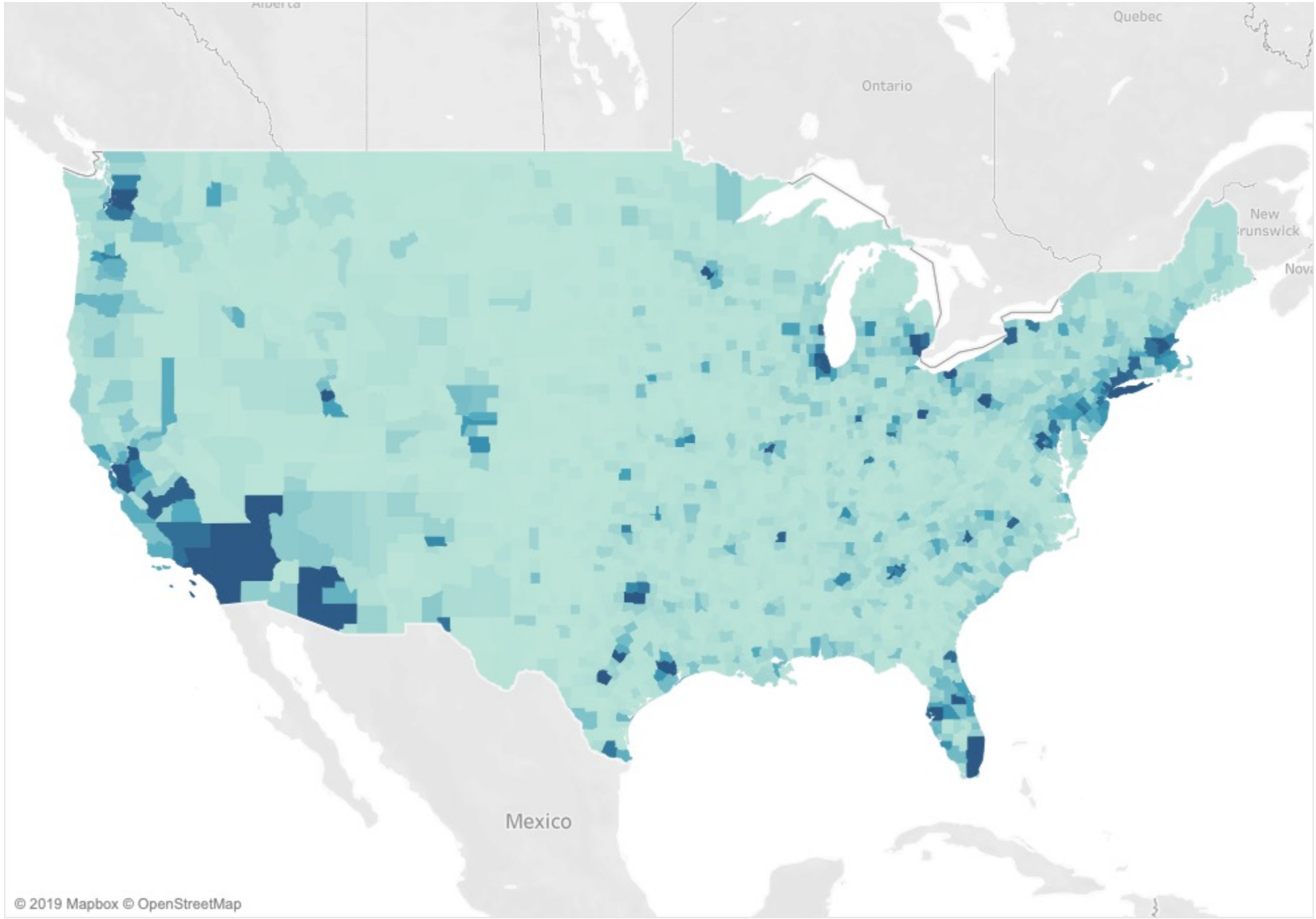
GEORGIA
TEXAS
LOUISIANA
FLORIDA

Metric Manipulation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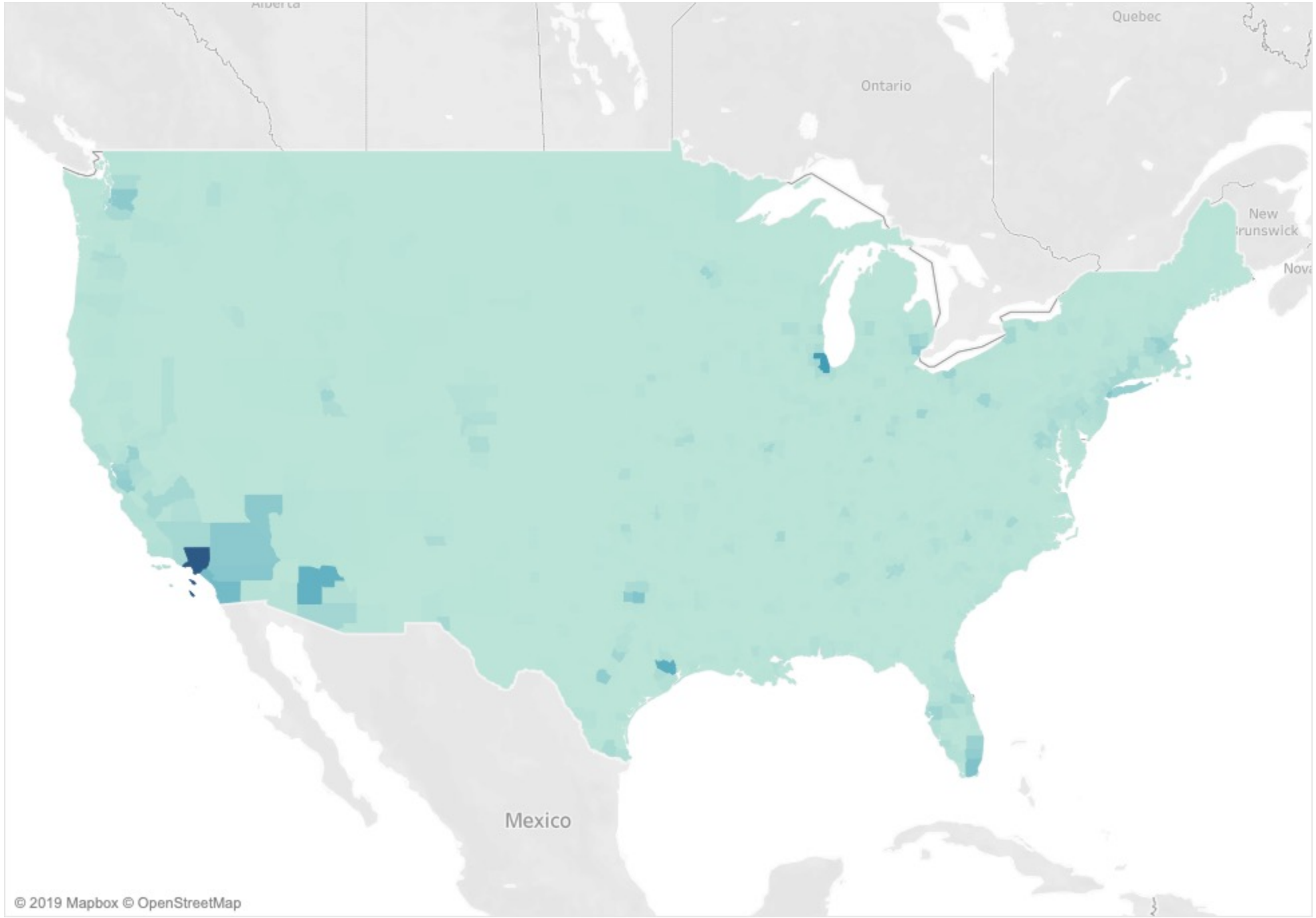
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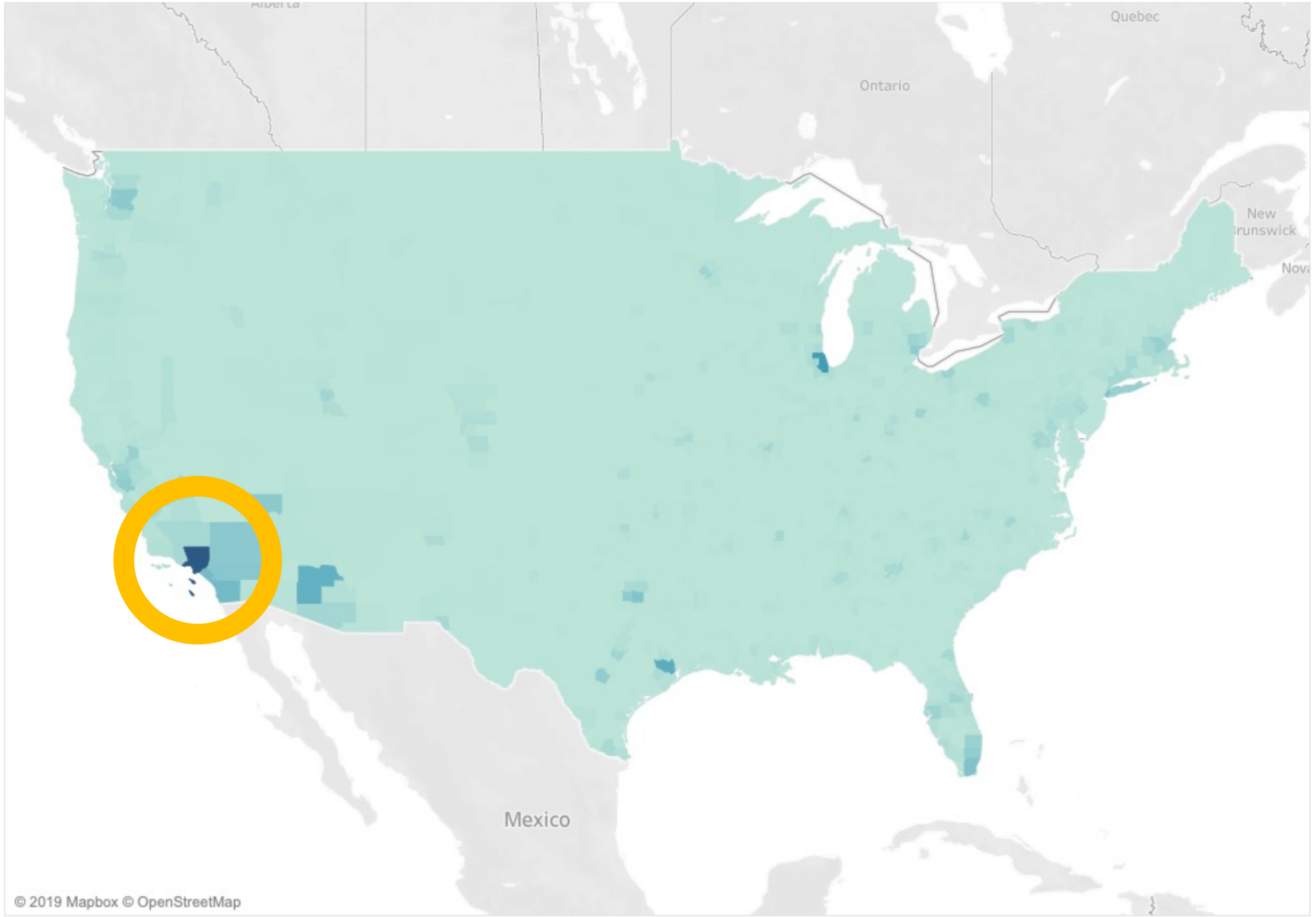
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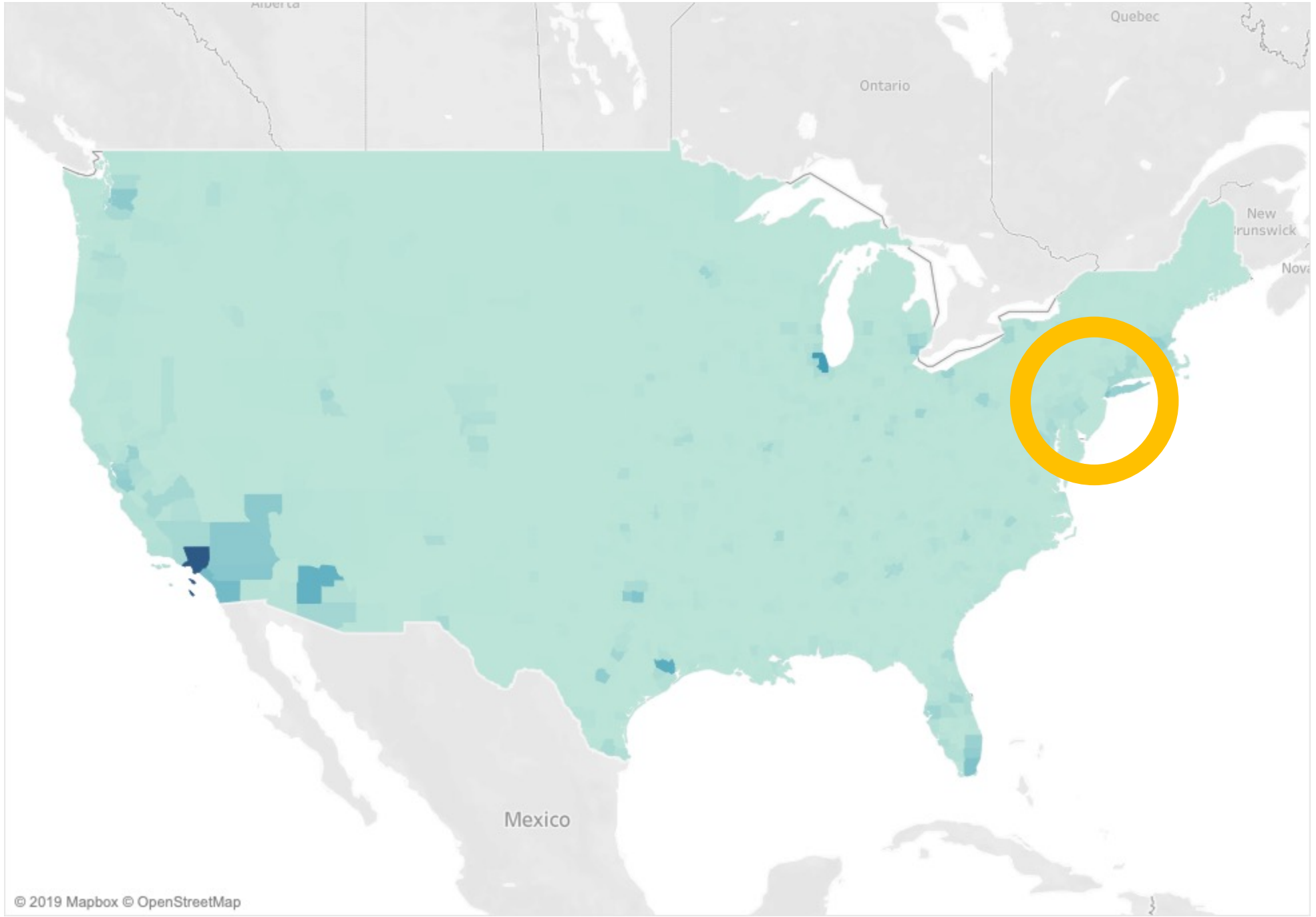
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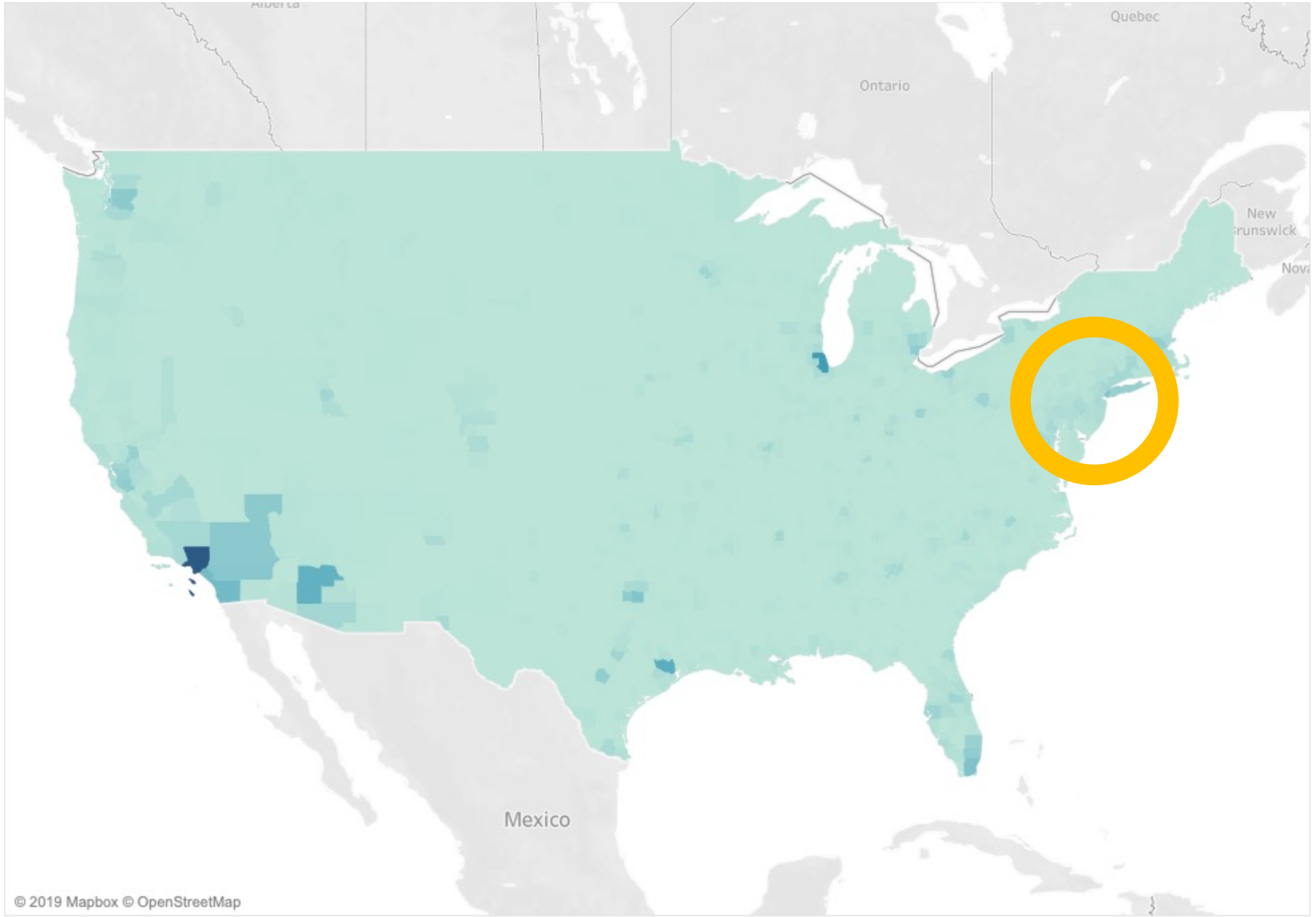
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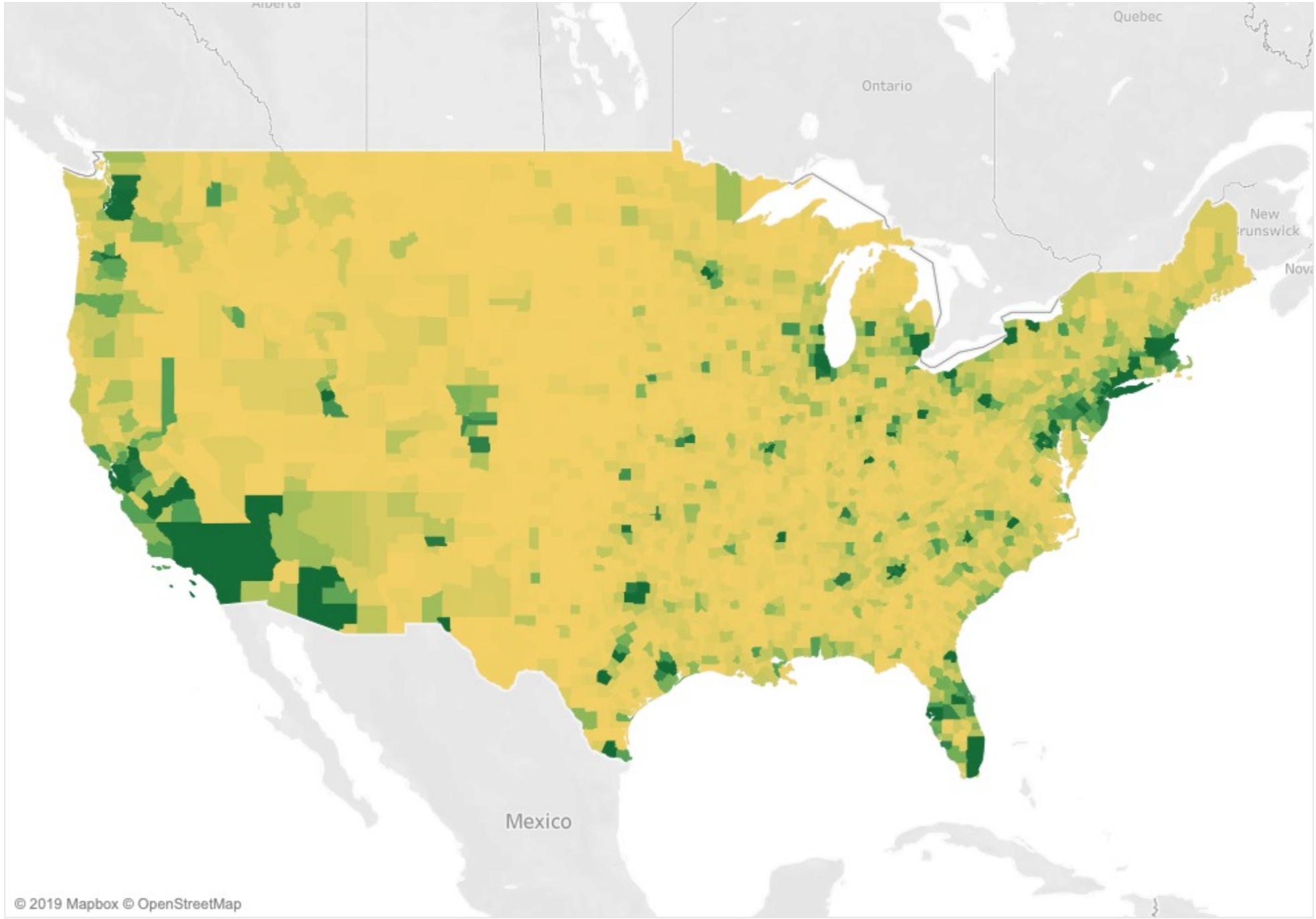
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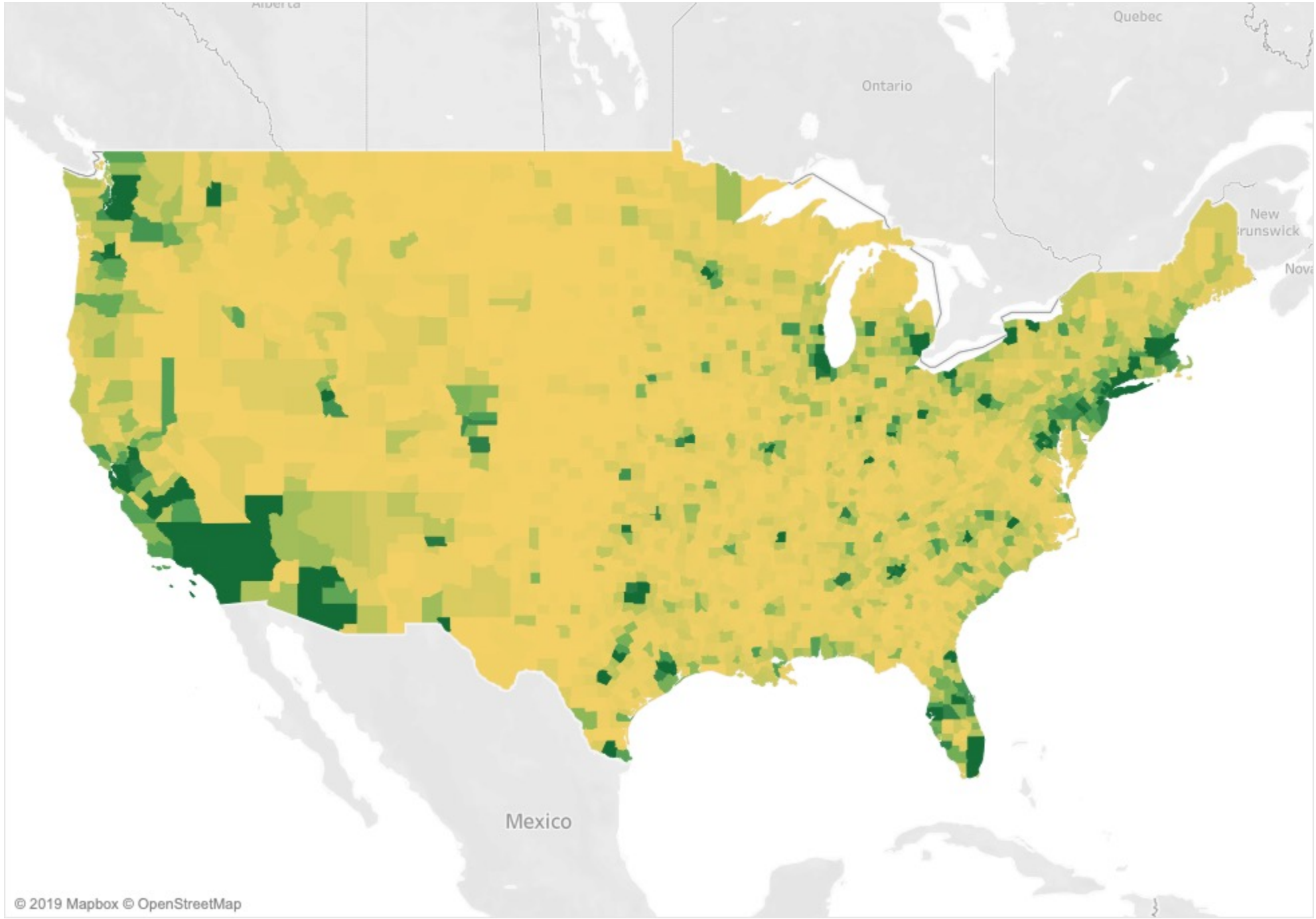
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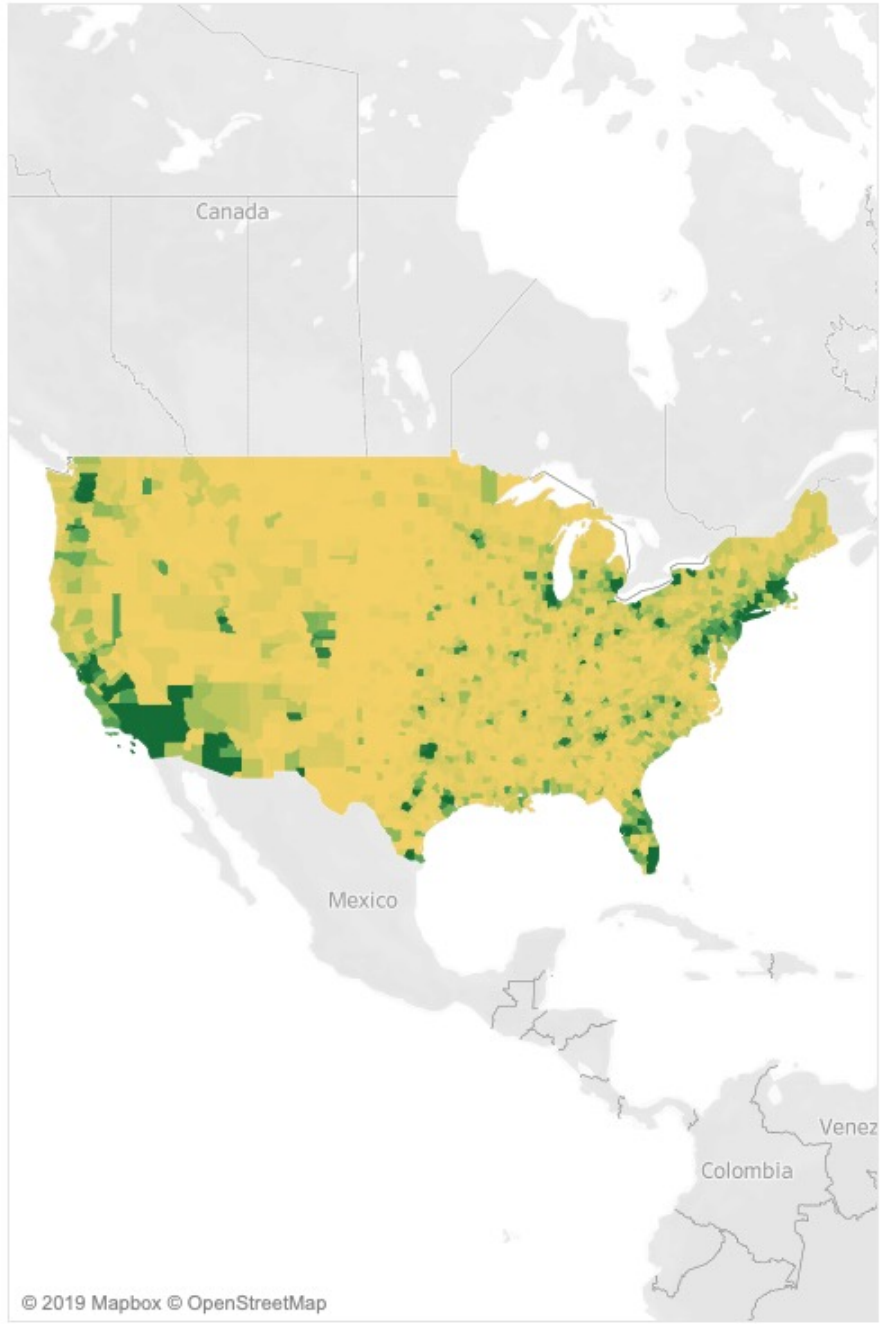
Users of A



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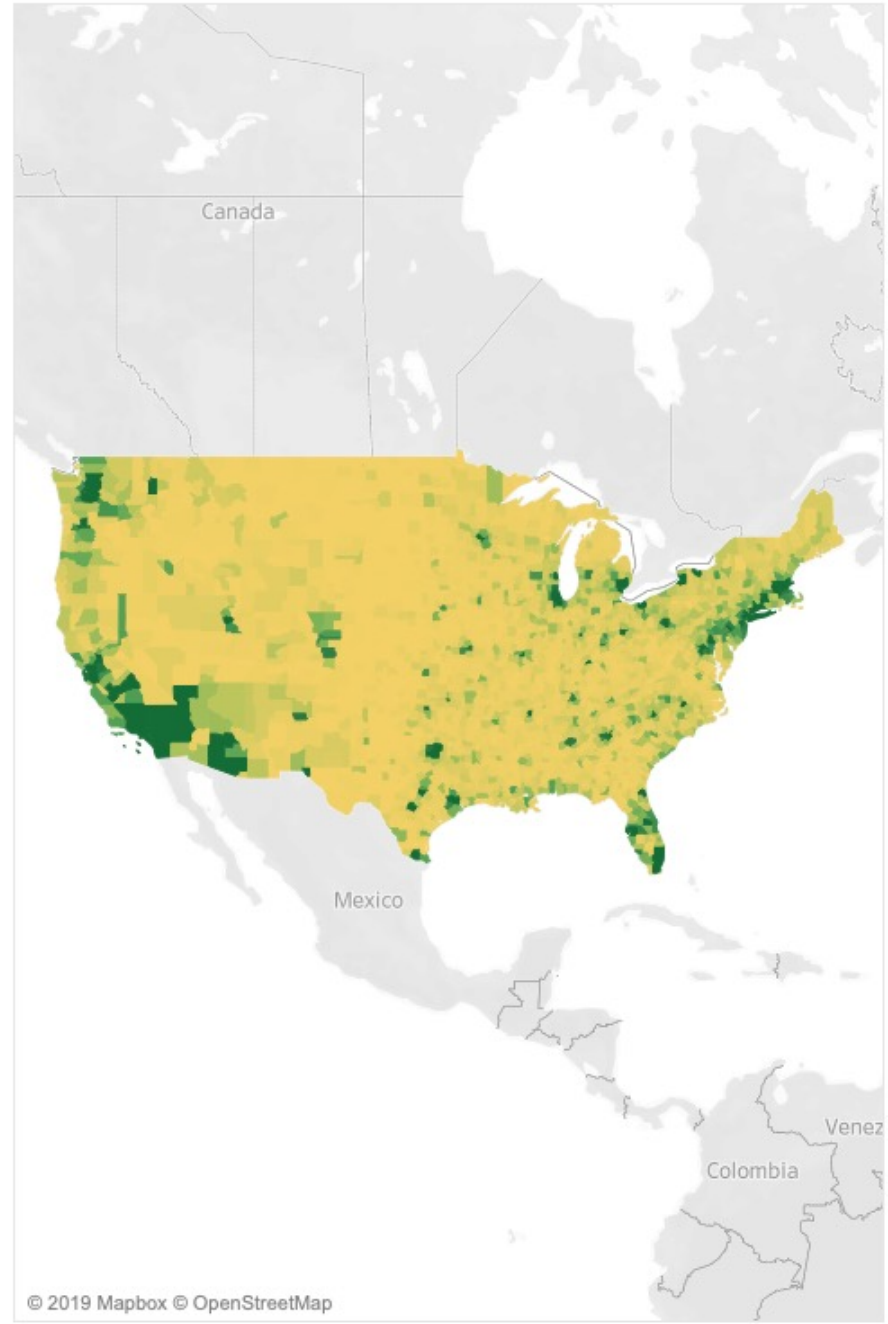

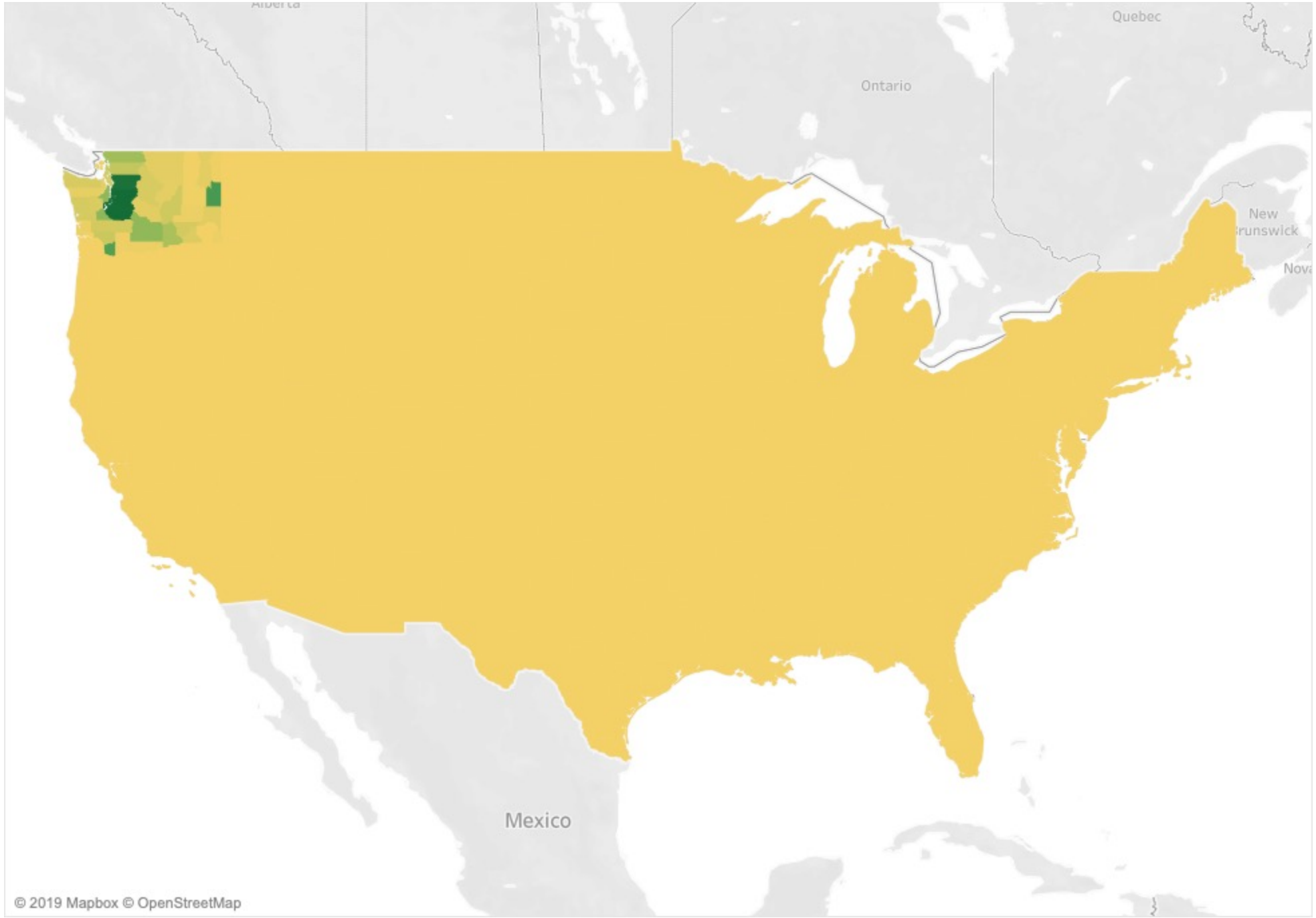
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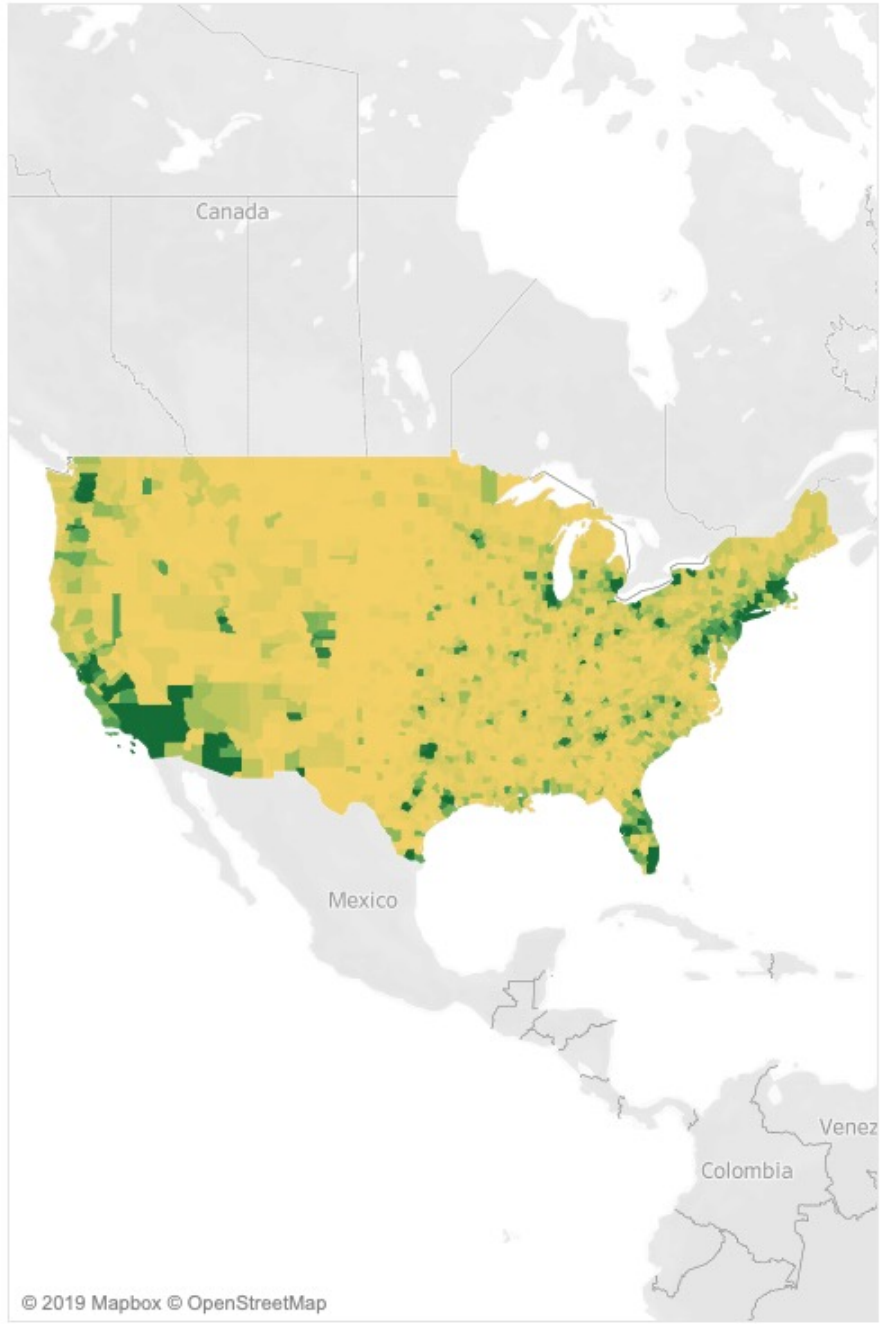

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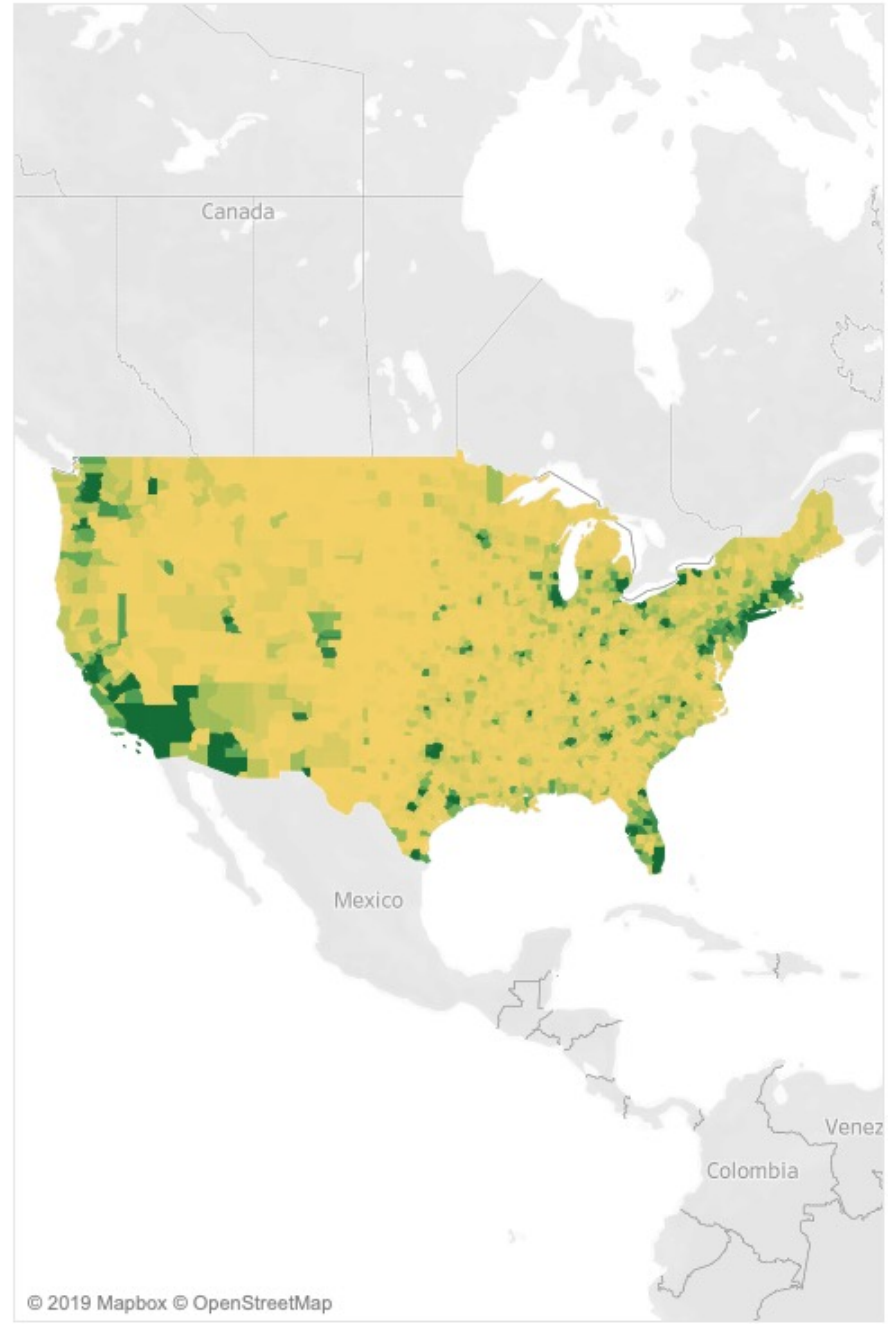


Metric Manipulation

Choosing how data are counted or normalized in order to hide or exaggerate effects in your data.

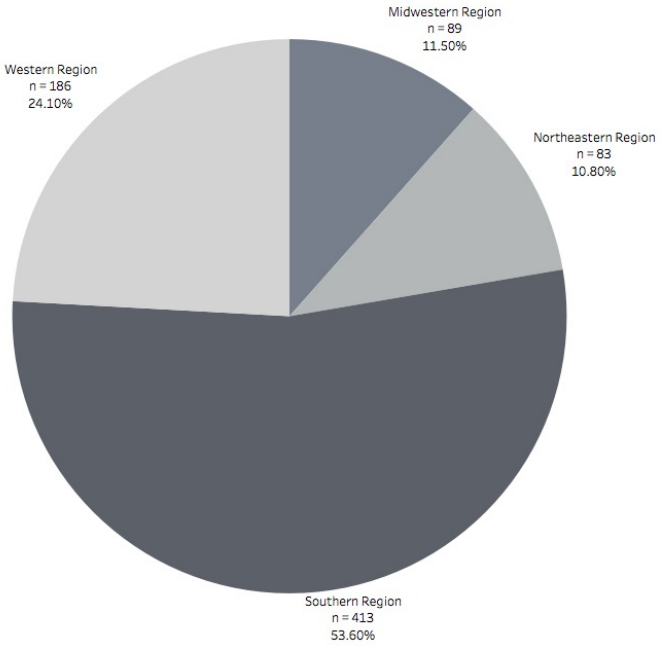
Dehumanization

Dehumanization

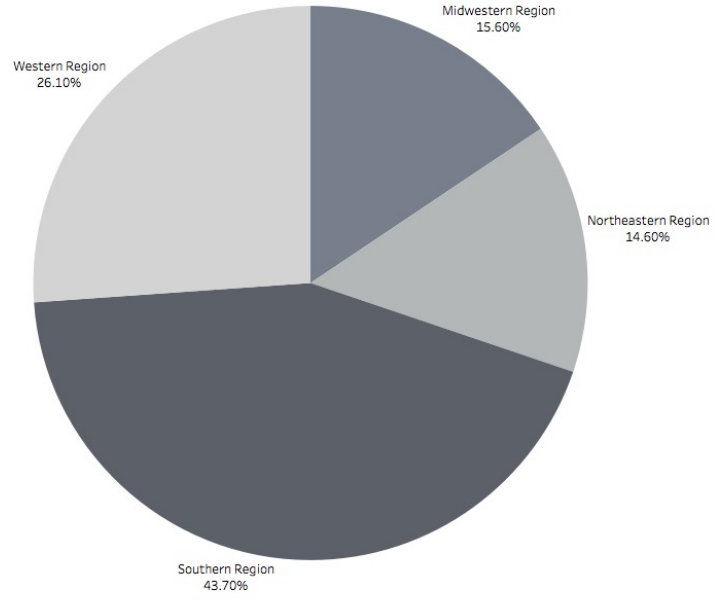
While it may seem like an extreme statement, I think the ideology of almost all current information visualization is anathema to humanistic thought, antipathetic to its aims and values.

Johanna Drucker, “Humanistic theory and digital scholarship”

Logging fatalities and percentages by region, 1992-97

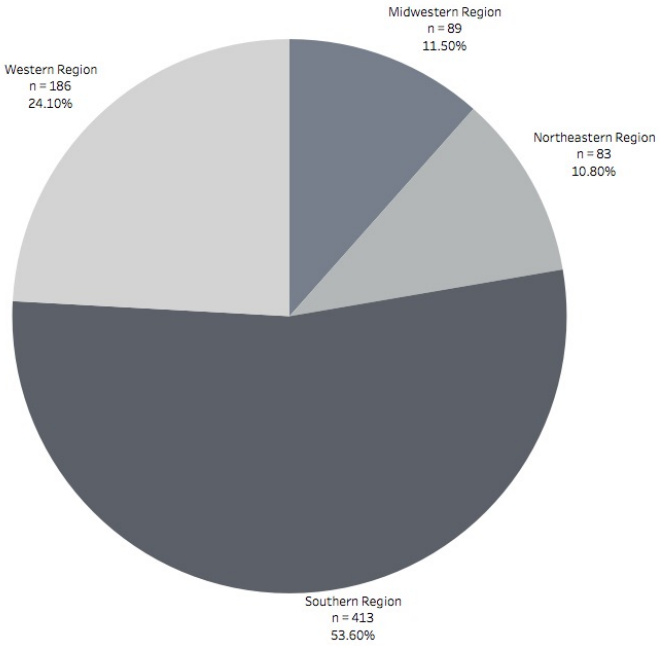


Logging employment percentages by region, 1992-97

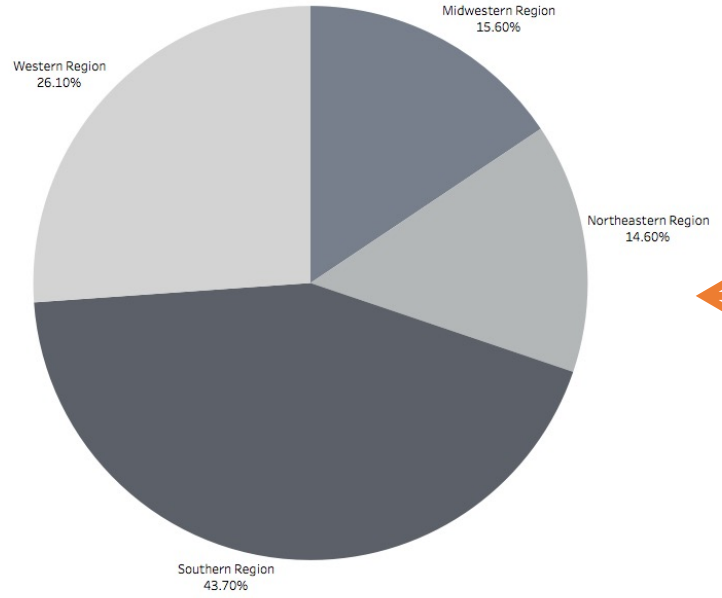


Sam Dragga & Dan Voss “Cruel Pies: The Inhumanity of Technical Illustrations”

Logging fatalities and percentages by region, 1992-97

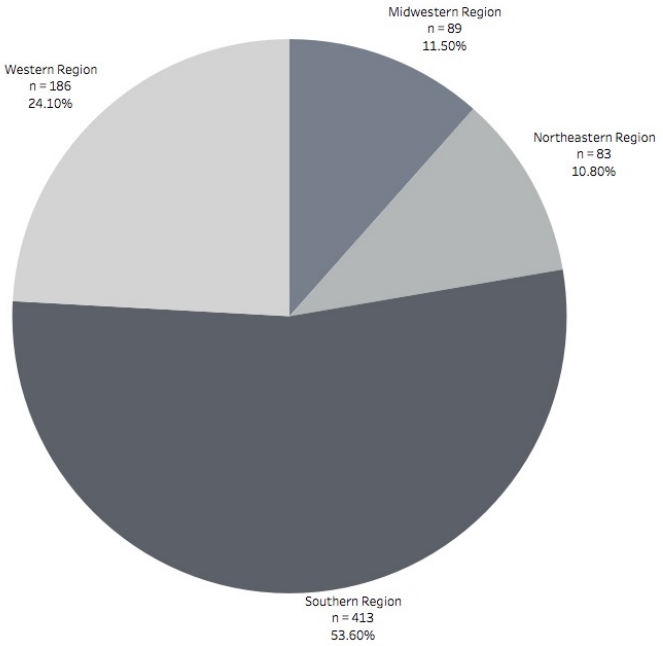


Logging employment percentages by region, 1992-97



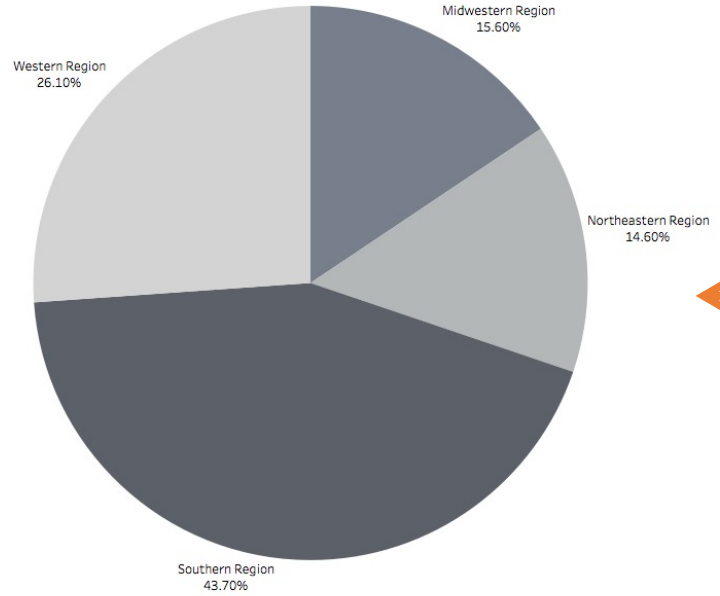
Where Your Employees Live

Logging fatalities and percentages by region, 1992-97

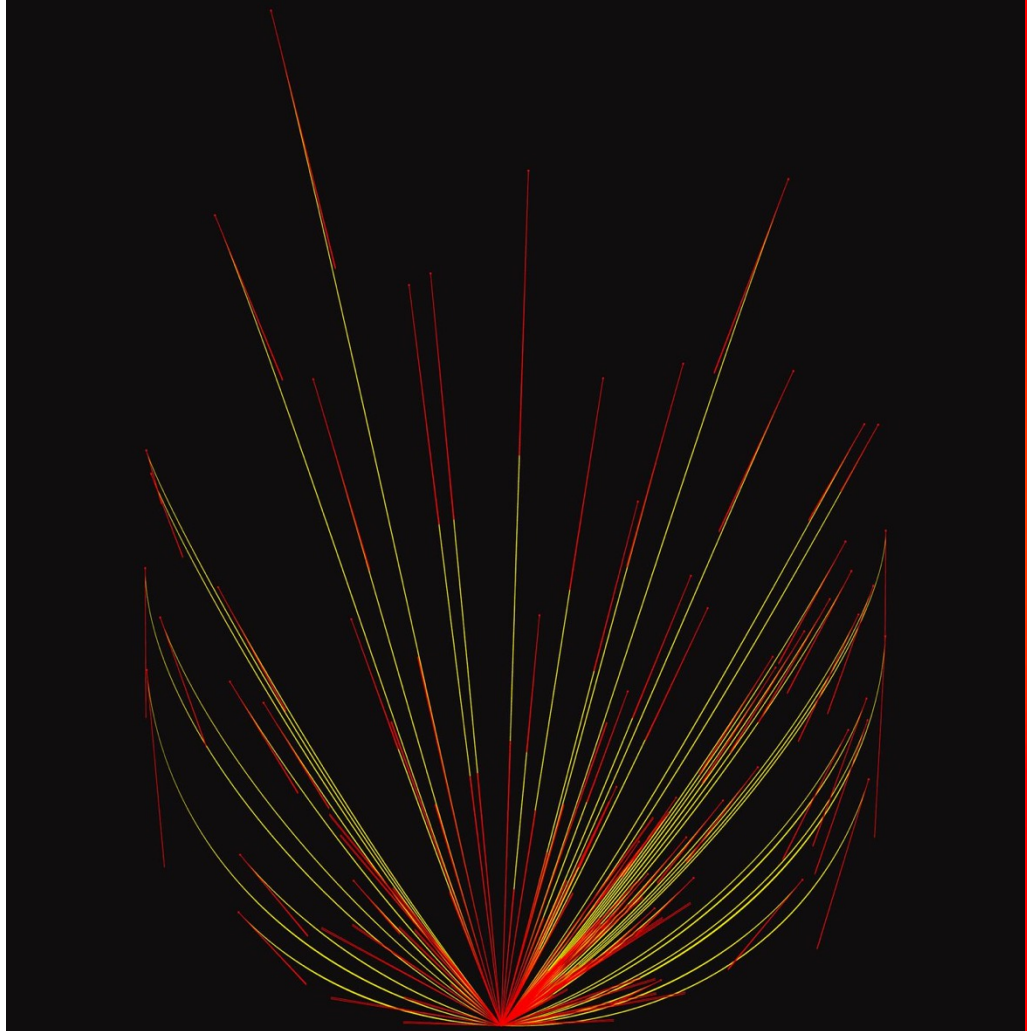


771 Dead People

Logging employment percentages by region, 1992-97



Where Your Employees Live



HIROSHIMA

34° 23' 53" N, 132° 28' 32.9" E

During the final stages of World War II in 1945, the United States conducted two atomic bombings against the cities of Hiroshima and Nagasaki in Japan, the first on August 6, 1945 and the second on August 9, 1945.

This graphic shows all the events leading to the dropping of the first atomic bomb. Reading from left to right, each line represents one event that could be classed as a instigator to the bomb being dropped. The lines are years from 1895 to 1945 length of the line depicts the month of that year.

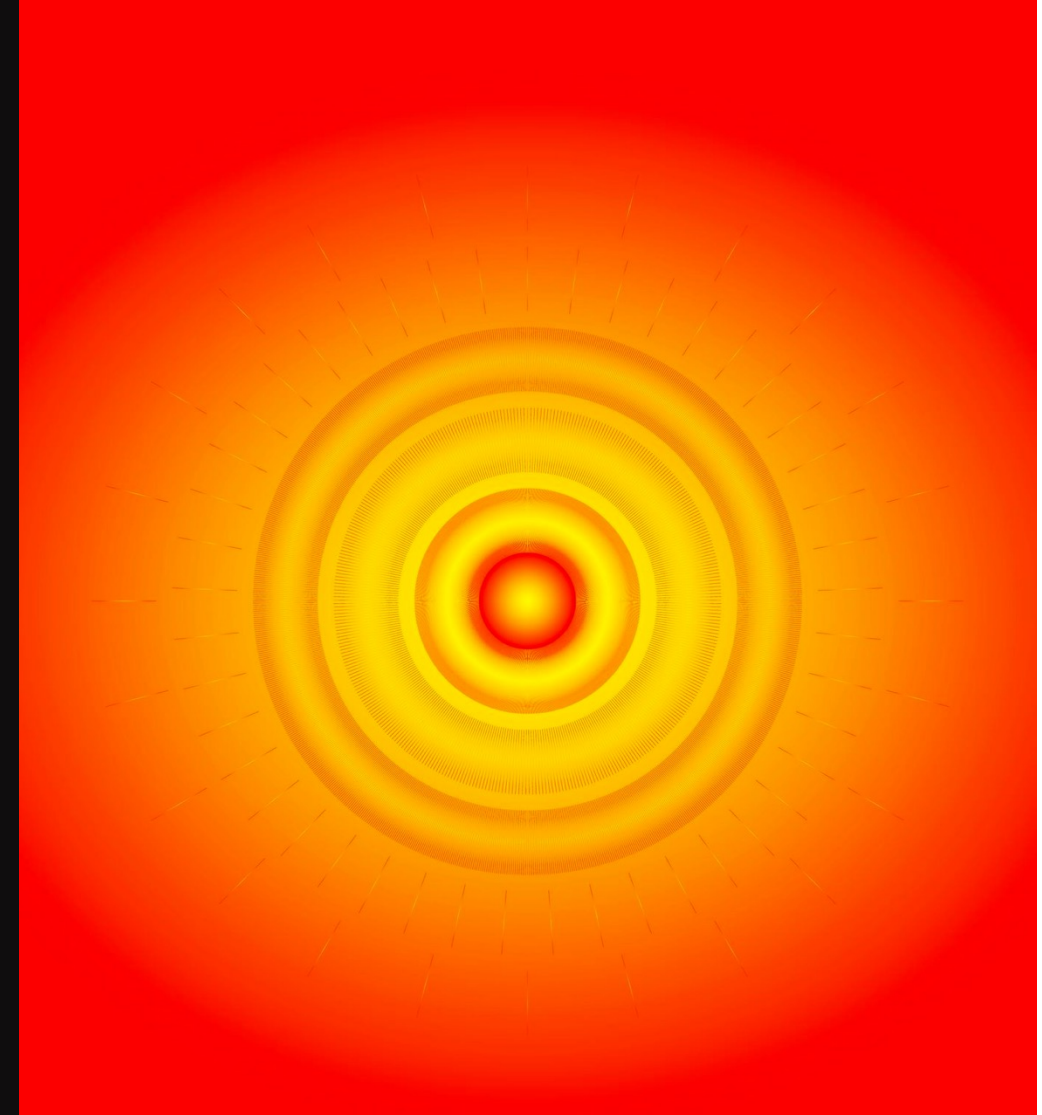
The shape of this graphic was inspired by the very recognisable mushroom clouds infamous of atomic bombs and testing detonations.

1895 Wilhelm Roentgen discovers X-rays. **1896** Antoine Henri Becquerel discovers radioactivity. **1897** J. J. Thomson discovers the electron. **1899** Ernest Rutherford discovers rays. Alpha & Beta. **1900** Frederick Soddy observes spontaneous disintegration of radioactive elements into variants he calls "isotopes." **1902** Rutherford & Soddy publish theory of radioactive decay. **1903** Becquerel shares Nobel Prize for Physics with Pierre and Marie Curie for **1896** discovery of natural radioactivity. **1904** Rutherford discovers that alpha rays are heavy positively charged particles. J.J. Thomson proposes the 'plum-pudding' model of the atom. **1905** Albert Einstein publishes the special theory of relativity regarding convertibility of matter and energy. **1911** The 'plum-pudding' is disproved by the gold foil experiment by Ernest Rutherford **1913** Niels Bohr publishes theory of atomic structure, combining nuclear theory with quantum theory. **1915** Albert Einstein publishes the general theory of relativity. **1919** Rutherford bombards nitrogen gas with alpha particles and obtains atoms of an oxygen isotope and protons. **1920** Rutherford speculates on the existence of the neutron. **1925** Werner Heisenberg, Max Born and later Erwin Schrödinger formulate quantum mechanics.

1927 Werner Heisenberg states the uncertainty principle, which states that it is not possible to simultaneously determine the position and momentum of a particle. **1929** Ernest O. Lawrence conceives idea for the first cyclotron. John Cockcroft and E. T. S. Walton develop a high-voltage apparatus for accelerating protons. **1931** Harold Urey discovers deuterium, an isotope of hydrogen that contains one proton and one neutron. **1932** James Chadwick discovers the neutron. **1933** Many scientists are compelled to leave their posts at German universities because of their "Jewish physics." Leo Szilard recollects: "It occurred to me in October, 1933 that a chain reaction might be set up if an element could be found that would emit two neutrons when it swallowed one neutron." **1934** Fréderic and Irène Joliot-Curie discover artificial radioactivity. Enrico Fermi irradiates uranium with neutrons. He believes he has produced the first transuranic element, but unknowingly achieves the world's first nuclear fission. **1938** Fermi receives the Nobel Prize in Physics for the discovery of transuranic elements and departs for the United States. Otto Hahn sends a paper to Lise Meitner containing experimental results that are interpreted by Meitner and nephew Otto Frisch as nuclear fission.

1939 Hahn and his assistant Fritz Strassmann publish their results. Meitner and Frisch publish a theoretical interpretation of the Hahn-Strassmann results as nuclear fission. Scientists obtain a letter from Einstein on the possibility of a uranium weapon. Hans Bethe recognizes that the fusion of hydrogen nuclei to form deuterium releases energy. **1940** German troops occupy Norway, seizing the world's only heavy-water production plant at Vemork. Frisch and Rudolf Peierls submit a memorandum to the British government estimating mass of uranium 235 needed for an atomic bomb. German scientists fail to observe neutron multiplication. Using the Berkeley cyclotron, Philip Abelson and Edwin McMillan demonstrate that neutrons captured by uranium 238 lead to the creation of elements neptunium and plutonium. **1941** Based on experiments with a natural uranium reactor, the Germans reject graphite as a moderator. Glenn Seaborg discovers new element which they call plutonium. American physicists confirm that plutonium is fissionable, thus usable for a bomb. British Committee reports that a weapon could be made with 22 pounds of pure uranium 235. Roosevelt authorizes the Manhattan Engineering District. The secret U.S. project to build an atomic bomb.

1942 Brigadier General Leslie Groves is put in charge of the Manhattan Project. He recruits J. Robert Oppenheimer as Scientific Director. Construction of a uranium isotope separation plant begins at Oak Ridge, Tennessee. Enrico Fermi at the University of Chicago produces the world's first controlled and sustained nuclear fission reaction. **1943** Planning begins for construction of reactors at Hanford, Washington, to breed plutonium for a bomb. Oppenheimer moves the bomb development to a secret laboratory located at Los Alamos, New Mexico. **1944** Bohr presents his memorandum on intentional control of nuclear weapons to Roosevelt. First batch of spent fuel obtained from Hanford reactors. Documents implying that the German's rate of progress toward a bomb had diminished. **1945** First plutonium reprocessing begins at Hanford. First uranium 235 separated. The Franck Report is sent to Stir Stimson. US explodes the world's first atomic bomb, the Trinity test. Little Boy, an uranium bomb, was dropped on Hiroshima, Japan.



HIROSHIMA

34° 23' 53" N, 132° 28' 32.9" E

During the final stages of World War II in 1945, the United States conducted two atomic bombings against the cities of Hiroshima and Nagasaki in Japan, the first on August 6, 1945 and the second on August 9, 1945.

This graphic shows how many people died from the bombings each line representing one death. The rings show the distance from the epicentre of the bomb's explosion. The numbers next to each ring show the mortality rate in percentages.

The shape of this graphic was inspired by the before and after photographs of Hiroshima shot from the Enola Gay with the aiming reticule visible.

The first ring in the centre represents the distance of 0-2 thousand feet from the epicentre. There is at 93% mortality rate and 7,905 people died at this distance from the bomb.

The second ring from the centre represents the distance of 2-4 thousand feet from the epicentre. There is a 86% mortality rate and 3,488 people died at this distance from the bomb.

The third ring from the centre represents 4-6 thousand feet from the epicentre. There is a 49% mortality rate and 8,678 died at this distance from the bomb.

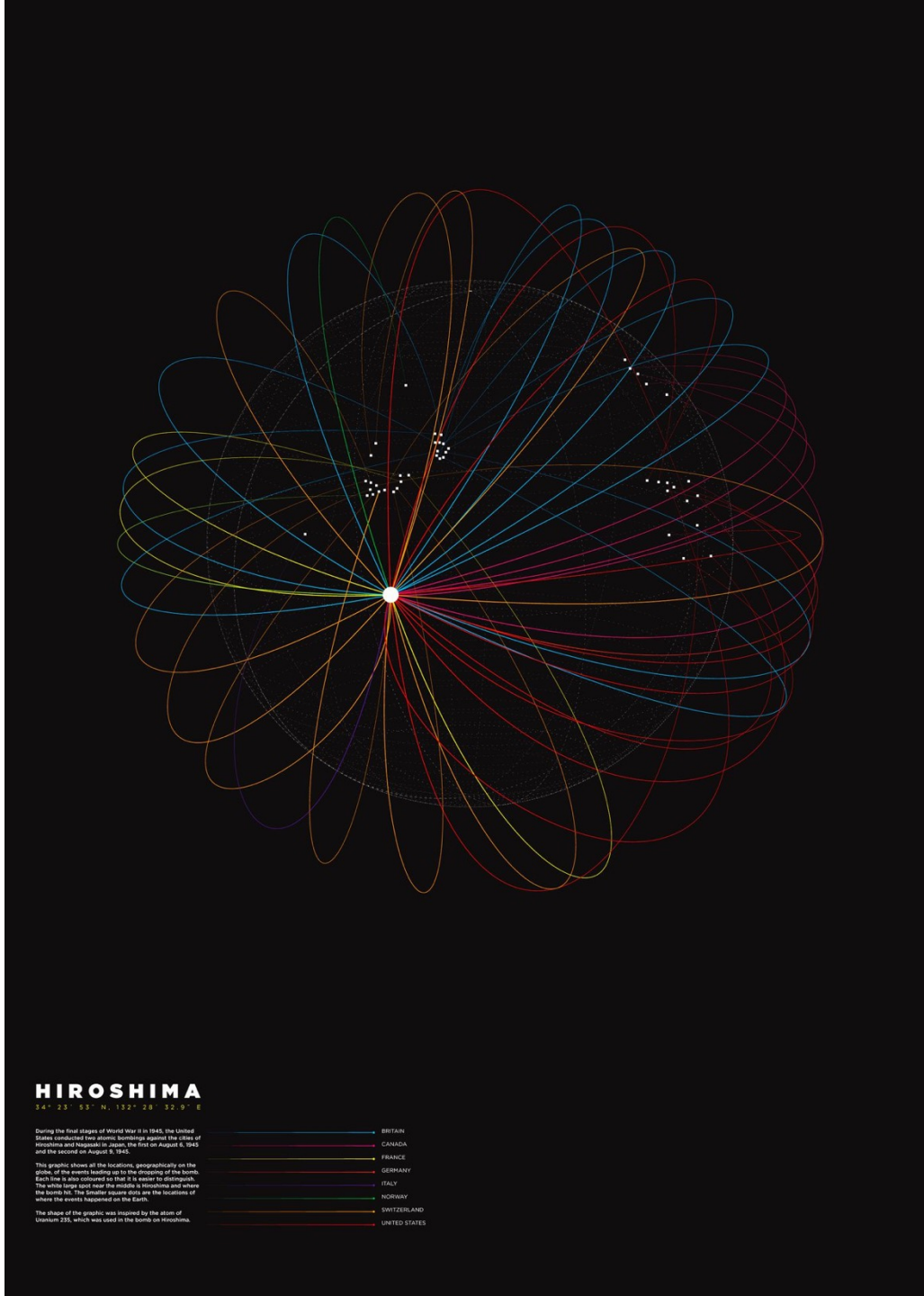
The fourth ring from the centre represents the distance of 6-8 thousand feet from the epicentre. There is a 12.5% mortality rate and 221 people died from this distance from the bomb.

The final fifth ring from the centre represents the distance of 8-10 thousand feet from the epicentre. There is a 1.3% mortality rate and 12 people died from this distance from the bomb.

“The UnEmpathic Art”

I am just very skeptical of the idea that data visualization is a medium that can convey (or even care about conveying) or increase “empathy”

-Alberto Cairo



Dehumanization

Visualization *abstracts* everything (including people and their suffering) into data, hiding information of moral importance.

Dark Patterns in Visualization

Lie Factors

Scale Manipulation

Convention Manipulation

Metric Manipulation

Dehumanization

Wrap Up

The designer of a chart can control the **message** of the chart

There are **patterns** that can often result in misleading charts

But **critical thinking** is more important than hard rules in design

Questions

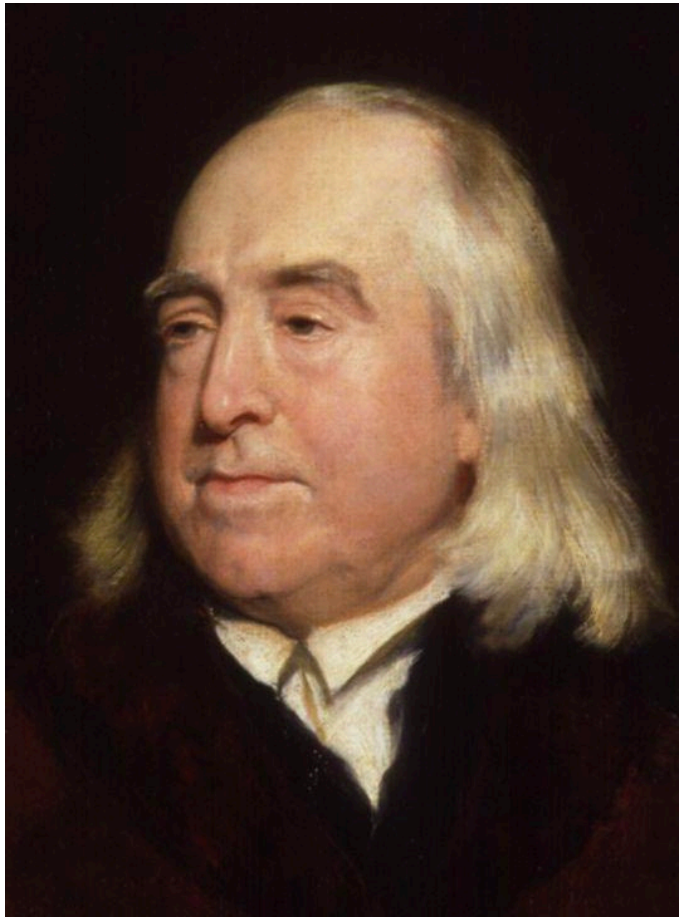
What Makes A Visualization *Deceptive?*

What Makes a Visualization *Ethical*?

Accounts of Ethics

Consequentialist Ethics
Deontological Ethics
Virtue Ethics
Role Ethics
... lots more

Consequentialism



A action is ethical or unethical based on its *consequences*. For instance, in "utilitarianism," an action's ethics is based on *utility.*

The Value of Visualization

- $C_i(S_0)$: *Initial development costs.* The visualization method has to be developed and implemented, possibly new hardware has to be acquired.
- $C_u(S_0)$: *Initial costs per user.* The user has to spend time on selection and acquisition of V, understanding how to use it, and tailoring it to his particular needs.
- $C_s(S_0)$: *Initial costs per session.* Data have to be converted, and an initial specification of the visualization has to be made.
- C_e: *Perception and exploration costs.* The user has to spend time to watch the visualization and understand it, as well as in modification and tuning of the specification, thereby exploring the data set.

The total costs are now given by

$$C = C_i + nC_u + nmC_s + nmkC_e.$$

The return on these investments consists of the value $W(\Delta K)$ of the acquired knowledge $\Delta K = K(T) - K(0)$ per session, multiplied by the total number of sessions:

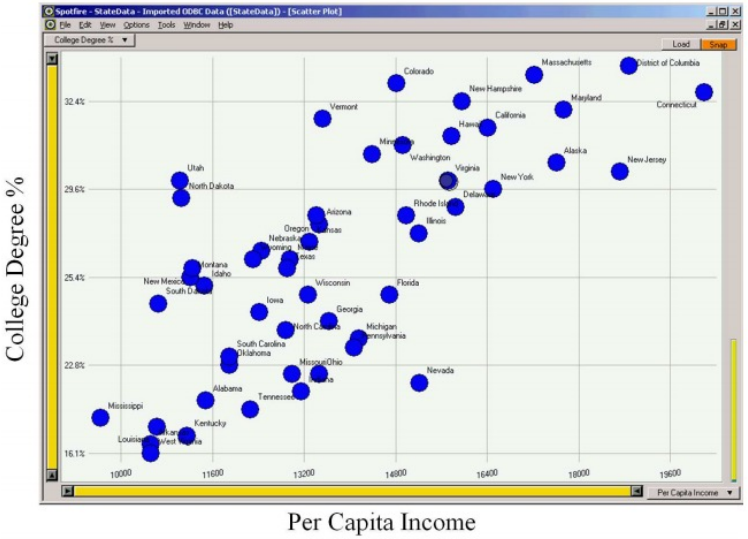
$$G = nmW(\Delta K)$$

and hence for the total profit $F = G - C$ we find

$$F = nm(W(\Delta K) - C_s - kC_e) - C_i - nC_u.$$

State	College Degree %	Per Capita Income
Alabama	20.6%	11486
Alaska	30.3%	17610
Arizona	27.1%	13461
Arkansas	17.0%	10520
California	31.3%	16409
Colorado	33.9%	14821
Connecticut	33.8%	20189
Delaware	27.8%	15854
District of Columbia	36.4%	18881
Florida	24.9%	14698
Georgia	24.3%	13631
Hawaii	31.2%	15770
Idaho	25.2%	11457
Illinois	26.8%	15201
Indiana	20.9%	13149
Iowa	24.5%	12422
Kansas	26.5%	13300
Kentucky	17.7%	11153
Louisiana	19.4%	10635
Maine	25.7%	12957
Maryland	31.7%	17730
Massachusetts	34.5%	17224
Michigan	24.1%	14154
Minnesota	30.4%	14389
Mississippi	19.9%	9648
Missouri	22.3%	12989
Montana	25.4%	11213
Nebraska	26.0%	12452
Nevada	21.5%	15214
New Hampshire	32.4%	15959
New Jersey	30.1%	18714
New Mexico	25.5%	11246
New York	29.6%	16501
North Carolina	24.2%	12885
North Dakota	28.1%	11051
Ohio	22.3%	13461
Oklahoma	22.8%	11893
Oregon	27.5%	13418
Pennsylvania	23.2%	14068
Rhode Island	27.5%	14981
South Carolina	23.0%	11897
South Dakota	24.6%	10661
Tennessee	20.1%	12255
Texas	25.5%	12904
Utah	30.0%	11029
Vermont	31.5%	13527
Virginia	30.0%	15713
Washington	30.9%	14923
West Virginia	16.1%	10520
Wisconsin	24.9%	13276
Wyoming	25.7%	12311

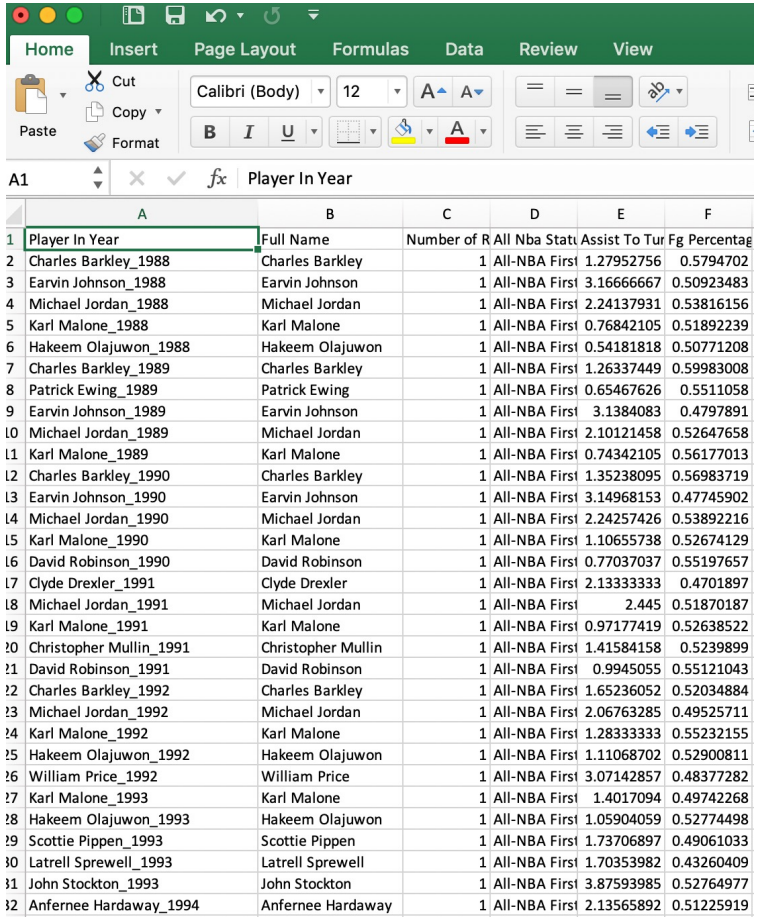
(a) A thousand words



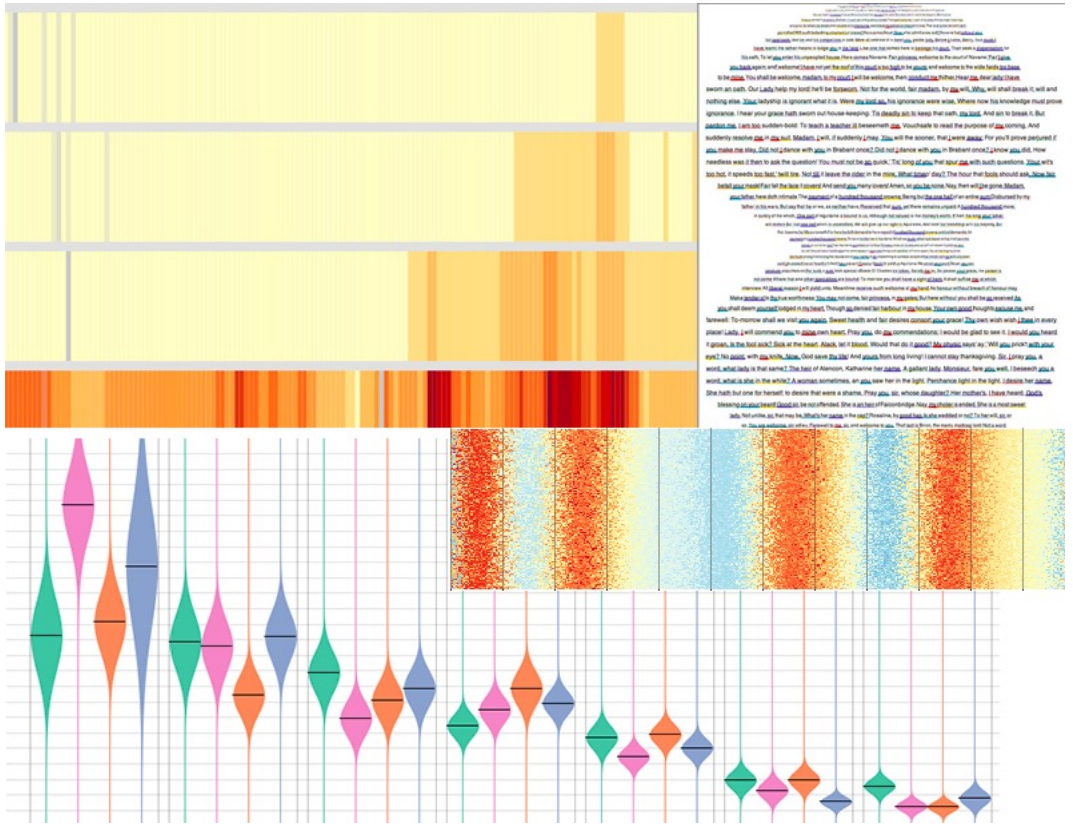
(b) A picture

Fig. 1: "A picture is worth a thousand words"

The Value of Visualization



	A	B	C	D	E	F
1	Player In Year	Full Name	Number of R	All Nba Statu	Assist To Tur	Fg Percentag
2	Charles Barkley_1988	Charles Barkley	1	All-NBA First	1.27952756	0.5794702
3	Earvin Johnson_1988	Earvin Johnson	1	All-NBA First	3.16666667	0.50923483
4	Michael Jordan_1988	Michael Jordan	1	All-NBA First	2.24137931	0.53816156
5	Karl Malone_1988	Karl Malone	1	All-NBA First	0.76842105	0.51892239
6	Hakeem Olajuwon_1988	Hakeem Olajuwon	1	All-NBA First	0.54181818	0.50771208
7	Charles Barkley_1989	Charles Barkley	1	All-NBA First	1.26337449	0.59983008
8	Patrick Ewing_1989	Patrick Ewing	1	All-NBA First	0.65467626	0.5511058
9	Earvin Johnson_1989	Earvin Johnson	1	All-NBA First	3.1384083	0.4797891
10	Michael Jordan_1989	Michael Jordan	1	All-NBA First	2.10121458	0.52647658
11	Karl Malone_1989	Karl Malone	1	All-NBA First	0.74342105	0.56177013
12	Charles Barkley_1990	Charles Barkley	1	All-NBA First	1.35238095	0.56983719
13	Earvin Johnson_1990	Earvin Johnson	1	All-NBA First	3.14968153	0.47745902
14	Michael Jordan_1990	Michael Jordan	1	All-NBA First	2.24257426	0.53892216
15	Karl Malone_1990	Karl Malone	1	All-NBA First	1.10655738	0.52674129
16	David Robinson_1990	David Robinson	1	All-NBA First	0.77037037	0.55197657
17	Clyde Drexler_1991	Clyde Drexler	1	All-NBA First	2.13333333	0.4701897
18	Michael Jordan_1991	Michael Jordan	1	All-NBA First	2.445	0.51870187
19	Karl Malone_1991	Karl Malone	1	All-NBA First	0.97177419	0.52638522
20	Christopher Mullin_1991	Christopher Mullin	1	All-NBA First	1.41584158	0.5239899
21	David Robinson_1991	David Robinson	1	All-NBA First	0.9945055	0.55121043
22	Charles Barkley_1992	Charles Barkley	1	All-NBA First	1.65236052	0.52034884
23	Michael Jordan_1992	Michael Jordan	1	All-NBA First	2.06763285	0.49525711
24	Karl Malone_1992	Karl Malone	1	All-NBA First	1.28333333	0.55232155
25	Hakeem Olajuwon_1992	Hakeem Olajuwon	1	All-NBA First	1.11068702	0.52900811
26	William Price_1992	William Price	1	All-NBA First	3.07142857	0.48377282
27	Karl Malone_1993	Karl Malone	1	All-NBA First	1.4017094	0.49742268
28	Hakeem Olajuwon_1993	Hakeem Olajuwon	1	All-NBA First	1.05904059	0.52774498
29	Scottie Pippen_1993	Scottie Pippen	1	All-NBA First	1.73706897	0.49061033
30	Latrell Sprewell_1993	Latrell Sprewell	1	All-NBA First	1.70353982	0.43260409
31	John Stockton_1993	John Stockton	1	All-NBA First	3.87593985	0.52764977
32	Anfernee Hardaway_1994	Anfernee Hardaway	1	All-NBA First	2.13565892	0.51225919

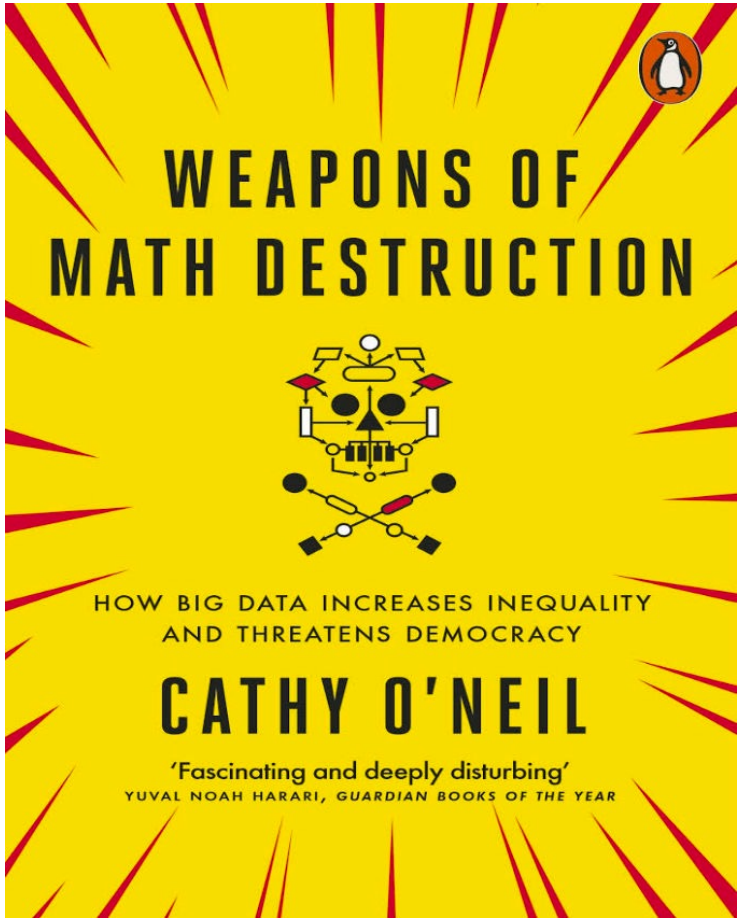


Problems with consequentialism

What do we measure?

Who is doing the measuring?

When are we done measuring?



Deontological Ethics

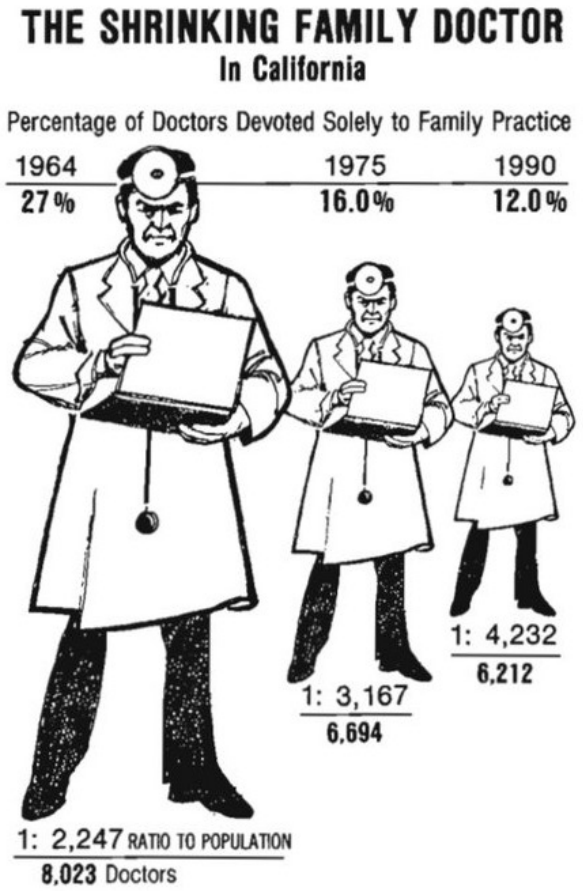
An action is ethical or unethical based on whether or not it follows the *rules.*

Visualization “Rules”

Tufte’s Lie Factor

LF = size of effect shown in graphic / size of effect in data

”Dishonest” if LF!=1

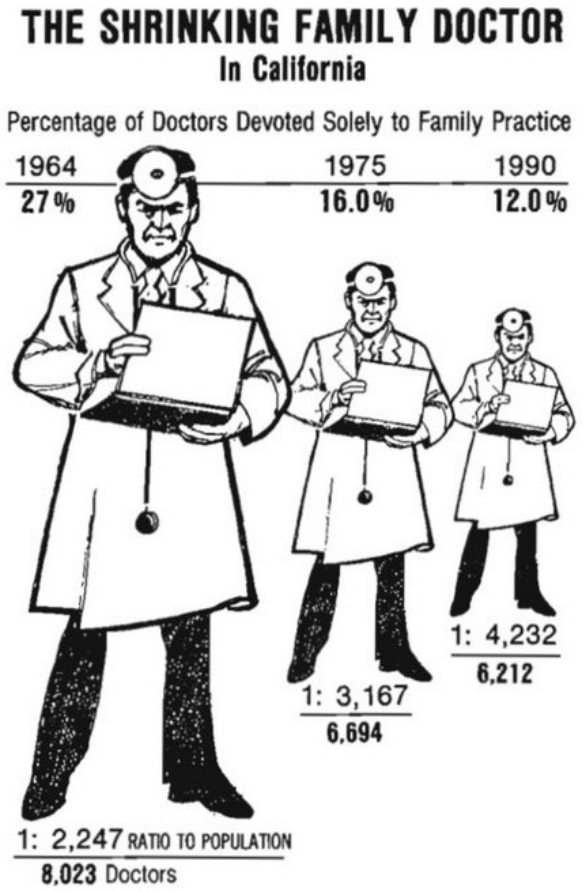


Visualization “Rules”

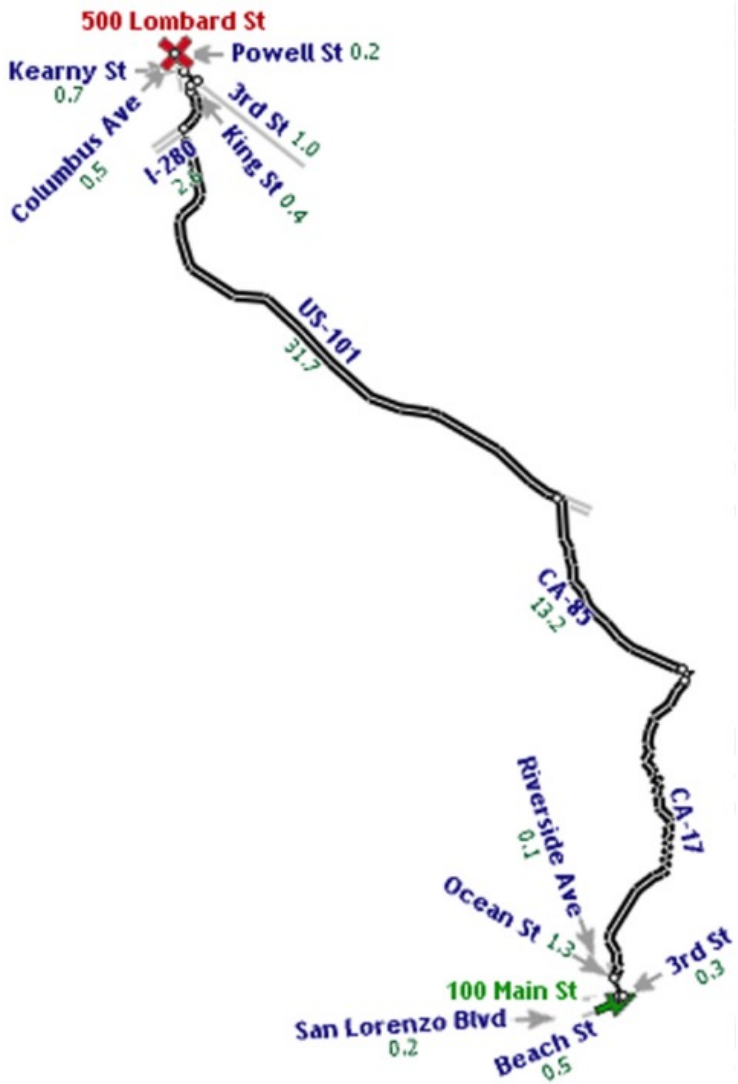
Tufte’s Lie Factor

LF = size of effect shown in graphic / size of effect in data

LF = **2.8!**



Visualization “White Lies”



Problems with deontology

Where do the rules come from?

Can the rules change?

What about edge cases?

Problems with deontology

Where do the rules come from?

Can the rules change?

What about edge cases?

Problems with deontology

Where do the rules come from?

Can the rules change?

What about edge cases?

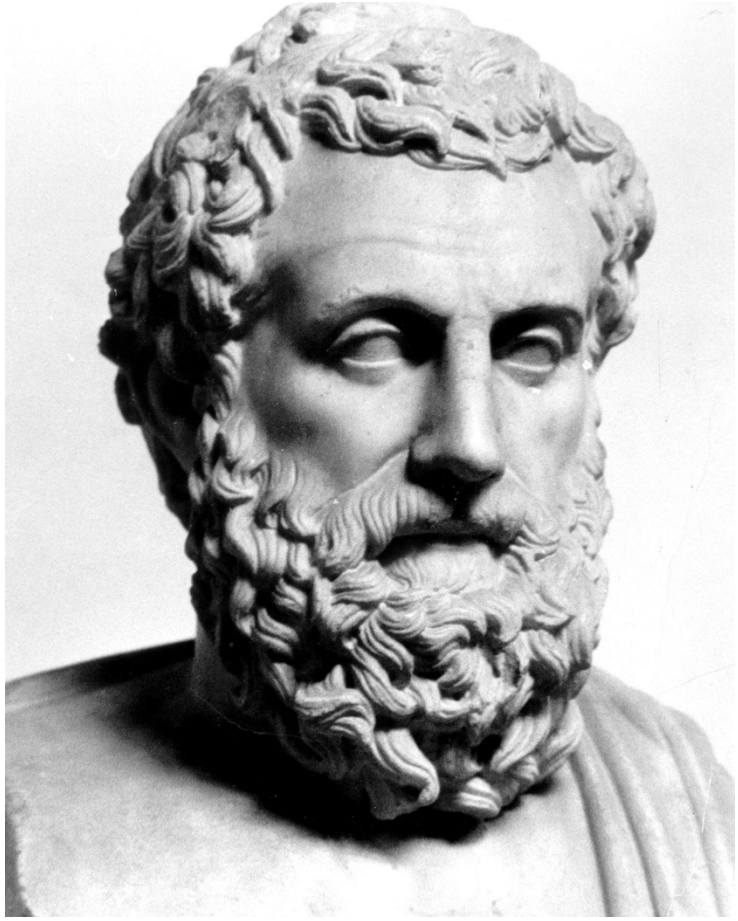
Problems with deontology

Where do the rules come from?

Can the rules change?

What about edge cases?

Virtue Ethics



Your actions are assessed by the extent to which they *cultivate* your virtues

Critical InfoVis: Exploring the Politics of Visualization

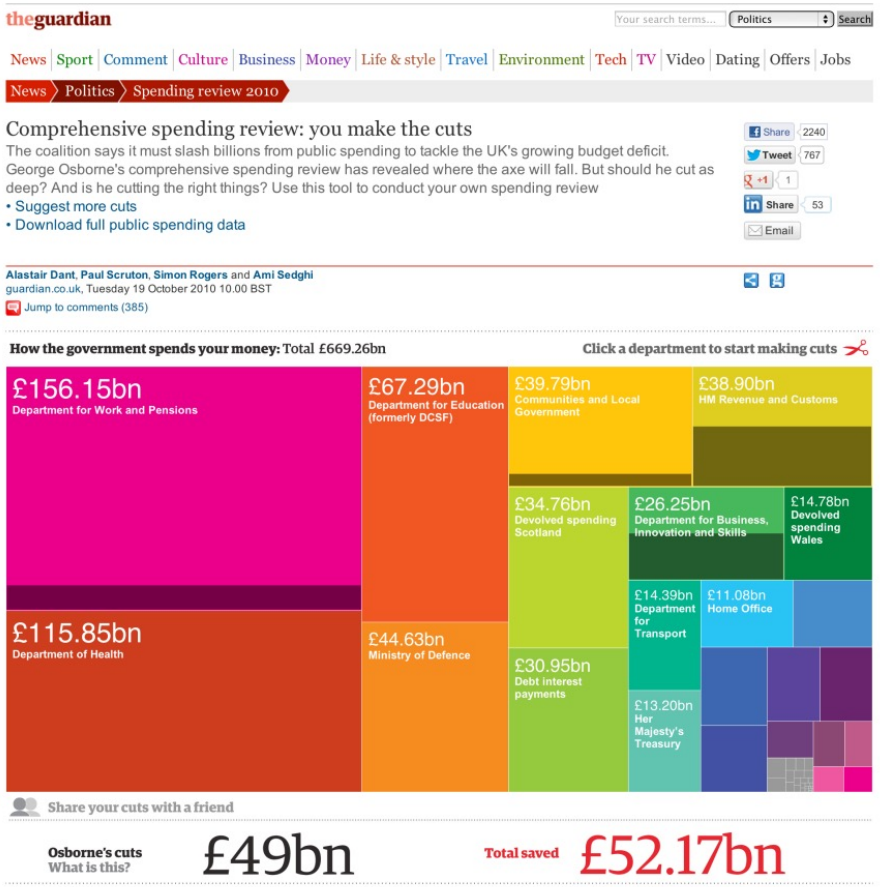
Disclosure

Plurality

Contingency

Empowerment

-Marian Dörk, Patrick Feng, Chris Collins, Sheelagh Carpendale

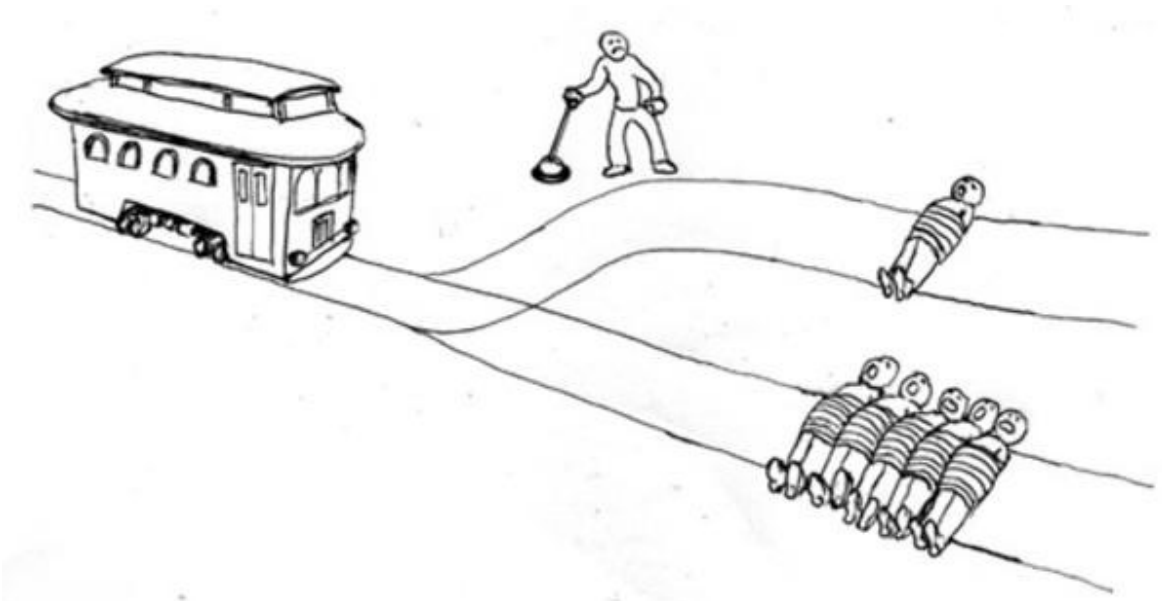


Problems with virtue ethics

Where do the virtues come from?

What do I do about conflicts in virtues?

What is never okay to do?



Role Ethics

Your actions are assessed by the extent to which you *fulfill the obligations* of your role.

Professional Ethics

ACM CODE OF ETHICS

*Computing professionals' actions **CHANGE THE WORLD.** They should reflect upon the wider impact of their work, consistently supporting the public good.*

GENERAL ETHICAL PRINCIPLES.

Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing. Avoid harm. Be honest and trustworthy. Be fair and take action not to discriminate. Respect the work required to produce new ideas, inventions, and creative works, and computing artifacts. Respect privacy. Honor confidentiality.

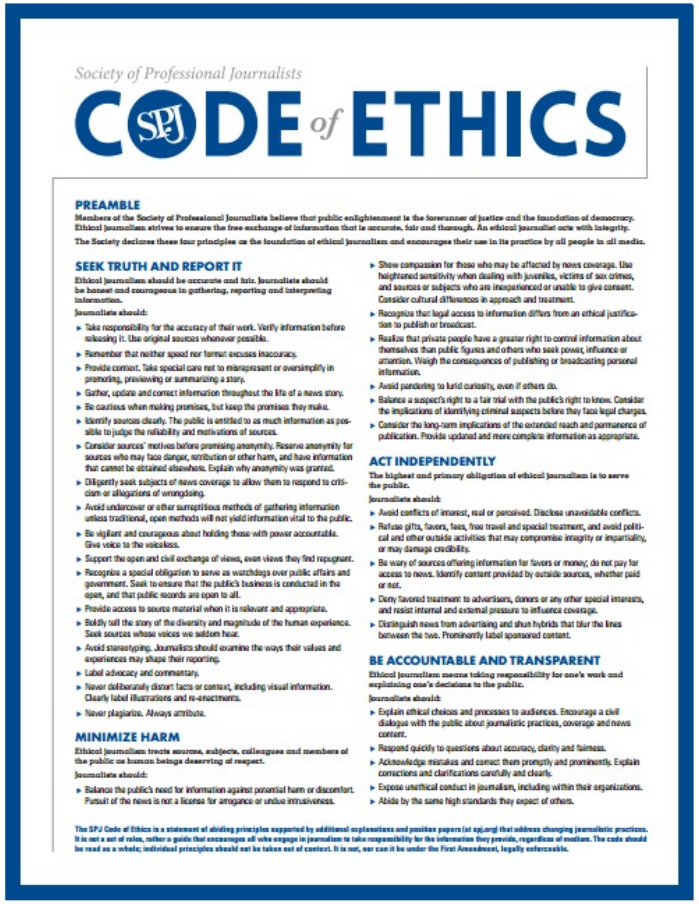
PROFESSIONAL RESPONSIBILITIES.

Strive to achieve **high quality** in both the processes and products of professional work. Maintain **high standards** of professional competence, conduct, and ethical practice. Know and **respect existing rules** pertaining to professional work. Accept and provide appropriate **professional review**. Give **comprehensive and thorough evaluations** of computer systems and their impacts, including analysis of possible risks. Perform **work only in areas of competence**. Foster **public awareness and understanding** of computing, related technologies, and their consequences. Access computing and communication resources only when authorized or when compelled by the public good. Design and implement systems that are **robustly and usably secure.**

PROFESSIONAL LEADERSHIP PRINCIPLES.

Ensure that the public good is the central concern during all professional computing work. Articulate, encourage acceptance of, and evaluate fulfillment of **social responsibilities** by members of the organization or group. Manage personnel and resources to **enhance the quality of working life**. Articulate, apply, and support policies and processes that **reflect the principles of the Code**. Create opportunities for members of the organization or group to **grow as professionals**. **Use care** when modifying or retiring systems. Recognize and take special care of systems that become integrated in the infrastructure of society.

https://www.acm.org/code-of-ethics



Society of Professional Journalists

SPJ CODE of ETHICS

PREAMBLE

Members of the Society of Professional Journalists believe that public enlightenment is the forerunner of justice and the foundation of democracy. Ethical journalism strives to ensure the free exchange of information that is accurate, fair and thorough. An ethical journalist acts with integrity.

The Society declares these four principles as the foundation of ethical journalism and encourages their use in its practice by all people in all media.

SEEK TRUTH AND REPORT IT

Ethical journalism should be accurate and fair. Journalists should be honest and courageous in gathering, reporting and interpreting information.

Journalists should:

- Take responsibility for the accuracy of their work. Verify information before releasing it. Use original sources whenever possible.
- Remember that neither speed nor format excuses inaccuracy.
- Provide context. Take special care not to misrepresent or oversimplify in promoting, previewing or summarizing a story.
- Gather, update and correct information throughout the life of a news story.
- Be cautious when making promises, but keep the promises they make.
- Identify sources clearly. The public is entitled to as much information as possible to judge the reliability and motivations of sources.
- Consider sources' motives before promising anonymity. Reserve anonymity for sources who may face danger, retribution or other harm, and have information that cannot be obtained elsewhere. Explain why anonymity was granted.
- Diligently seek subjects of news coverage to allow them to respond to criticism or allegations of wrongdoing.
- Avoid undercover or other surreptitious methods of gathering information unless traditional, open methods will not yield information vital to the public.
- Be vigilant and courageous about holding those with power accountable. Give voice to the voiceless.
- Support the open and civil exchange of views, even views they find repugnant.
- Recognize a special obligation to serve as watchdogs over public affairs and government. Seek to ensure that the public's business is conducted in the open, and that public records are open to all.
- Provide access to source material when it is relevant and appropriate.
- Boldly tell the story of the diversity and magnitude of the human experience. Seek sources whose voices we seldom hear.
- Avoid stereotyping. Journalists should examine the ways their values and experiences may shape their reporting.
- Label advocacy and commentary.
- Never deliberately distort facts or context, including visual information. Clearly label illustrations and re-enactments.
- Never plagiarize. Always attribute.

MINIMIZE HARM

Ethical journalism treats sources, subjects, colleagues and members of the public as human beings deserving of respect.

Journalists should:

- Balance the public's need for information against potential harm or discomfort. Pursuit of the news is not a license for arrogance or undue intrusiveness.
- Show compassion for those who may be affected by news coverage. Use heightened sensitivity when dealing with juveniles, victims of sex crimes, and sources or subjects who are inexperienced or unable to give consent. Consider cultural differences in approach and treatment.
- Recognize that legal access to information differs from an ethical justification to publish or broadcast.
- Realize that private people have a greater right to control information about themselves than public figures and others who seek power, influence or attention. Weigh the consequences of publishing or broadcasting personal information.
- Avoid pandering to lurid curiosity, even if others do.
- Balance a suspect's right to a fair trial with the public's right to know. Consider the implications of identifying criminal suspects before they face legal charges.
- Consider the long-term implications of the extended reach and permanence of publication. Provide updated and more complete information as appropriate.

ACT INDEPENDENTLY

The highest and primary obligation of ethical journalism is to serve the public.

Journalists should:

- Avoid conflicts of interest, real or perceived. Disclose unavoidable conflicts.
- Refuse gifts, favors, fees, free travel and special treatment, and avoid political and other outside activities that may compromise integrity or impartiality, or may damage credibility.
- Be wary of sources offering information for favors or money; do not pay for access to news. Identify content provided by outside sources, whether paid or not.
- Deny favored treatment to advertisers, donors or any other special interests, and resist internal and external pressure to influence coverage.
- Distinguish news from advertising and shun hybrids that blur the lines between the two. Prominently label sponsored content.

BE ACCOUNTABLE AND TRANSPARENT

Ethical journalism means taking responsibility for one's work and explaining one's decisions to the public.

Journalists should:

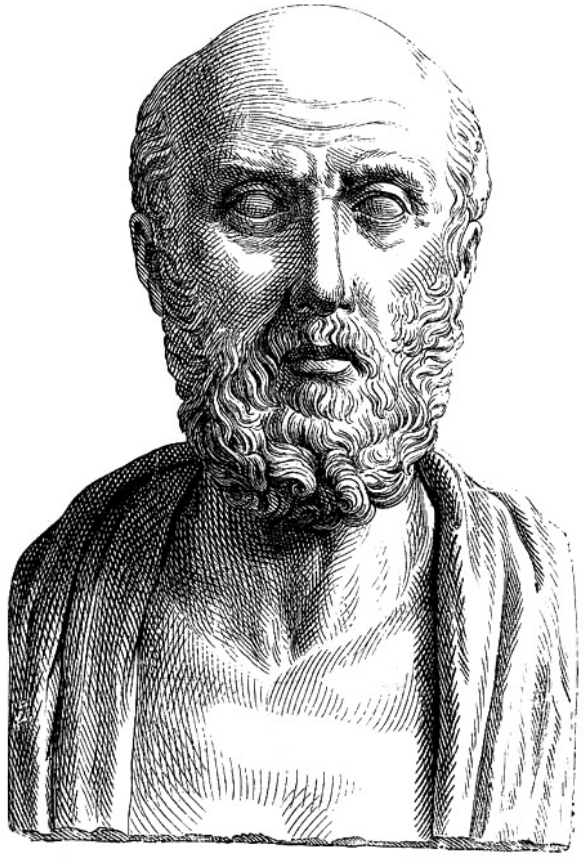
- Explain ethical choices and processes to audiences. Encourage a civil dialogue with the public about journalistic practices, coverage and news content.
- Respond quickly to questions about accuracy, clarity and fairness.
- Acknowledge mistakes and correct them promptly and prominently. Explain corrections and clarifications carefully and clearly.
- Expose unethical conduct in journalism, including within their organizations.
- Abide by the same high standards they expect of others.

The SPJ Code of Ethics is a statement of abiding principles supported by additional explanations and position papers (at spj.org) that address changing journalistic practices. It is not a set of rules, rather a guide that encourages all who engage in journalism to take responsibility for the information they provide, regardless of medium. The code should be read as a whole; individual principles should not be taken out of context. It is not, nor can it be under the First Amendment, legally enforceable.

Visualization Hippocratic Oath?

“ I shall not use visualization to intentionally hide or confuse the truth which it is intended to portray. I will respect the great power visualization has in garnering wisdom and misleading the uninformed. I accept this responsibility willfully and without reservation, and promise to defend this oath against all enemies, both domestic and foreign.”

-Jason Moore

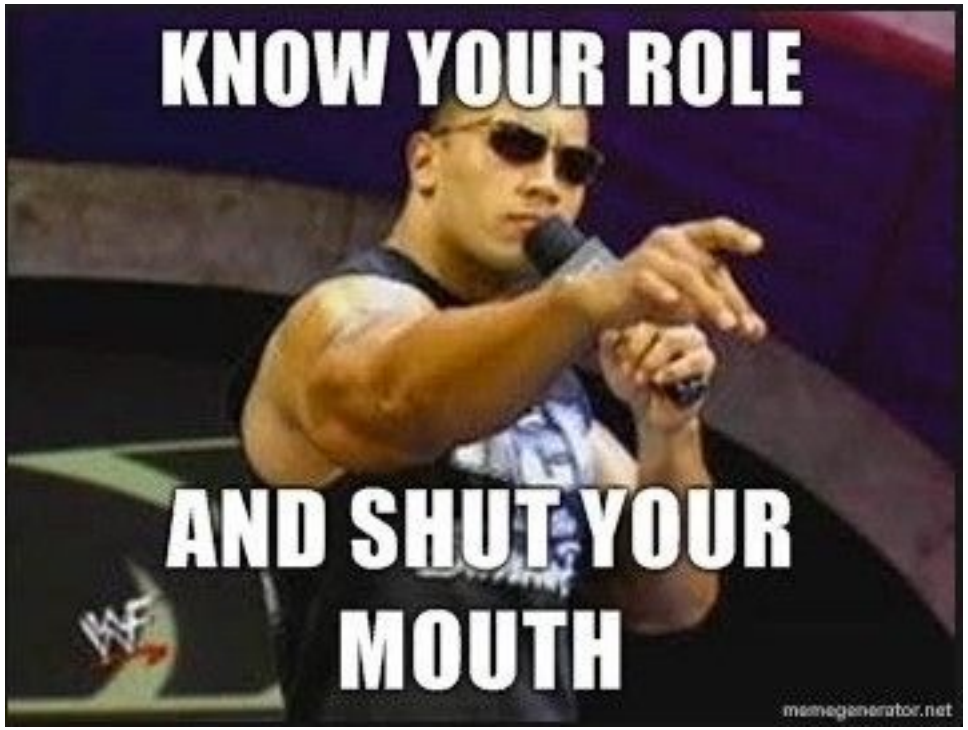


Problems with role-based ethics

Who gives you your roles?

What happens if you have multiple roles?

How big do our roles get?



Accounts of Ethics

Consequentialist Ethics
Deontological Ethics
Virtue Ethics
Role Based Ethics
... lots more

Berkeley/Haas Ethics Questions

Would I be happy for this decision to be on the public record?

What would happen if everybody did this?

How would I like it if someone did this to me?

Will the proposed course of action bring about a good result?

What will the proposed course of action do to my character or the character of my organization?

Is the proposed course of action consistent with my espoused values and principles?

What's a "Good" Visualization?

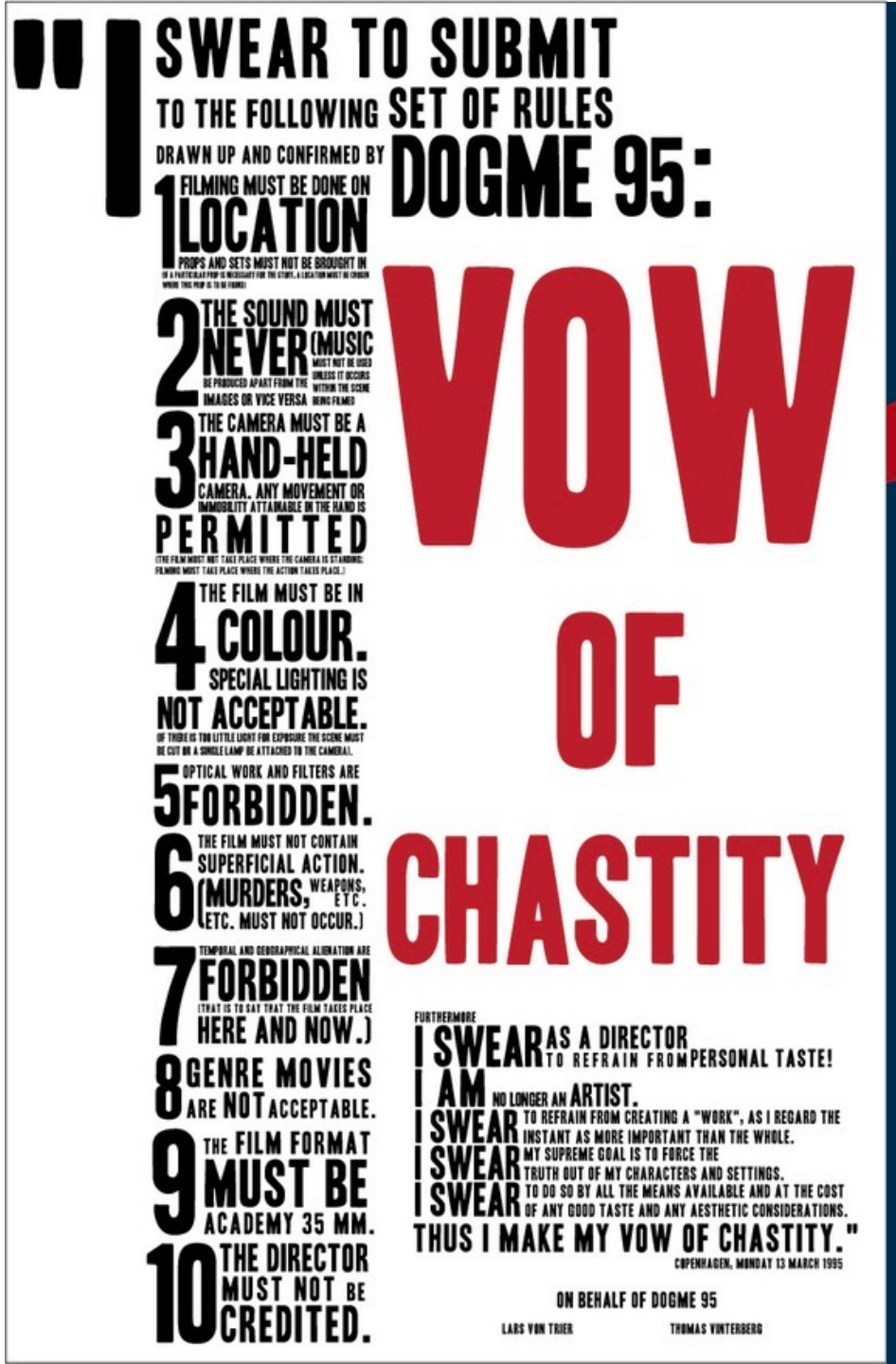
One that has the most *benefits* for the least *cost*

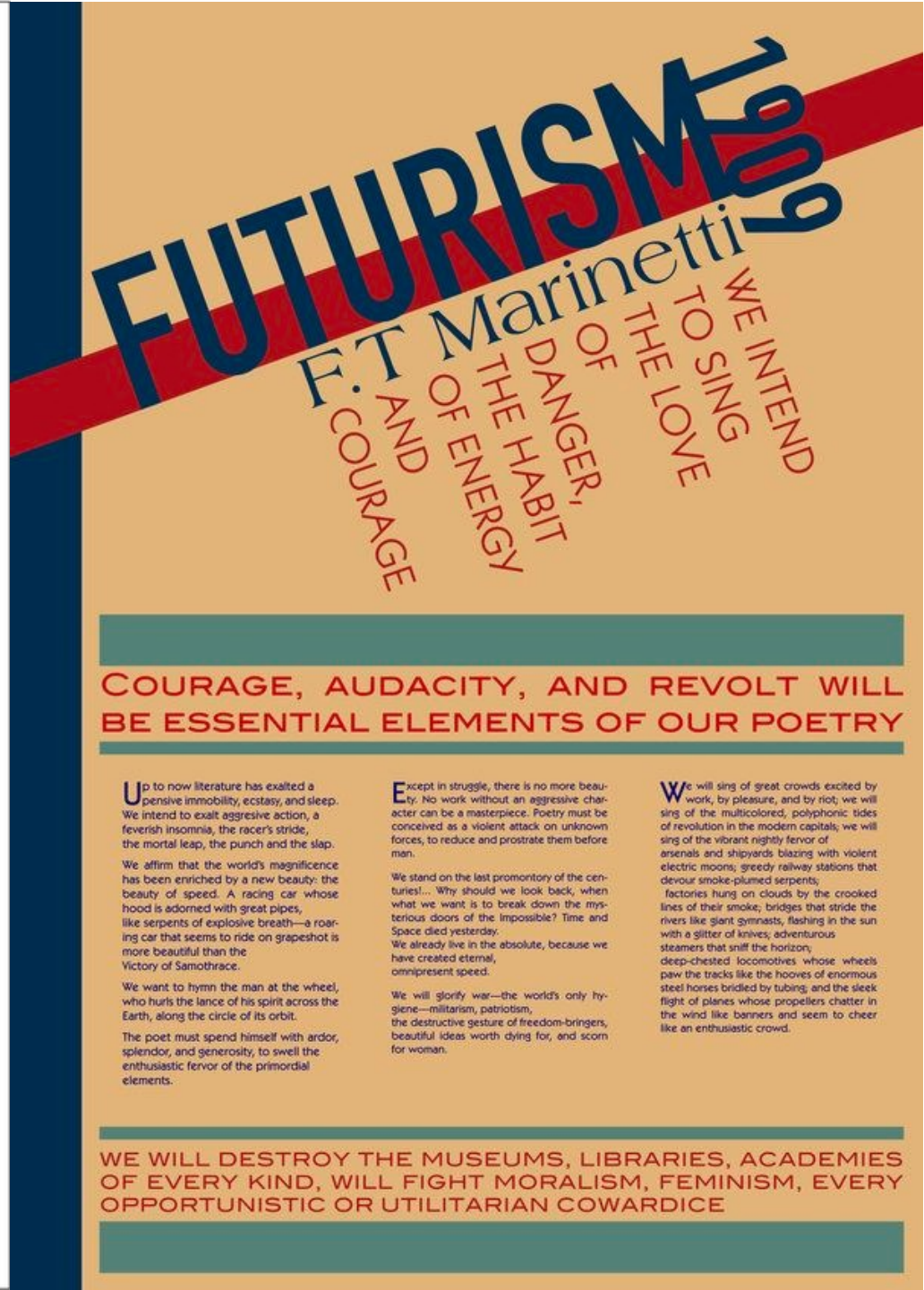
One that follows the *rules* of *good design*

One that *cultivates* the right *virtues*

One that *fulfills* our *duties* as visualization designers

Manifestos

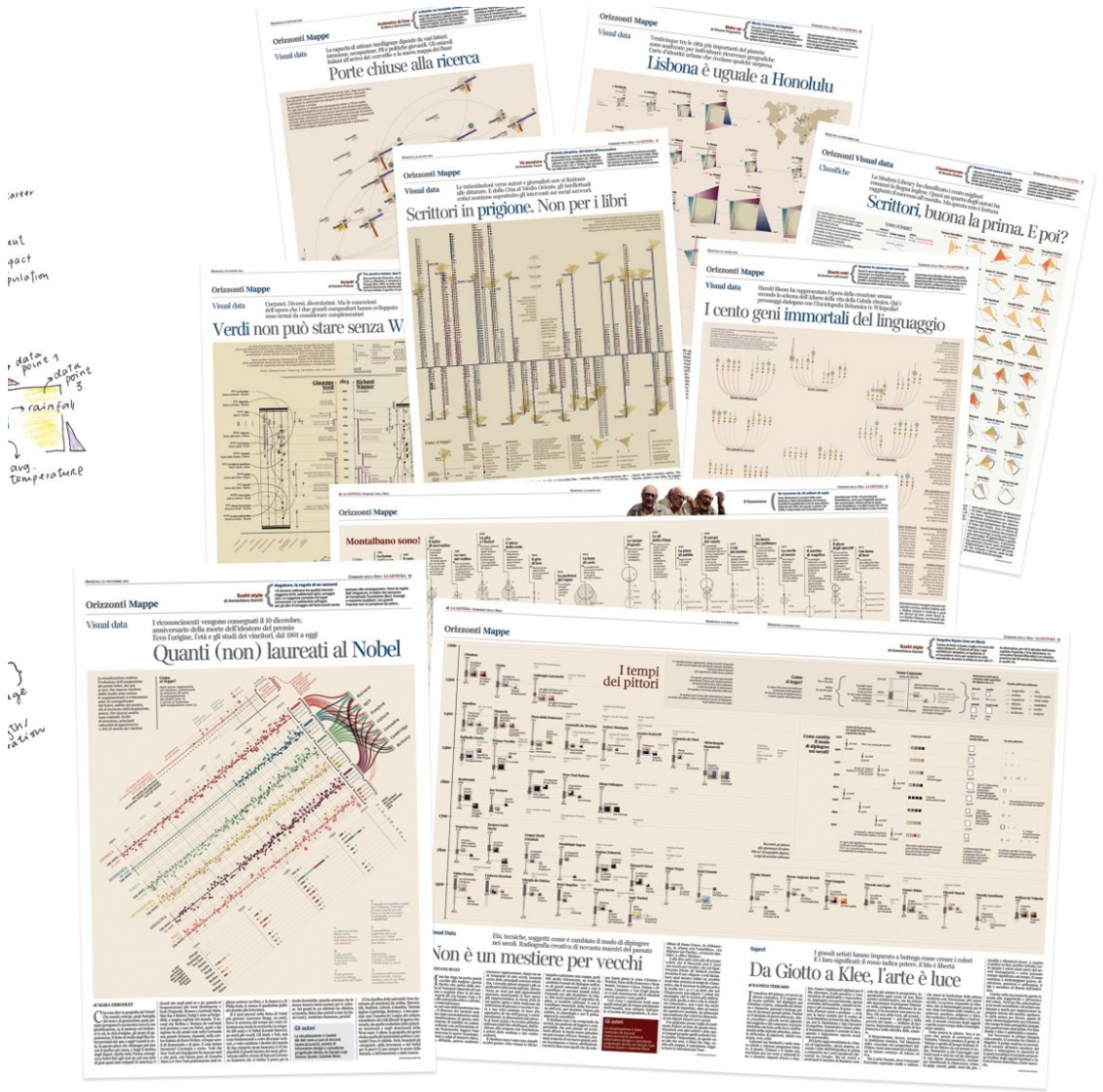

"I SWEAR TO SUBMIT TO THE FOLLOWING SET OF RULES DRAWN UP AND CONFIRMED BY DOGME 95:
1 FILMING MUST BE DONE ON LOCATION
PROPS AND SETS MUST NOT BE BROUGHT IN
2 THE SOUND MUST NEVER (MUSIC MUST NOT BE USED UNLESS IT OCCURS WITHIN THE SCENE BEING FILMED) BE PRODUCED APART FROM THE IMAGES OR VICE VERSA
3 THE CAMERA MUST BE A HAND-HELD CAMERA. ANY MOVEMENT OR IMMOBILITY ATTAINABLE IN THE HAND IS PERMITTED
(THE FILM MUST NOT TAKE PLACE WHERE THE CAMERA IS STANDING; FILMING MUST TAKE PLACE WHERE THE ACTION TAKES PLACE.)
4 THE FILM MUST BE IN COLOUR. SPECIAL LIGHTING IS NOT ACCEPTABLE.
(IF THERE IS TOO LITTLE LIGHT FOR EXPOSURE THE SCENE MUST BE CUT OR A SINGLE LAMP BE ATTACHED TO THE CAMERA).
5 OPTICAL WORK AND FILTERS ARE FORBIDDEN.
6 THE FILM MUST NOT CONTAIN SUPERFICIAL ACTION. (MURDERS, WEAPONS, ETC. ETC. MUST NOT OCCUR.)
7 TEMPORAL AND GEORAPHICAL ALIENATION ARE FORBIDDEN (THAT IS TO SAY THAT THE FILM TAKES PLACE HERE AND NOW.)
8 GENRE MOVIES ARE NOT ACCEPTABLE.
9 THE FILM FORMAT MUST BE ACADEMY 35 MM.
10 THE DIRECTOR MUST NOT BE CREDITED.
VOW OF CHASTITY
FURTHERMORE
I SWEAR AS A DIRECTOR TO REFRAIN FROM PERSONAL TASTE!
I AM NO LONGER AN ARTIST.
I SWEAR TO REFRAIN FROM CREATING A "WORK", AS I REGARD THE INSTANT AS MORE IMPORTANT THAN THE WHOLE.
I SWEAR MY SUPREME GOAL IS TO FORCE THE TRUTH OUT OF MY CHARACTERS AND SETTINGS.
I SWEAR TO DO SO BY ALL THE MEANS AVAILABLE AND AT THE COST OF ANY GOOD TASTE AND ANY AESTHETIC CONSIDERATIONS.
THUS I MAKE MY VOW OF CHASTITY."
COPENHAGEN, MONDAY 13 MARCH 1995
ON BEHALF OF DOGME 95
LARS VON TRIER
THOMAS VINTERBERG


FUTURISM 1909
F.T Marinetti
WE INTEND TO SING THE LOVE OF DANGER, THE HABIT OF ENERGY AND COURAGE
COURAGE, AUDACITY, AND REVOLT WILL BE ESSENTIAL ELEMENTS OF OUR POETRY
Up to now literature has exalted a pensive immobility, ecstasy, and sleep. We intend to exalt aggresive action, a feverish insomnia, the racer's stride, the mortal leap, the punch and the slap.
We affirm that the world's magnificence has been enriched by a new beauty: the beauty of speed. A racing car whose hood is adorned with great pipes, like serpents of explosive breath—a roaring car that seems to ride on grapeshot is more beautiful than the Victory of Samothrace.
We want to hymn the man at the wheel, who hurls the lance of his spirit across the Earth, along the circle of its orbit.
The poet must spend himself with ardor, splendor, and generosity, to swell the enthusiastic fervor of the primordial elements.
Except in struggle, there is no more beauty. No work without an aggressive character can be a masterpiece. Poetry must be conceived as a violent attack on unknown forces, to reduce and prostrate them before man.
We stand on the last promontory of the centuries!... Why should we look back, when what we want is to break down the mysterious doors of the Impossible? Time and Space died yesterday. We already live in the absolute, because we have created eternal, omnipresent speed.
We will glorify war—the world's only hygiene—militarism, patriotism, the destructive gesture of freedom-bringers, beautiful ideas worth dying for, and scorn for woman.
We will sing of great crowds excited by work, by pleasure, and by riot; we will sing of the multicolored, polyphonic tides of revolution in the modern capitals; we will sing of the vibrant nightly fervor of arsenals and shipyards blazing with violent electric moons; greedy railway stations that devour smoke-plumed serpents; factories hung on clouds by the crooked lines of their smoke; bridges that stride the rivers like giant gymnasts, flashing in the sun with a glitter of knives; adventurous steamers that sniff the horizon; deep-chested locomotives whose wheels paw the tracks like the hooves of enormous steel horses bridled by tubing; and the sleek flight of planes whose propellers chatter in the wind like banners and seem to cheer like an enthusiastic crowd.
WE WILL DESTROY THE MUSEUMS, LIBRARIES, ACADEMIES OF EVERY KIND, WILL FIGHT MORALISM, FEMINISM, EVERY OPPORTUNISTIC OR UTILITARIAN COWARDICE

Data Humanism

“We are ready to question the impersonality of a merely technical approach to data and to begin designing ways to connect numbers to what they really stand for: knowledge, behaviors, people.”

-Giorgia Lupi



Data Feminism

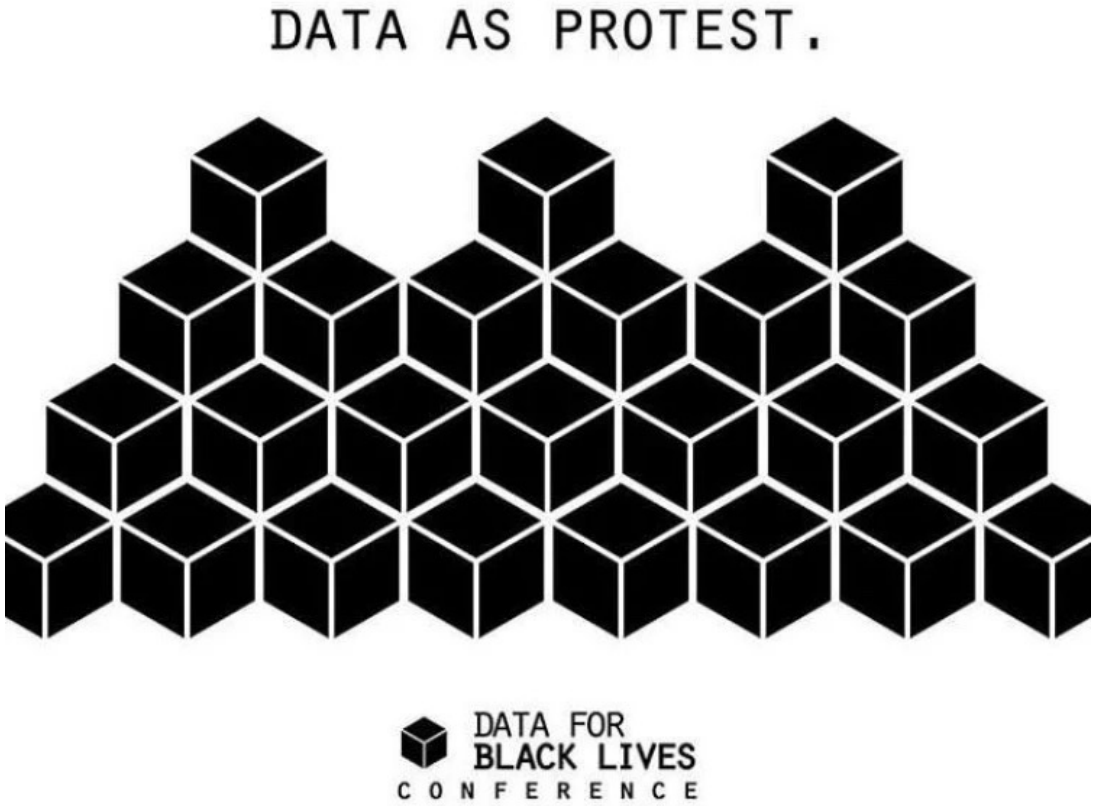
“We call attention to the people and their bodies who are typically included in the data collection process, as well as to the people and their bodies who are typically left out.”

-Lauren Klein and Catherine D’Ignazio

Data for Black Lives

“White supremacy is an algorithm, in and of itself… much of the work for us as data practitioners is to reverse engineer that algorithm.”

-Ejike Obineme



Human-Computer Insurrection: Notes on an Anarchist HCI

"We must work to ensure our technologies actively contribute to (rather than detract from) human autonomy and dignity."

-Os Keyes, Josephine Hoy, and Margaret Drouhard

Questions to Ask

Can I identify ethical and unethical data visualizations?

Can I critique the moral character of data visualizations?

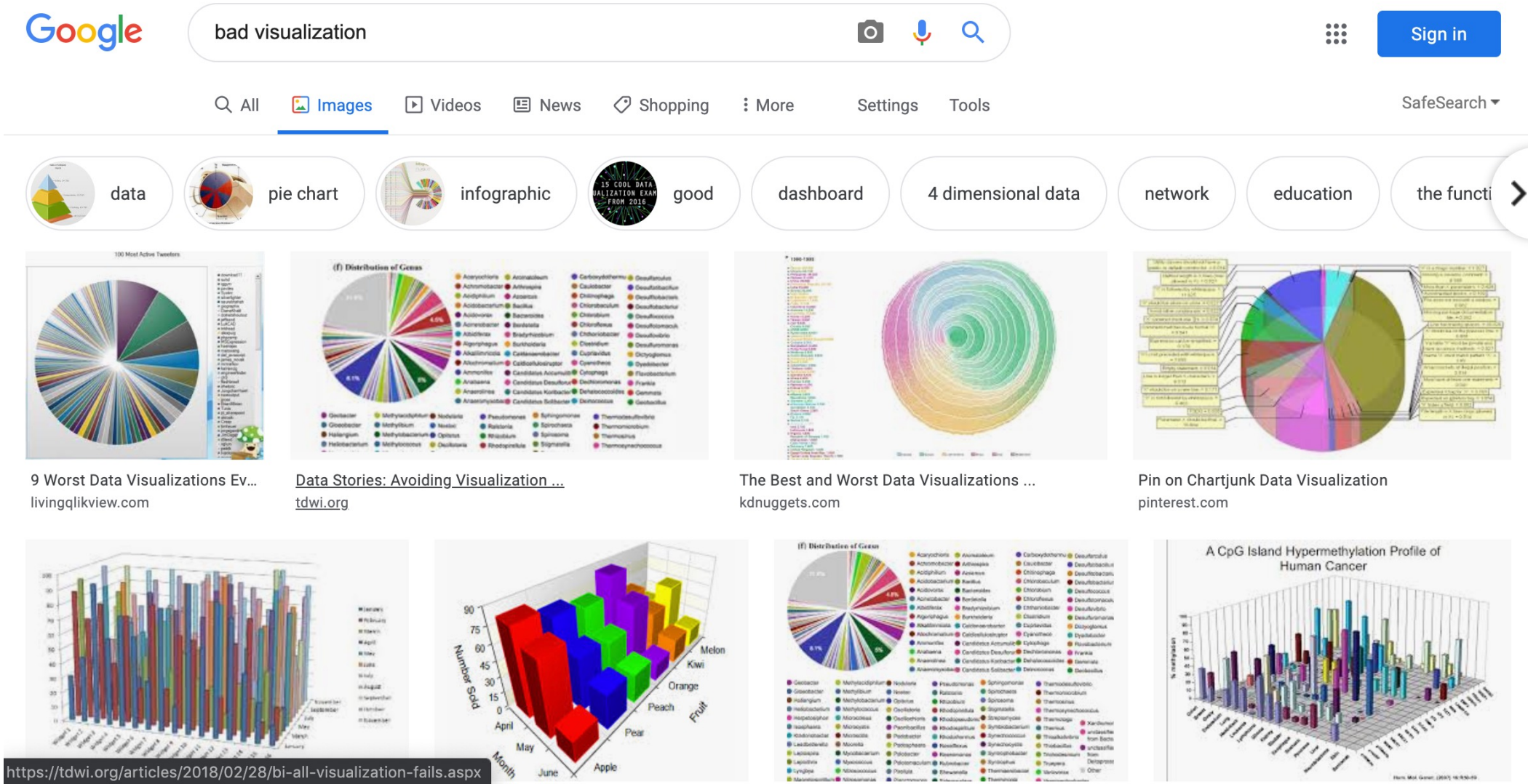
Can I impact (or stop) projects I think are unethical?

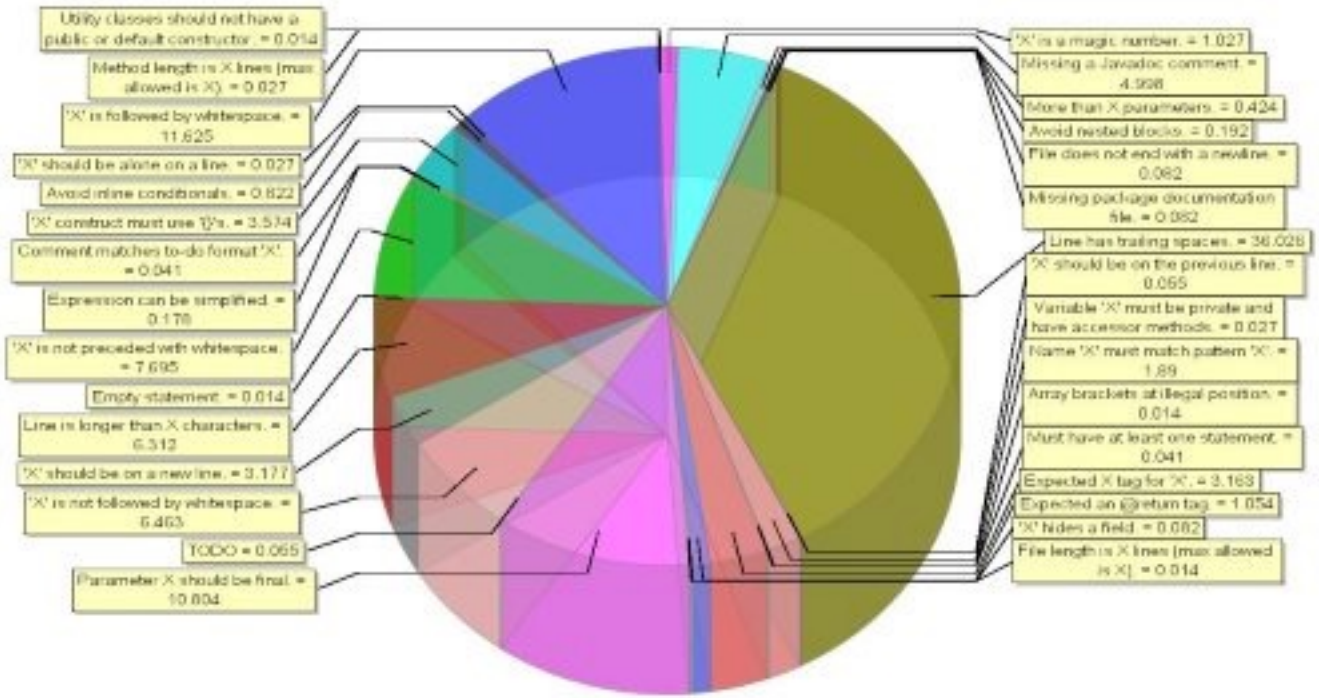
Thanks!

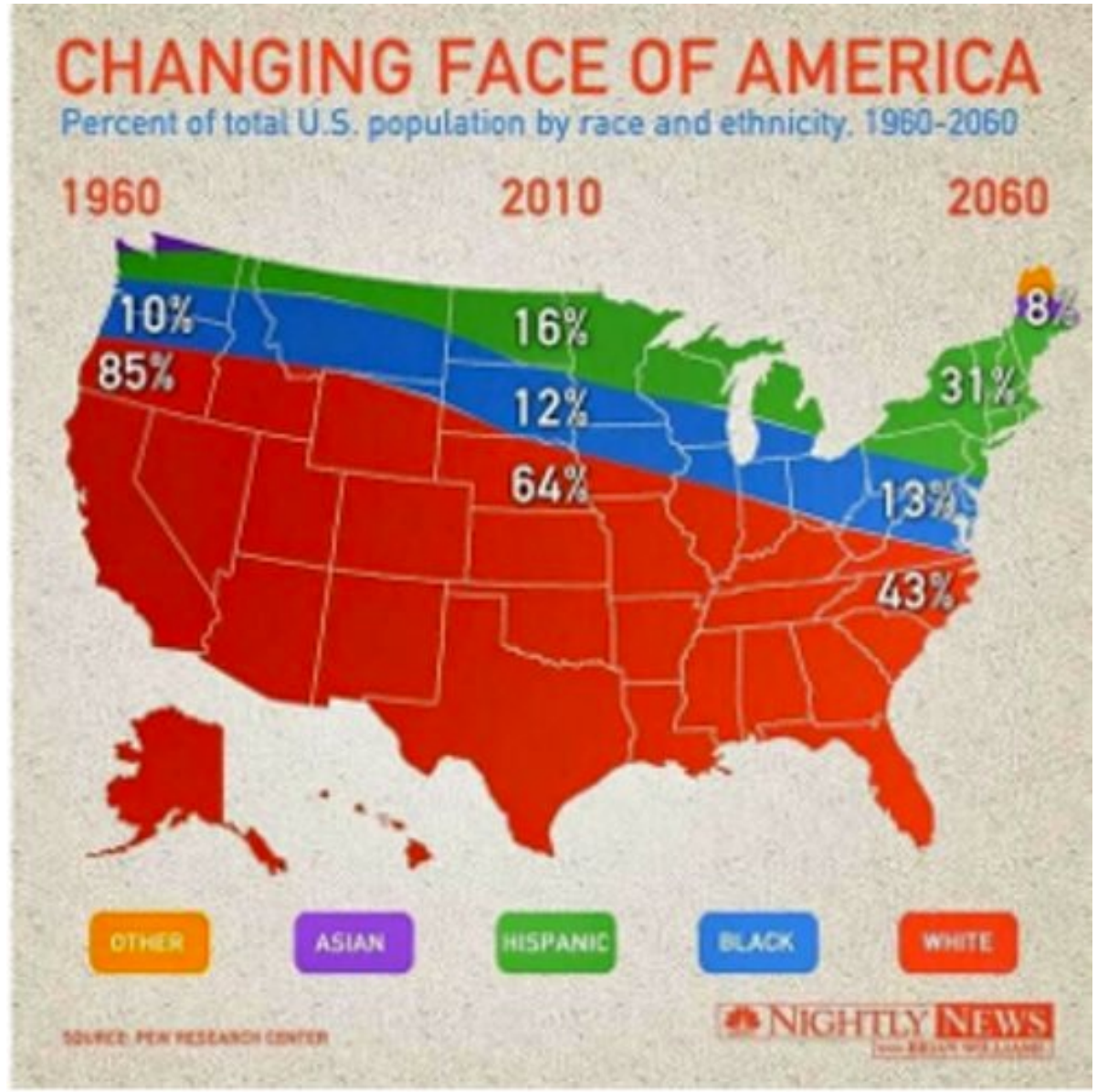
Michael Correll

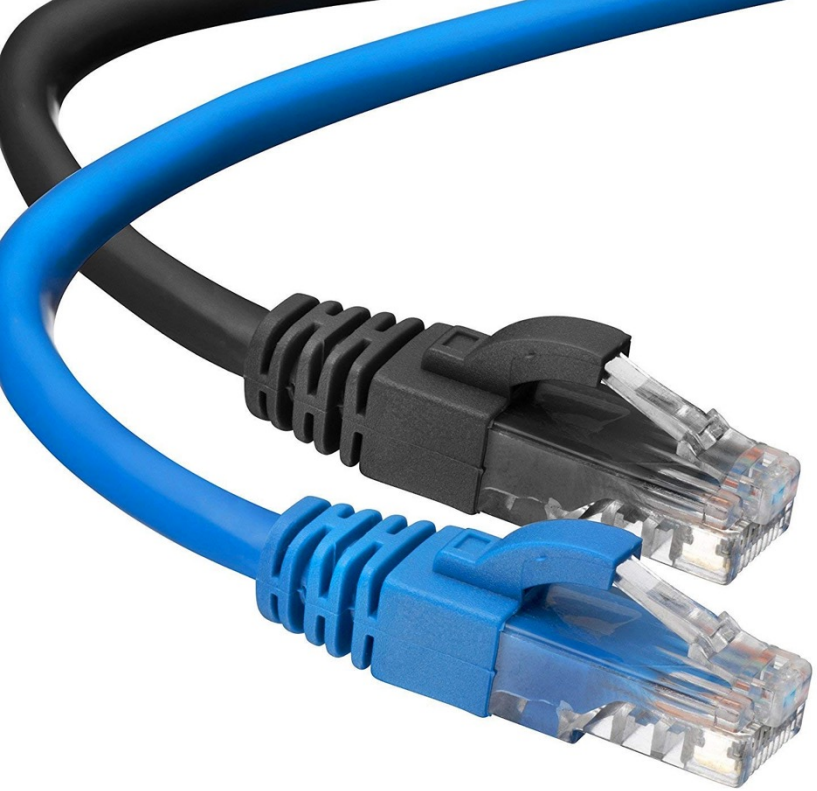
correll.io

Why is our conception of “bad” visualization so narrow?



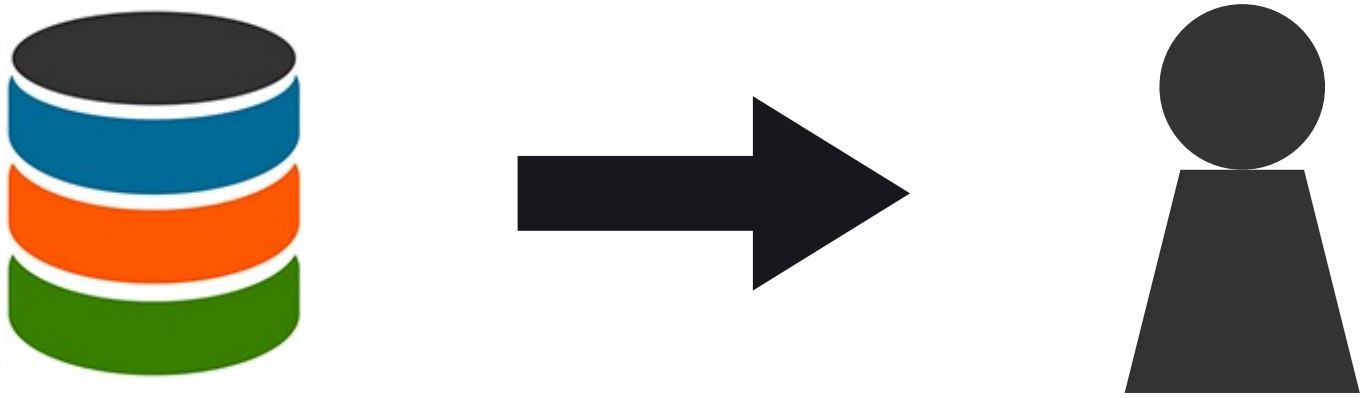

Utility classes should not have a public or default constructor. = 0.014
Method length is X lines (max allowed is X). = 0.027
'X' is followed by whitespace. = 11.625
'X' should be alone on a line. = 0.027
Avoid inline conditionals. = 0.822
'X' construct must use '{}'s. = 3.534
Comment matches to-do format 'X'. = 0.041
Expression can be simplified. = 0.178
'X' is not preceded with whitespace. = 7.695
Empty statement. = 0.014
Line is longer than X characters. = 6.312
'X' should be on a new line. = 3.177
'X' is not followed by whitespace. = 6.463
TODO = 0.065
Parameter X should be final. = 10.804
'X' is a magic number. = 1.027
Missing a Javadoc comment. = 4.998
More than X parameters. = 0.424
Avoid nested blocks. = 0.192
File does not end with a newline. = 0.082
Missing package documentation file. = 0.082
Line has trailing spaces. = 36.028
'X' should be on the previous line. = 0.065
Variable 'X' must be private and have accessor methods. = 0.027
Name 'X' must match pattern 'X'. = 1.89
Array brackets at illegal position. = 0.014
Must have at least one statement. = 0.041
Expected X tag for 'X'. = 3.163
Expected an @return tag. = 1.054
'X' hides a field. = 0.082
File length is X lines (max allowed is X). = 0.014


CHANGING FACE OF AMERICA
Percent of total U.S. population by race and ethnicity, 1960-2060
1960
2010
2060
10%
85%
16%
12%
64%
8%
31%
13%
43%
OTHER
ASIAN
HISPANIC
BLACK
WHITE
SOURCE: PEW RESEARCH CENTER
NIGHTLY NEWS



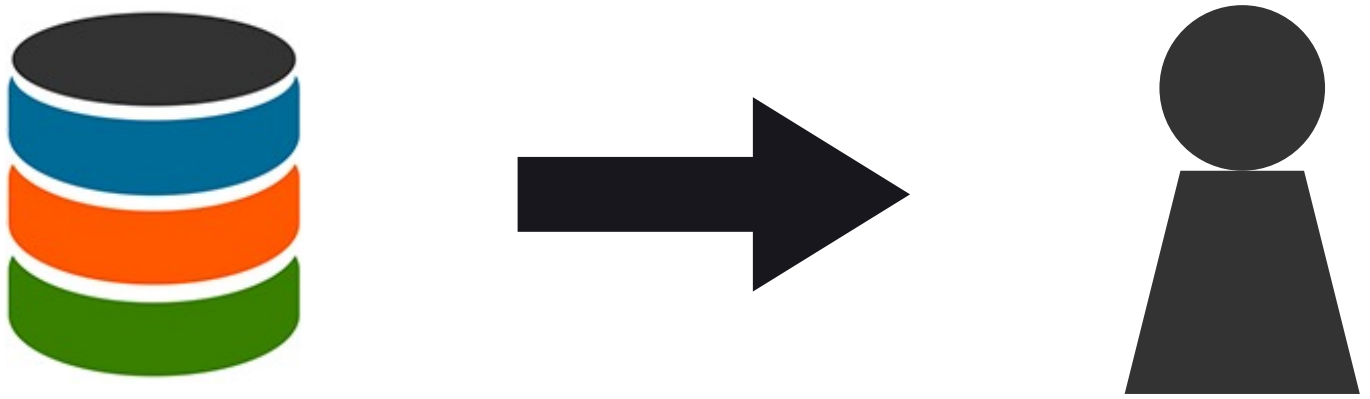
The Ethernet Delusion

“The purpose of visualization is to maximize throughput and minimize noise as you transport a dataset to a person’s brain”



Data

User



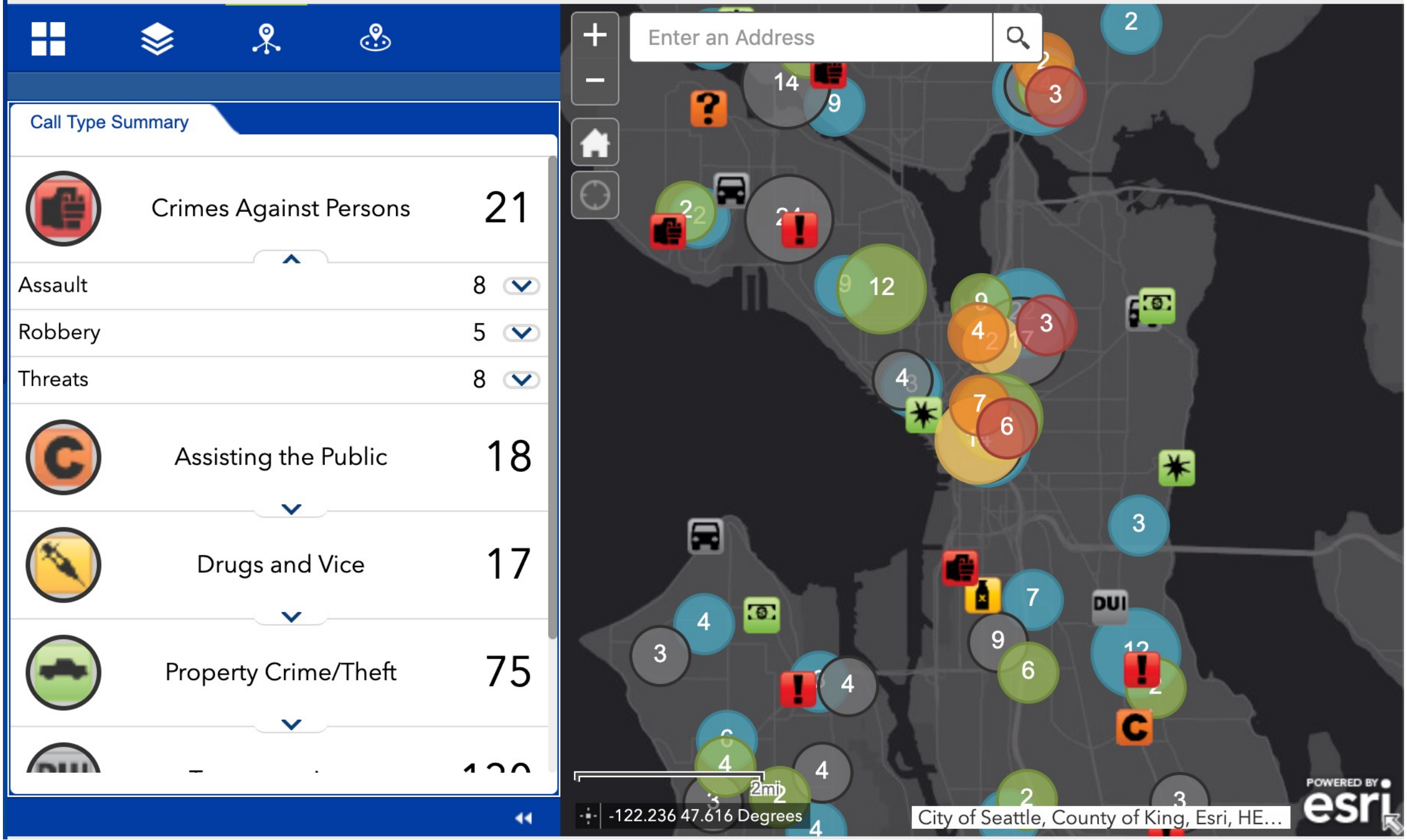
Data **Visualization** User

Problems with the Ethernet Delusions

Ignores the source and rhetorical objective of visualization

Assumes data are objective truths about the world

Pre-supposes that you *must* create a visualization


Call Type Summary
Crimes Against Persons
21
Assault
8
Robbery
5
Threats
8
Assisting the Public
18
Drugs and Vice
17
Property Crime/Theft
75
Enter an Address
DUI
2mi
-122.236 47.616 Degrees
City of Seattle, County of King, Esri, HE…
POWERED BY esri

Add Map Labels
Remove Color-Coding
Hide Overlays
2010 Census Block Data
1 Dot = 1 Person
White
Black
Asian
Hispanic
Other Race / Native American / Multi-racial
What am I looking at...?
Google
Tweet
Share
Dustin A. Cable | University of Virginia | Weldon Cooper Center for Public Service | Reference Data by Stamen Design
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WHITE COLLAR CRIME RISK ZONES

THE NEW INQUIRY

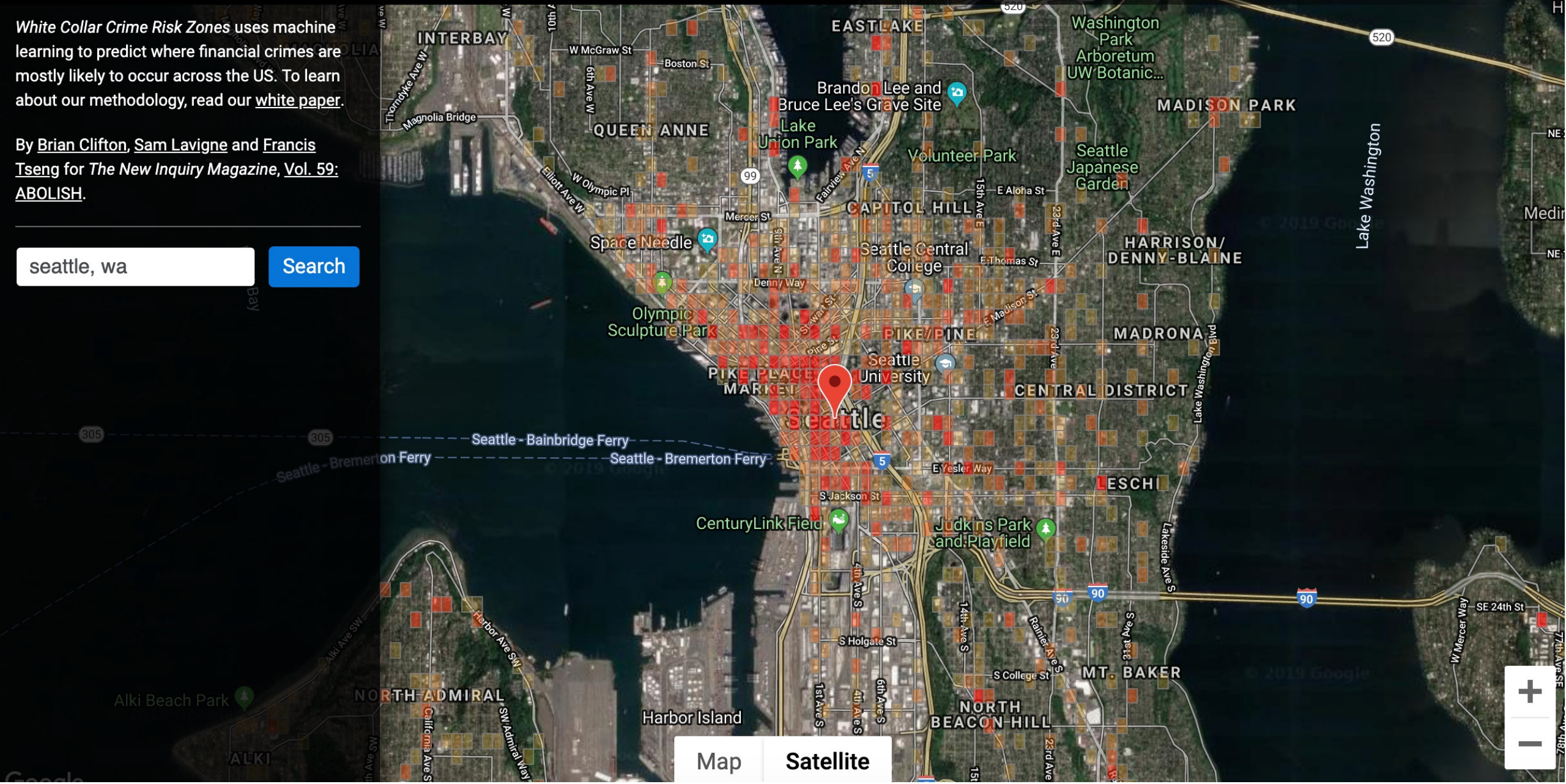
Download on the App Store

White Collar Crime Risk Zones uses machine learning to predict where financial crimes are mostly likely to occur across the US. To learn about our methodology, read our white paper.

By Brian Clifton, Sam Lavigne and Francis Tseng for *The New Inquiry Magazine*, Vol. 59: ABOLISH.

seattle, wa

Search



ashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (J...

Cumulative Cases | Active Cases | Incidence Rate | Case-Fatality Ratio | Testing Rate

191
countries/regions

Lancet Inf Dis Article: Here. Mobile Version: Here. Data sources: Full list. Downloadable database: GitHub, Feature Layer.
Lead by JHU CSSE. Technical Support: Esri Living Atlas team and JHU APL. Financial Support:

Global Deaths
2,067,611

404,284 deaths
US

211,491 deaths
Brazil

152,718 deaths
India

142,832 deaths
Mexico

93,469 deaths
United Kingdom

Global Deaths

US State L
Deaths, Rec

41,456 deaths,
recovered
New York US

34,488 deaths,
recovered
California US

33,065
deaths, 1,711,
recovered
Texas US

24,578 deaths,

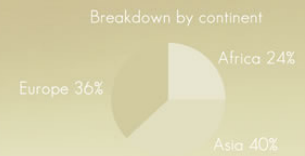
US Deaths,

Daily Cases

100 years of world cuisine

38,000,000 deaths 25 conflicts 1915 - present

100yearsofworldcuisine.com



Sudanese civil war
1983-2005
2,200,000 †

Holodomor
1932-33
3,000,000 †

Biafran war
1967-70
1,000,000 †

North Korean famine
1990-ongoing
2,000,000 †

Stalingrad
1942-43
1,520,000 †

Congo wars
1998-2003
3,900,000 †

Gulag system
1929-53
1,600,000 †

Wars in Indochina
1945-75
6,000,000 †

Khmer genocide
1975-79
3,000,000 †

Romas
1941-45
200,000 †

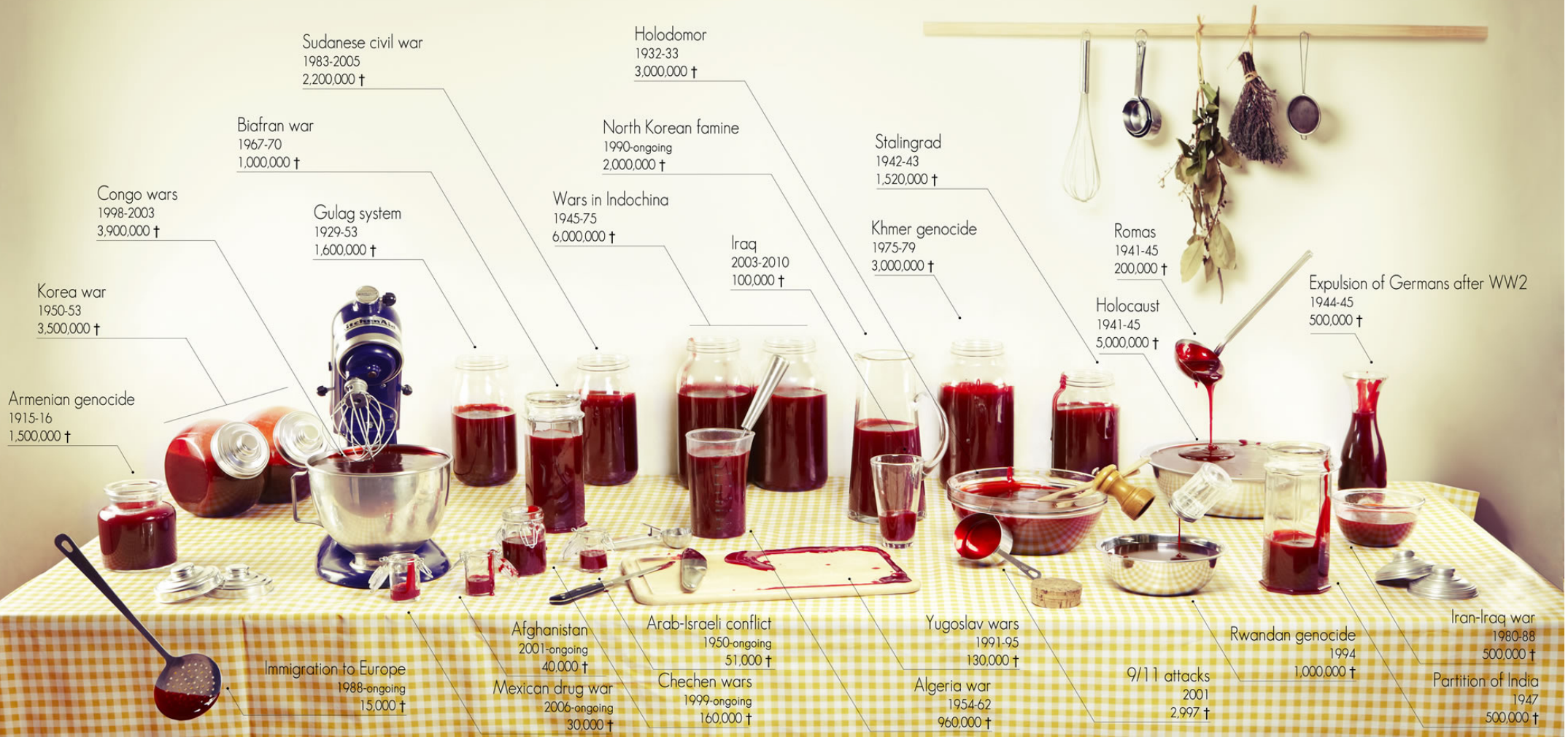
Iraq
2003-2010
100,000 †

Holocaust
1941-45
5,000,000 †

Expulsion of Germans after WW2
1944-45
500,000 †

Korea war
1950-53
3,500,000 †

Armenian genocide
1915-16
1,500,000 †



Immigration to Europe
1988-ongoing
15,000 †

Afghanistan
2001-ongoing
40,000 †

Mexican drug war
2006-ongoing
30,000 †

Arab-Israeli conflict
1950-ongoing
51,000 †

Chechen wars
1999-ongoing
160,000 †

Yugoslav wars
1991-95
130,000 †

Algeria war
1954-62
960,000 †

9/11 attacks
2001
2,997 †

Rwandan genocide
1994
1,000,000 †

Iran-Iraq war
1980-88
500,000 †

Partition of India
1947
500,000 †