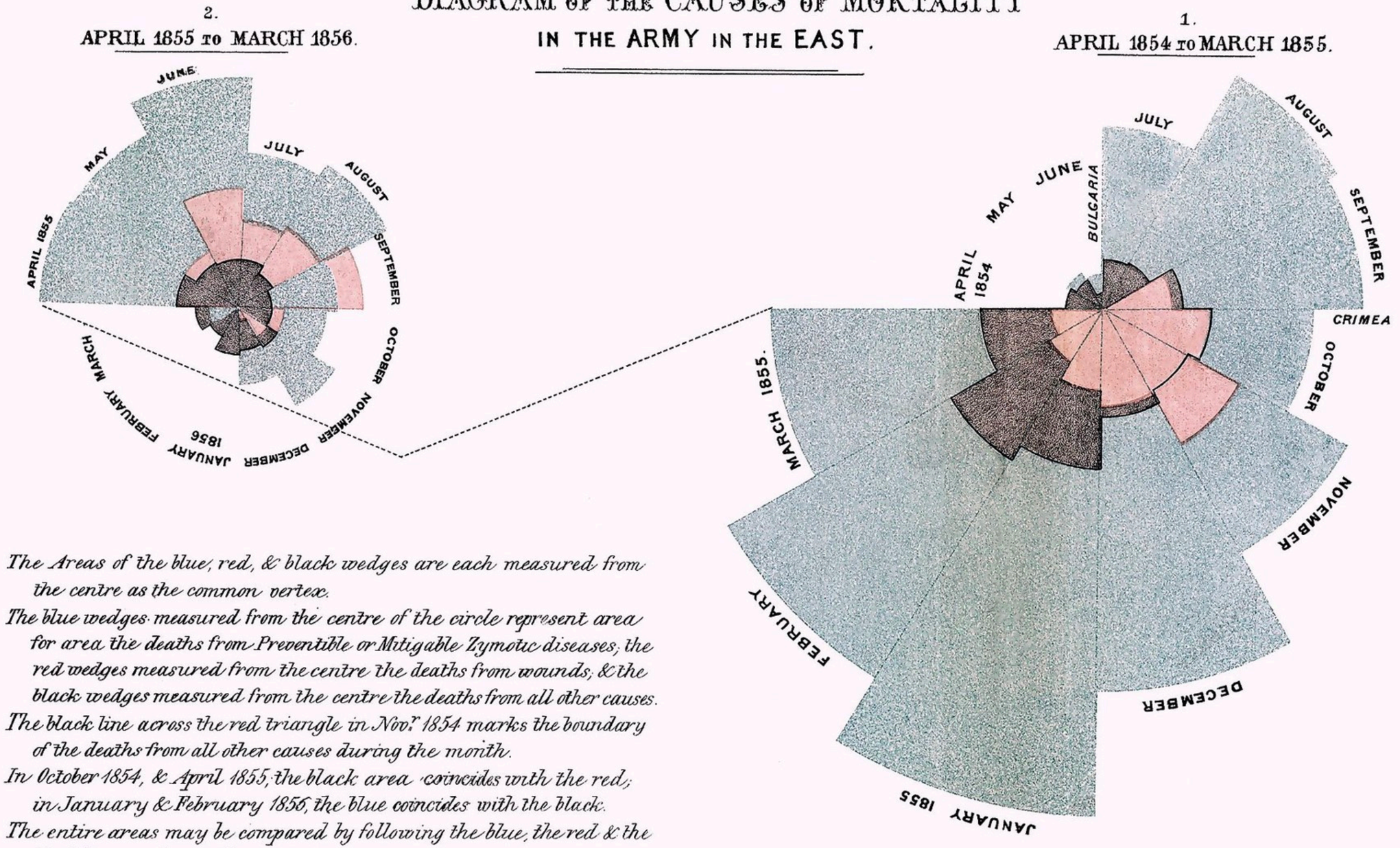
DIAGRAM of the CAUSES of MORTALITY IN THE ARMY IN THE EAST.



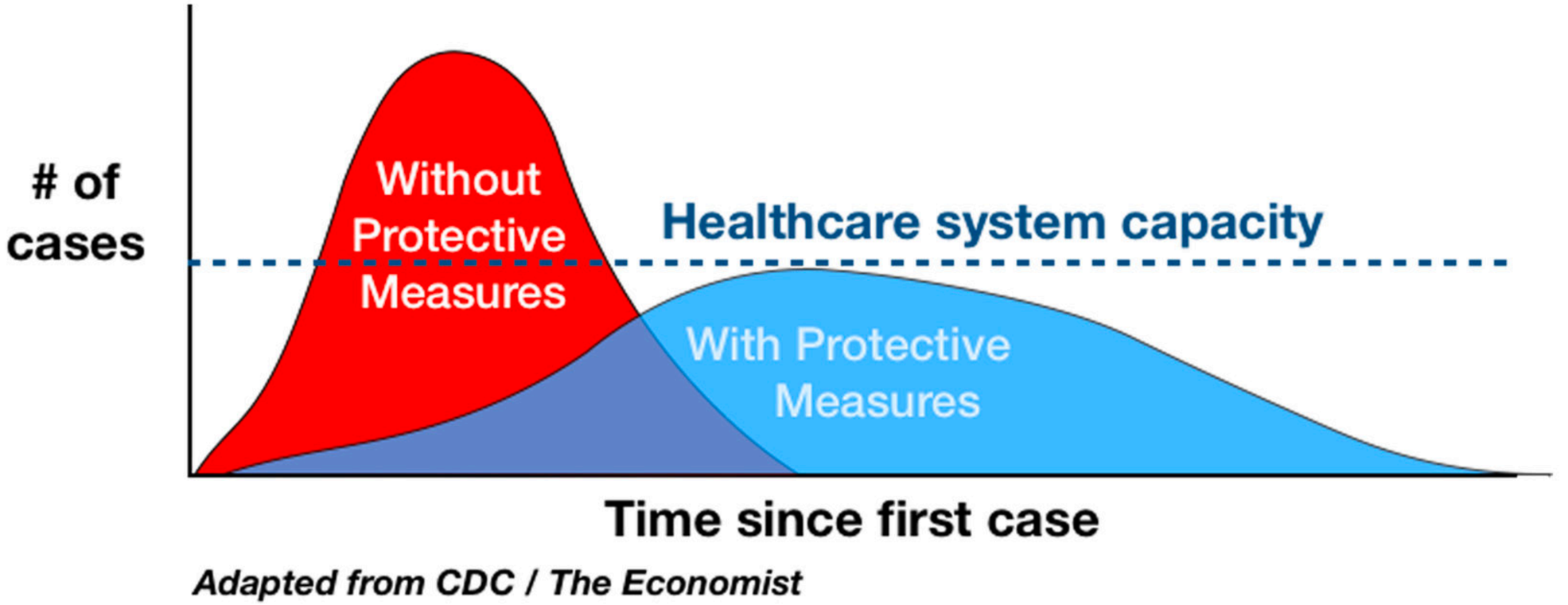
The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.

The blue wedges measured from the centre of the circle represent area for area the deaths from Preventible or Mitigable Zymotic diseases; the red wedges measured from the centre the deaths from wounds; & the black wedges measured from the centre the deaths from all other causes.

The black line across the red triangle in Nov.r 1854 marks the boundary of the deaths from all other causes during the month.

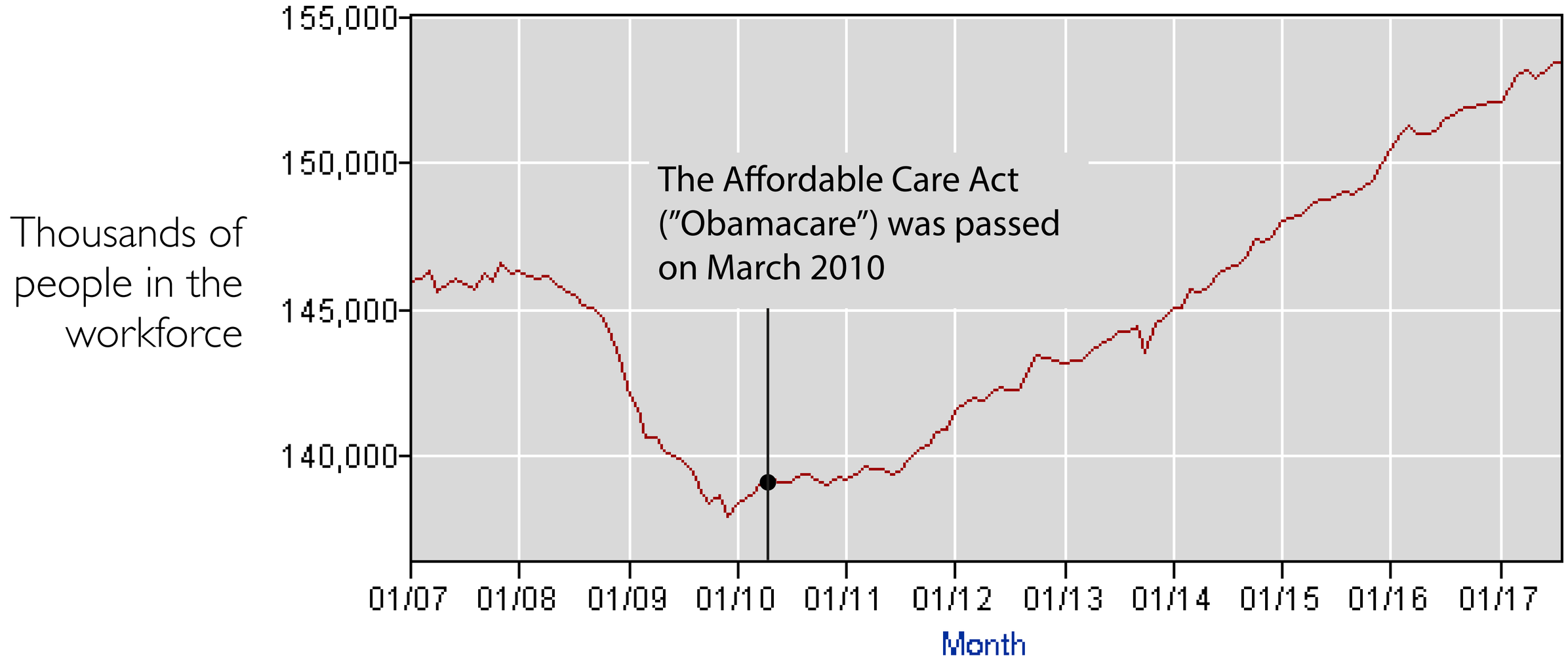
In October 1854, & April 1855, the black area coincides with the red; in January & February 1856, the blue coincides with the black.

The entire areas may be compared by following the blue, the red & the black lines enclosing them.

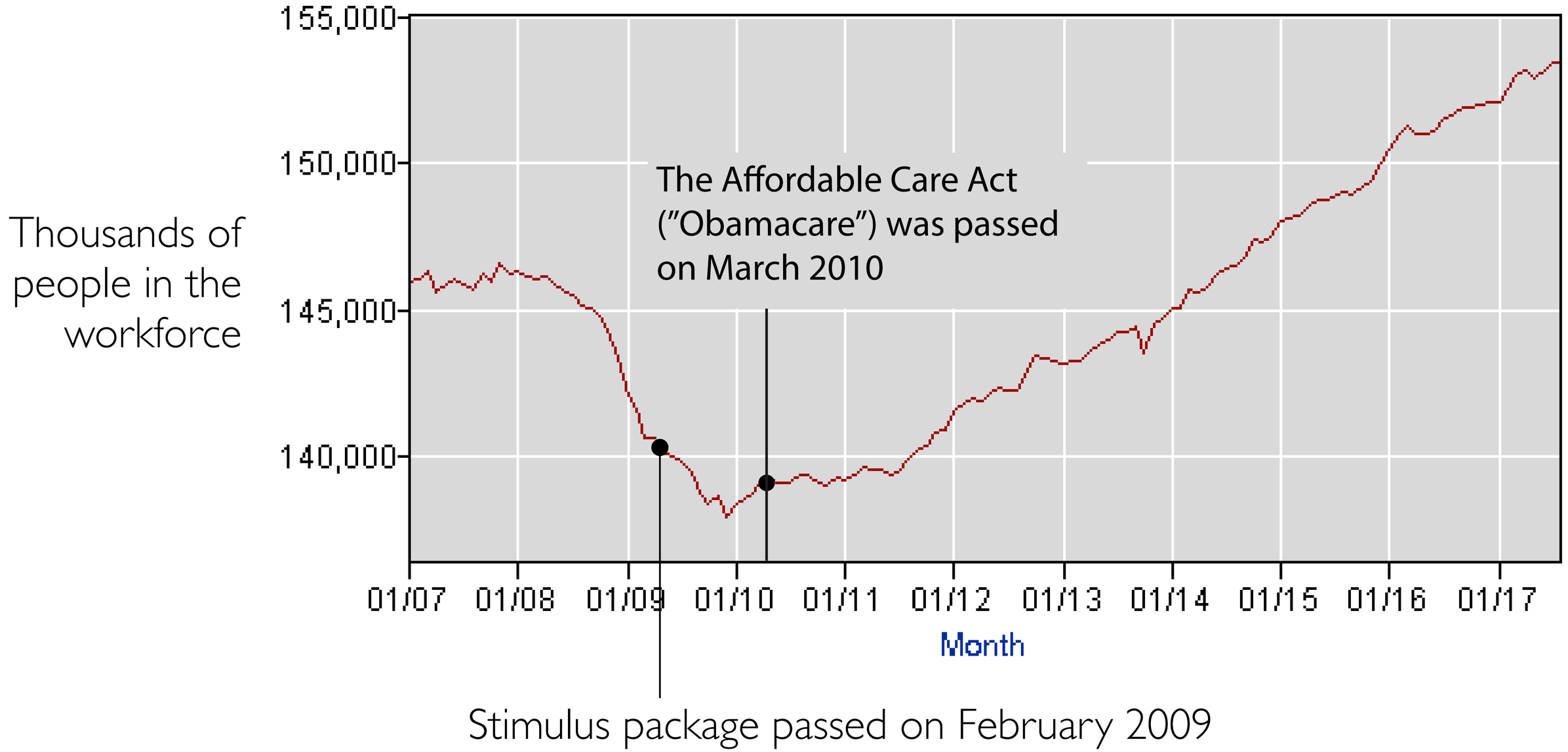


Adapted from CDC / The Economist

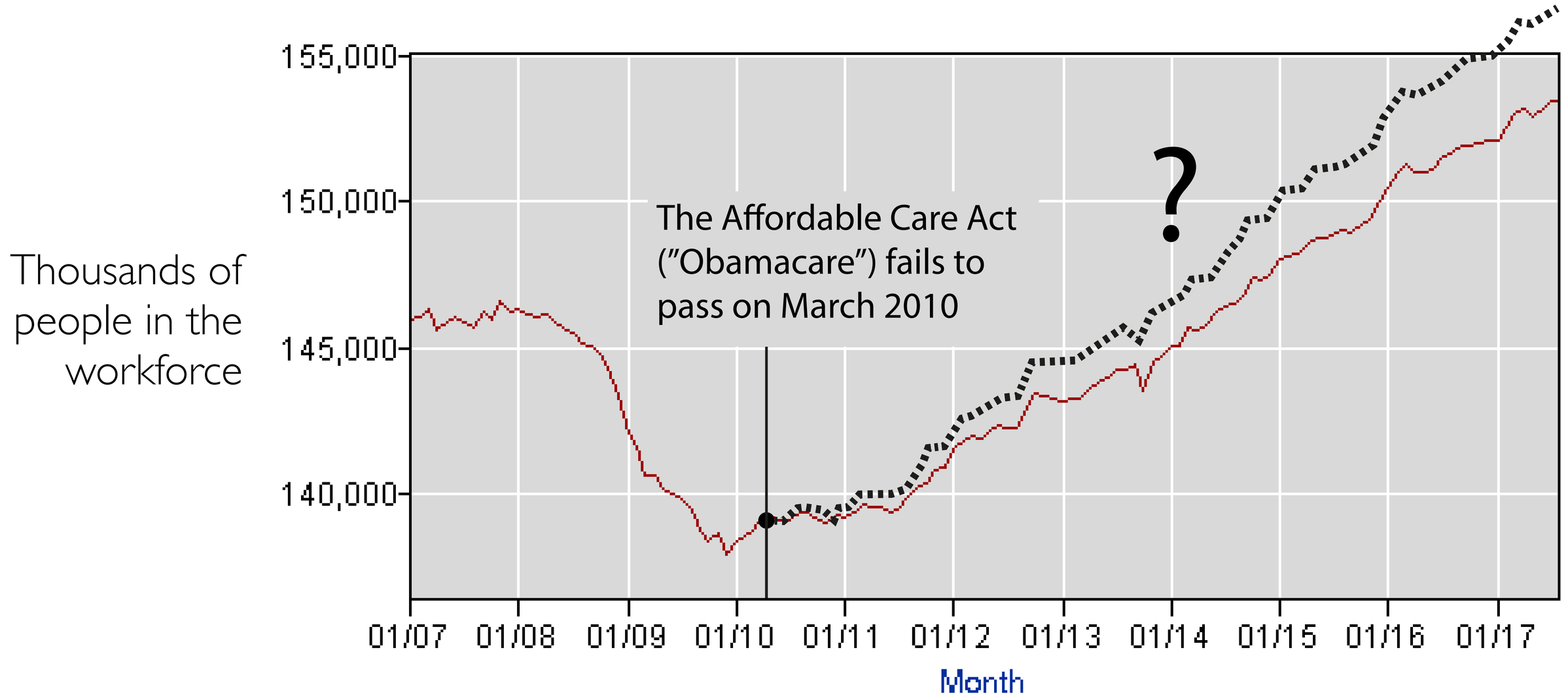
Leftist pundit: "Obamacare is good for the job market"



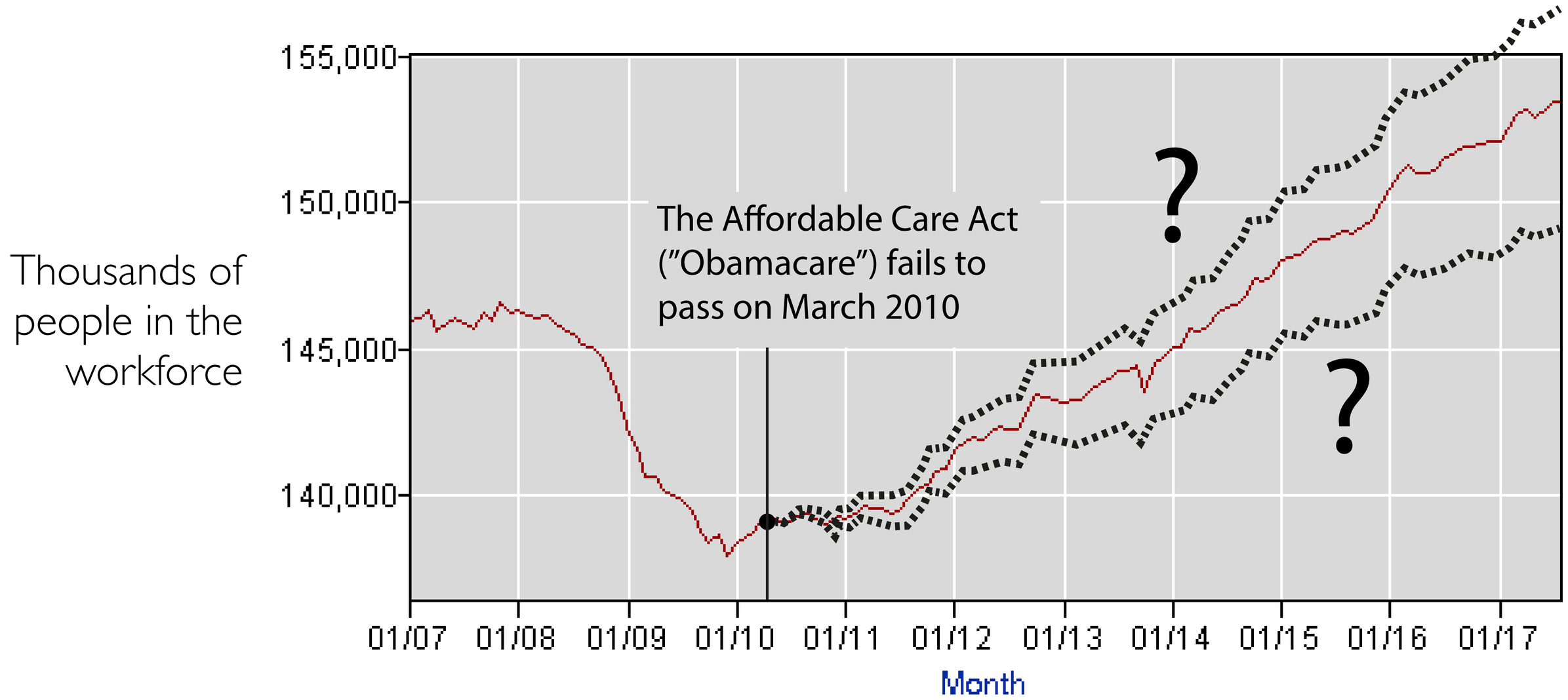
Key principle: A chart or infographic shows only what it shows *and nothing else*



Skeptical me: But what if Obamacare hadn't passed?



Skeptical me: But what if Obamacare hadn't passed?



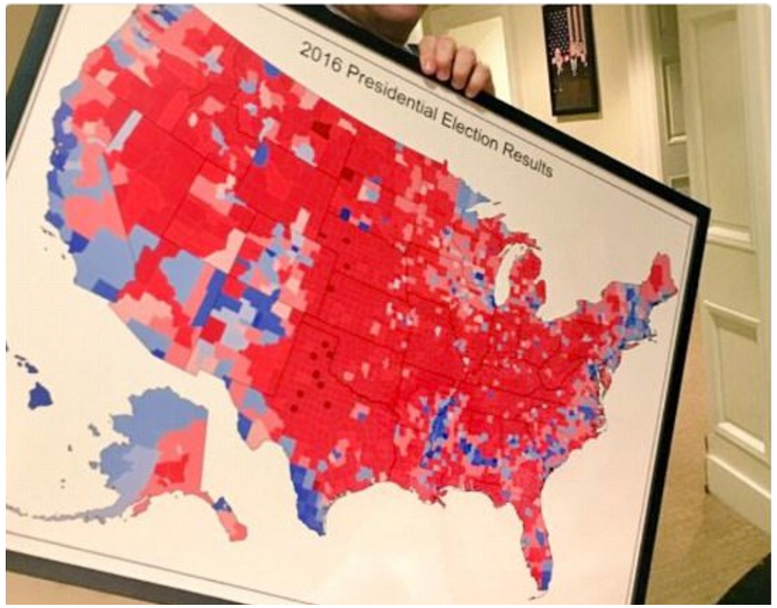
https://twitter.com/TreyYingst?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor

Gideon Resnick @GideonResnick · 32m

here's a pic from reuters of Trump with the electoral maps he showed to reporters yesterday

Stephen J. Adler, Steve Holland and Jeff Mason

https://www.reuters.com/article/us-usa-trump-100days/exclusive-trump-says-he-thought-being-president-would-be-easier-than-his-old-life-idUSKBN17U0CA

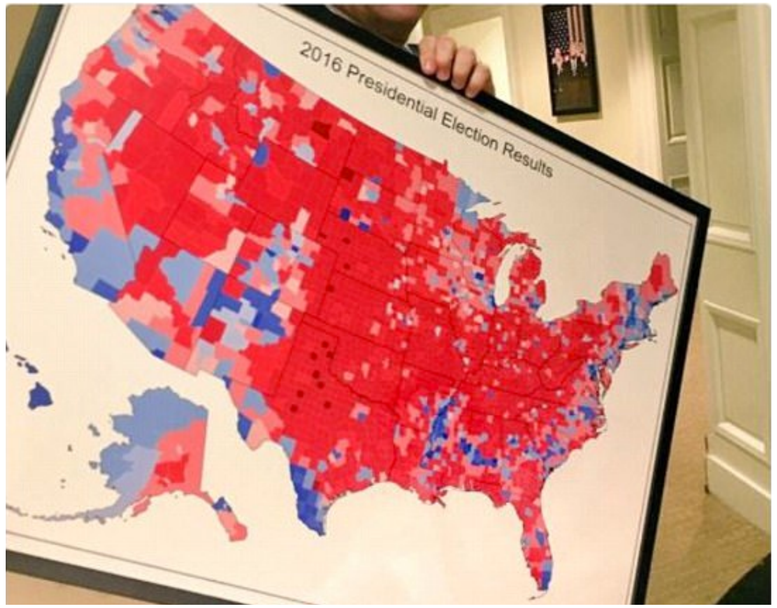


Surface on the
county-level map:

Red: 80%

Blue: 20%

VICTORY BY A LANDSLIDE!!!!!!



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county-level map:

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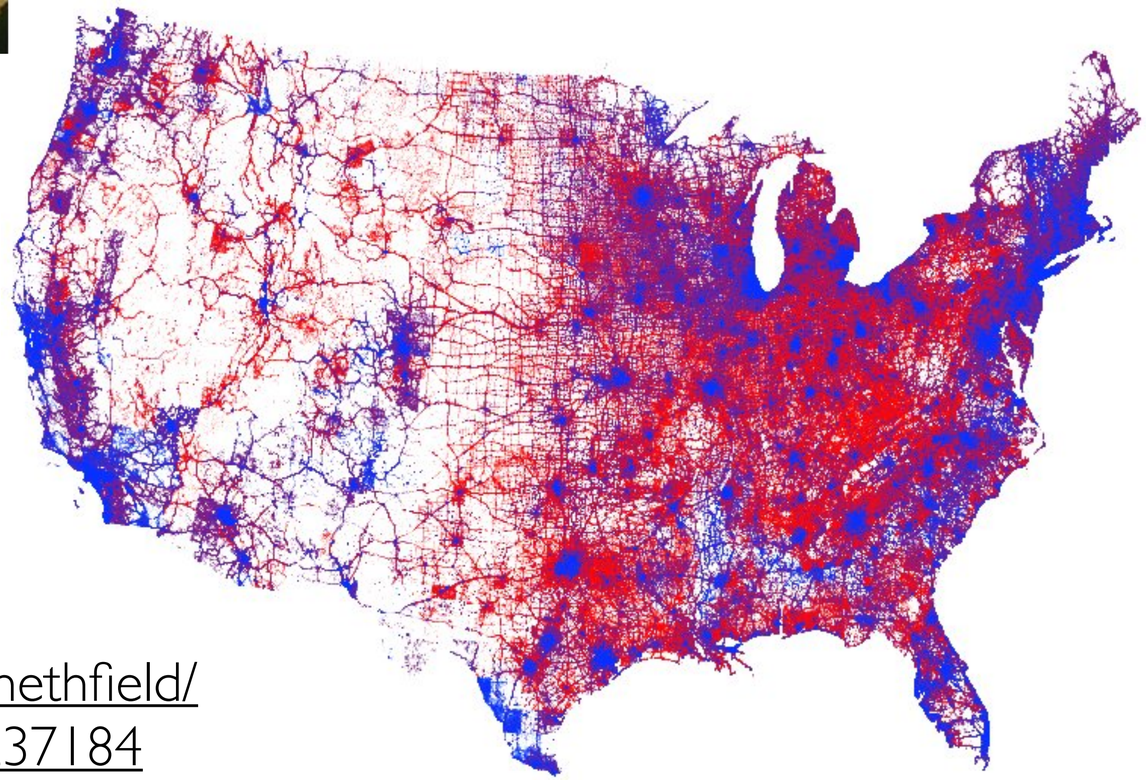
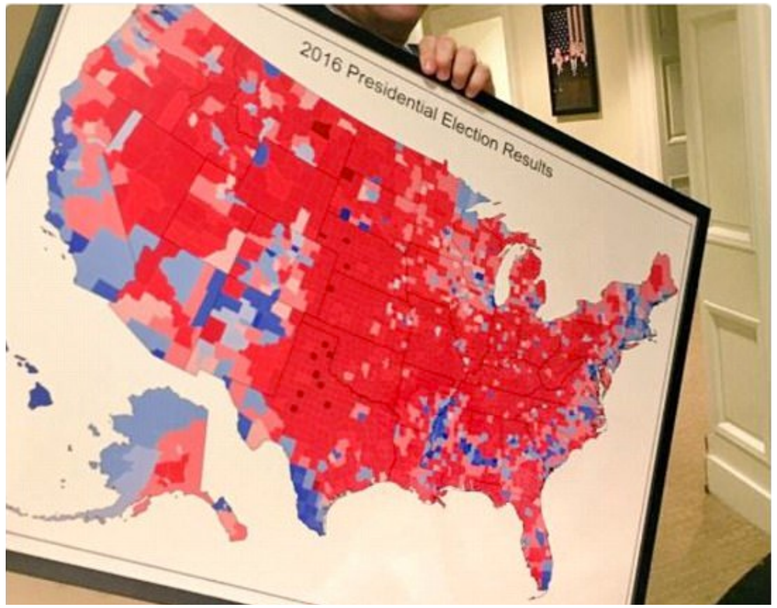
VICTORY BY A LANDSLIDE???



Map by Kenneth Field
https://twitter.com/kennethfield/status/970827334038237184



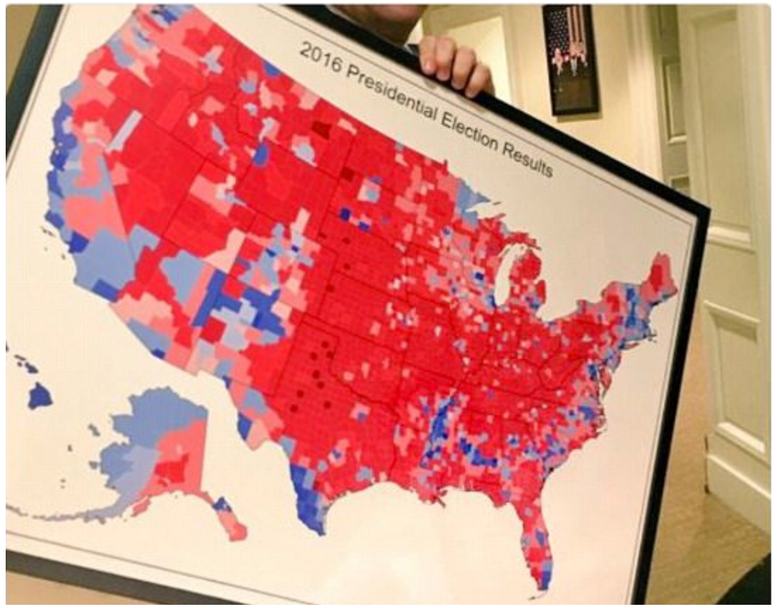
Surface on the county-level map:

Red: 80%

Blue: 20%

SHARE OF THE POPULAR VOTE IN THE 2016 PRESIDENTIAL ELECTION

Donald Trump		**46.1%**	62,984,825 votes
Hillary Clinton		**48.2%**	65,853,516 votes
Other candidates		**5.7%**	



Surface on the county-level map:

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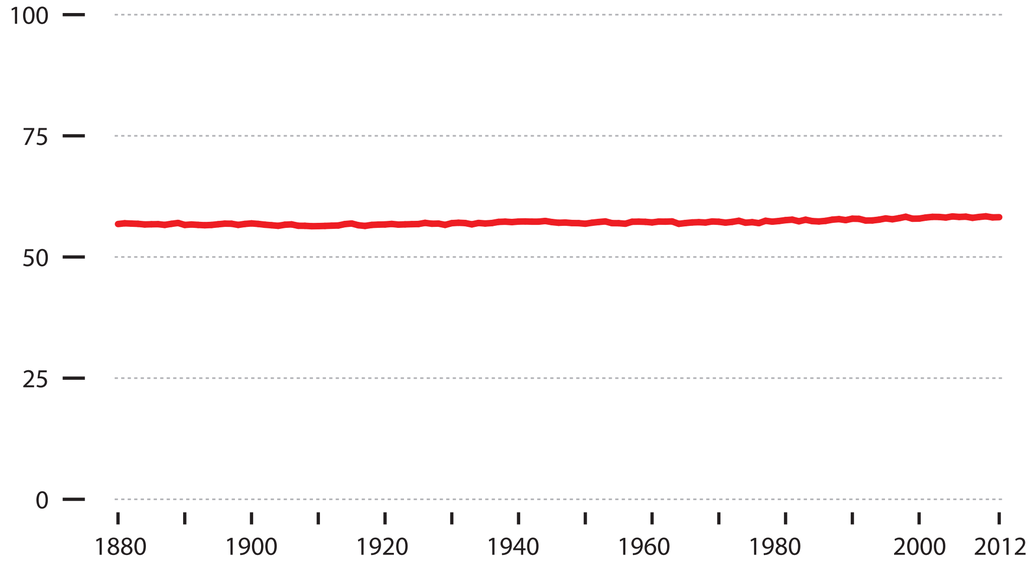
SHARE OF THE POPULAR VOTE IN THE 2016 PRESIDENTIAL ELECTION

Donald Trump	46.1%	62,984,825 votes
Hillary Clinton	48.2%	65,853,516 votes
Other candidates	5.7%	

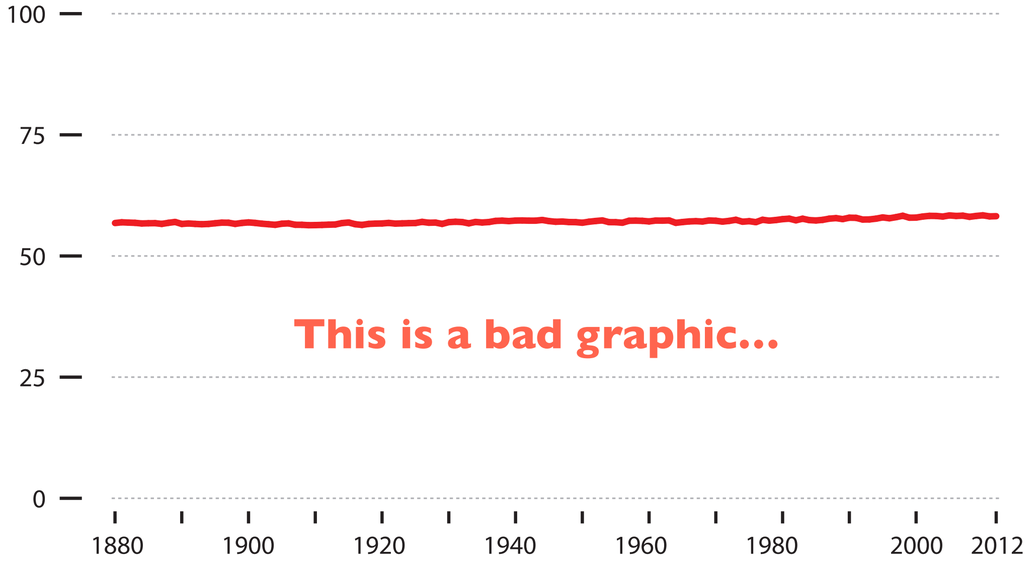
PERCENTAGE OF ELIGIBLE VOTERS

Didn't vote	40.0%
Voted for Donald Trump	27.7%
Voted for Hillary Clinton	28.9%
Voted for other candidates	3.4%

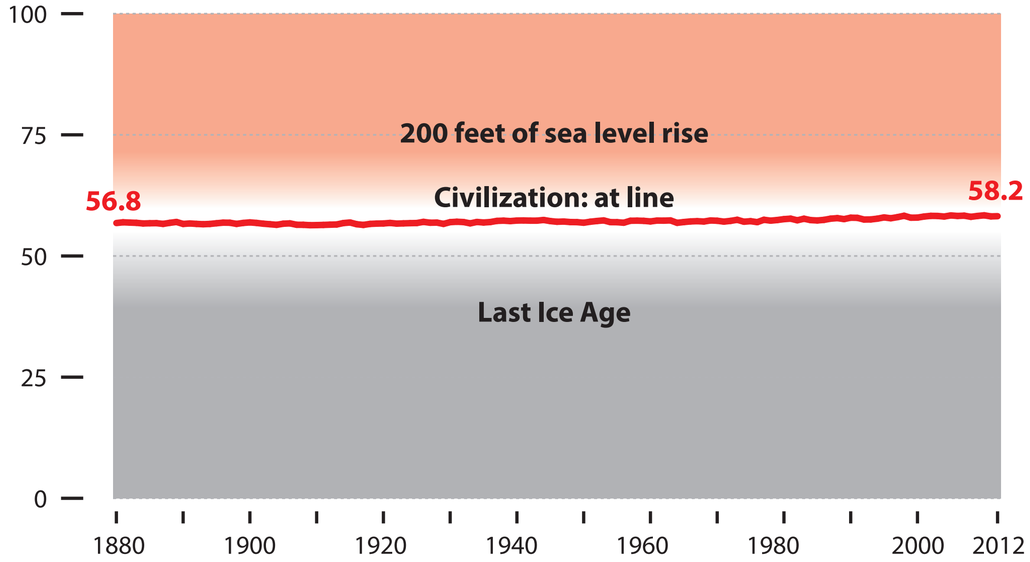
Average annual global temperature in degrees Fahrenheit



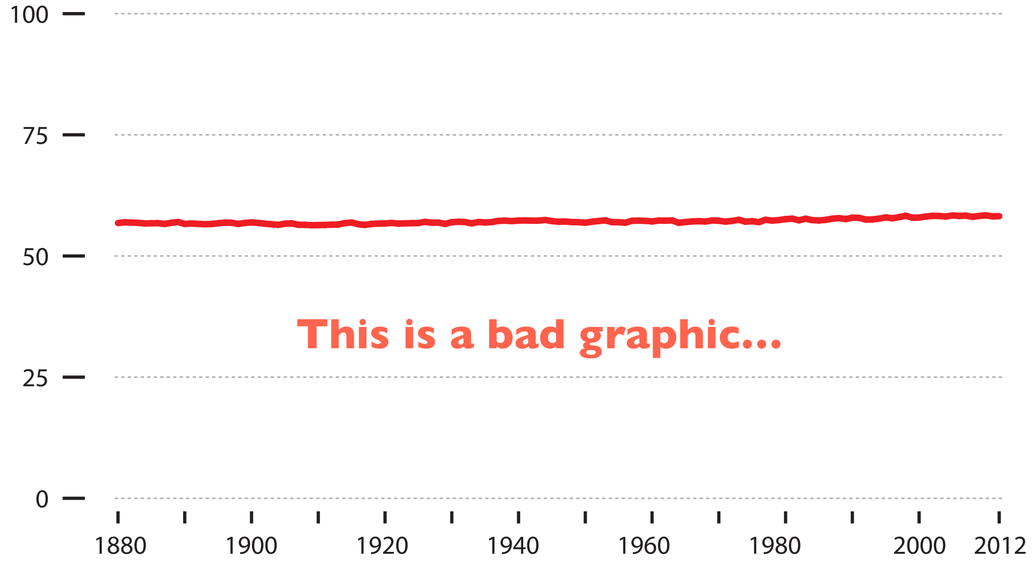
Average annual global temperature in degrees Fahrenheit



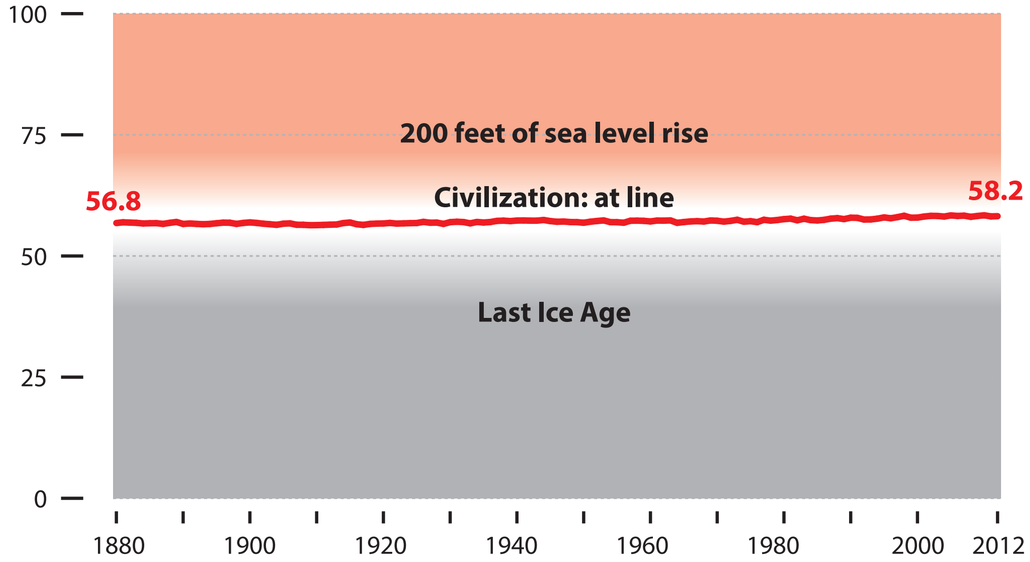
Average annual global temperature in degrees Fahrenheit



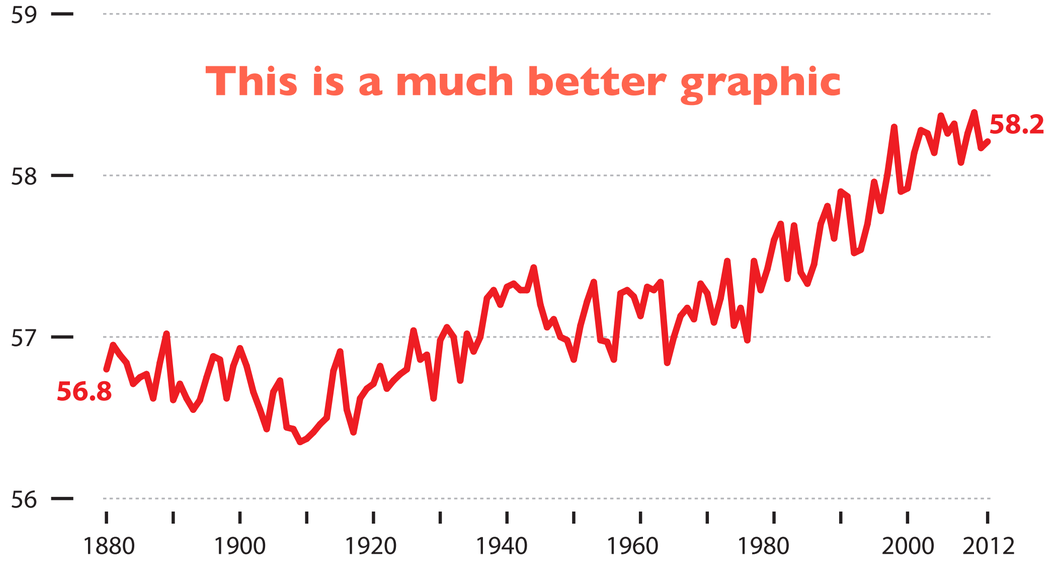
Average annual global temperature in degrees Fahrenheit



Average annual global temperature in degrees Fahrenheit



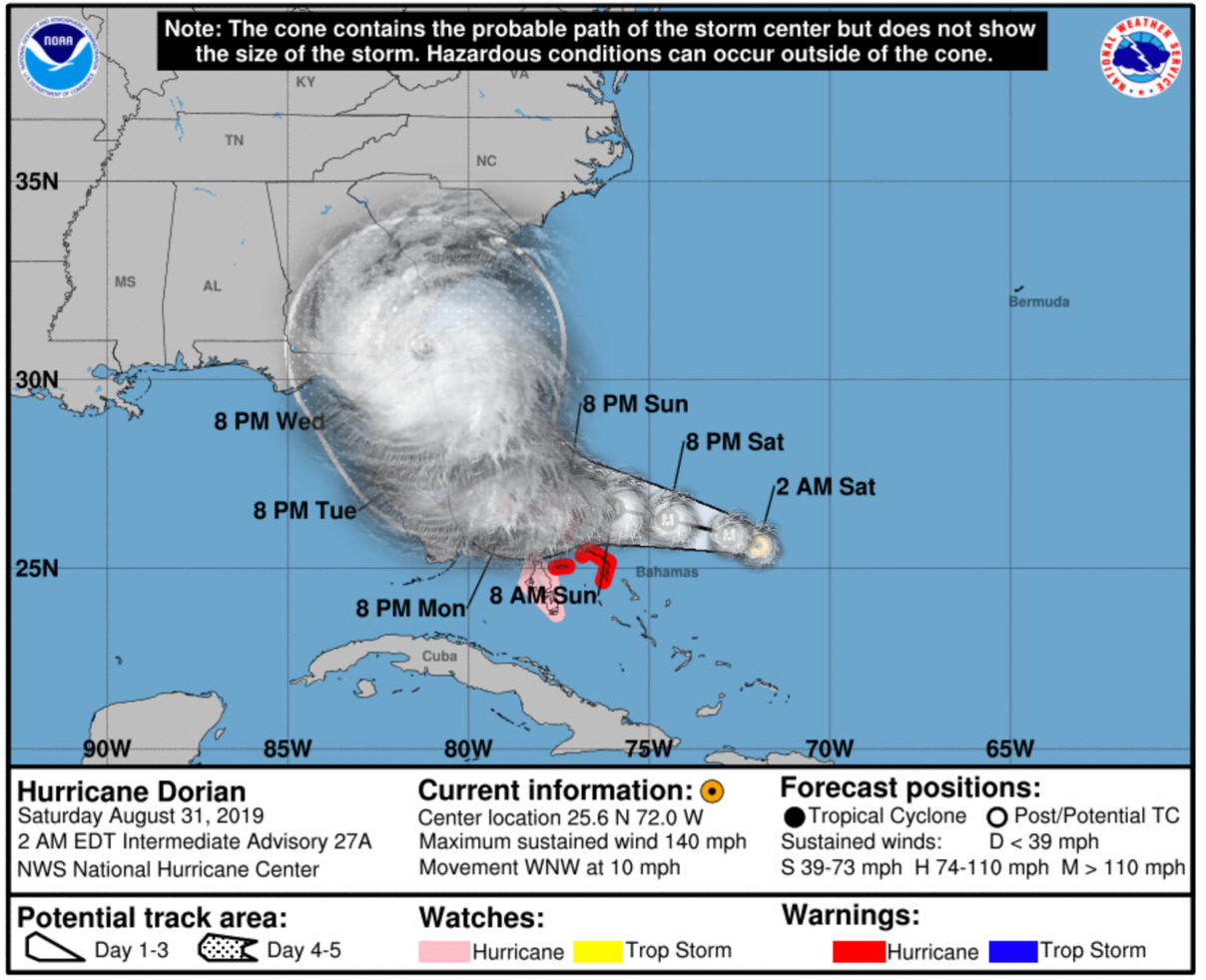
Average annual global temperature in degrees Fahrenheit



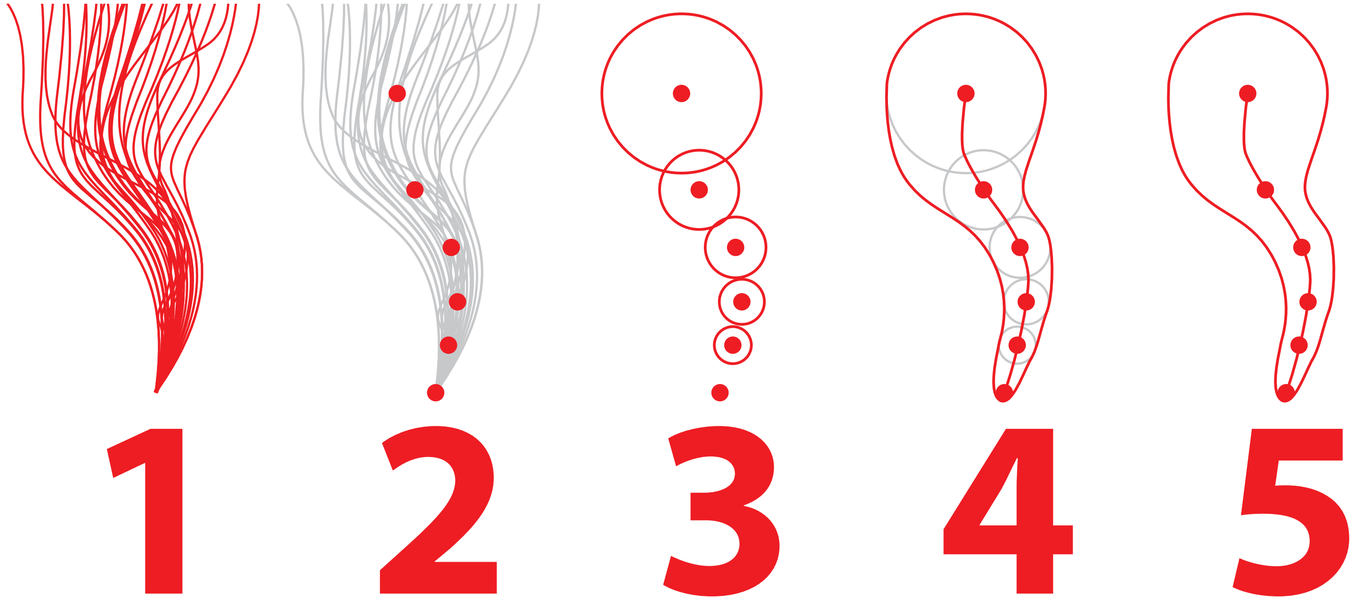
What you design…

What you design…

…what (some) people see

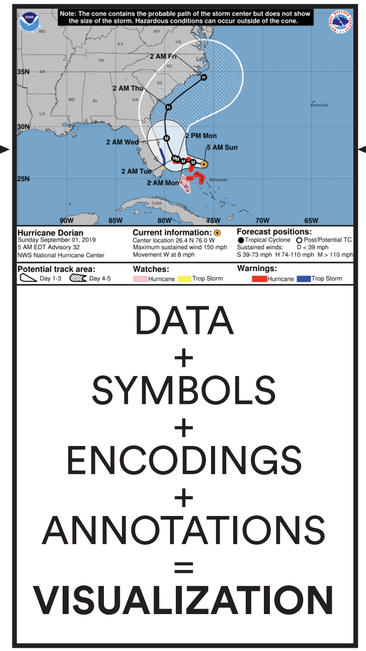



Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.
KY
TN
NC
SC
MS
AL
GA
FL
Bermuda
Bahamas
Cuba
35N
30N
25N
90W
85W
80W
75W
70W
65W
8 PM Wed
8 PM Tue
8 PM Mon
8 AM Sun
8 PM Sun
8 PM Sat
2 AM Sat
Hurricane Dorian
Saturday August 31, 2019
2 AM EDT Intermediate Advisory 27A
NWS National Hurricane Center
Current information:
Center location 25.6 N 72.0 W
Maximum sustained wind 140 mph
Movement WNW at 10 mph
Forecast positions:
Tropical Cyclone
Post/Potential TC
Sustained winds:
D < 39 mph
S 39-73 mph H 74-110 mph M > 110 mph
Potential track area:
Day 1-3
Day 4-5
Watches:
Hurricane
Trop Storm
Warnings:
Hurricane
Trop Storm


1
2
3
4
5

THE PSYCHOLOGY OF CHART COMPREHENSION, SIMPLIFIED

Designers' mental models



DATA
+
SYMBOLS
+
ENCODINGS
+
ANNOTATIONS
=
VISUALIZATION

Readers' mental models

Mediators' mental models

This briefing took place on September 4, and Trump sent his “Alabama” tweet on September 1.
But the map Trump manipulated wasn’t the one from September 1. It was a much earlier one.

The White House ✓
@WhiteHouse

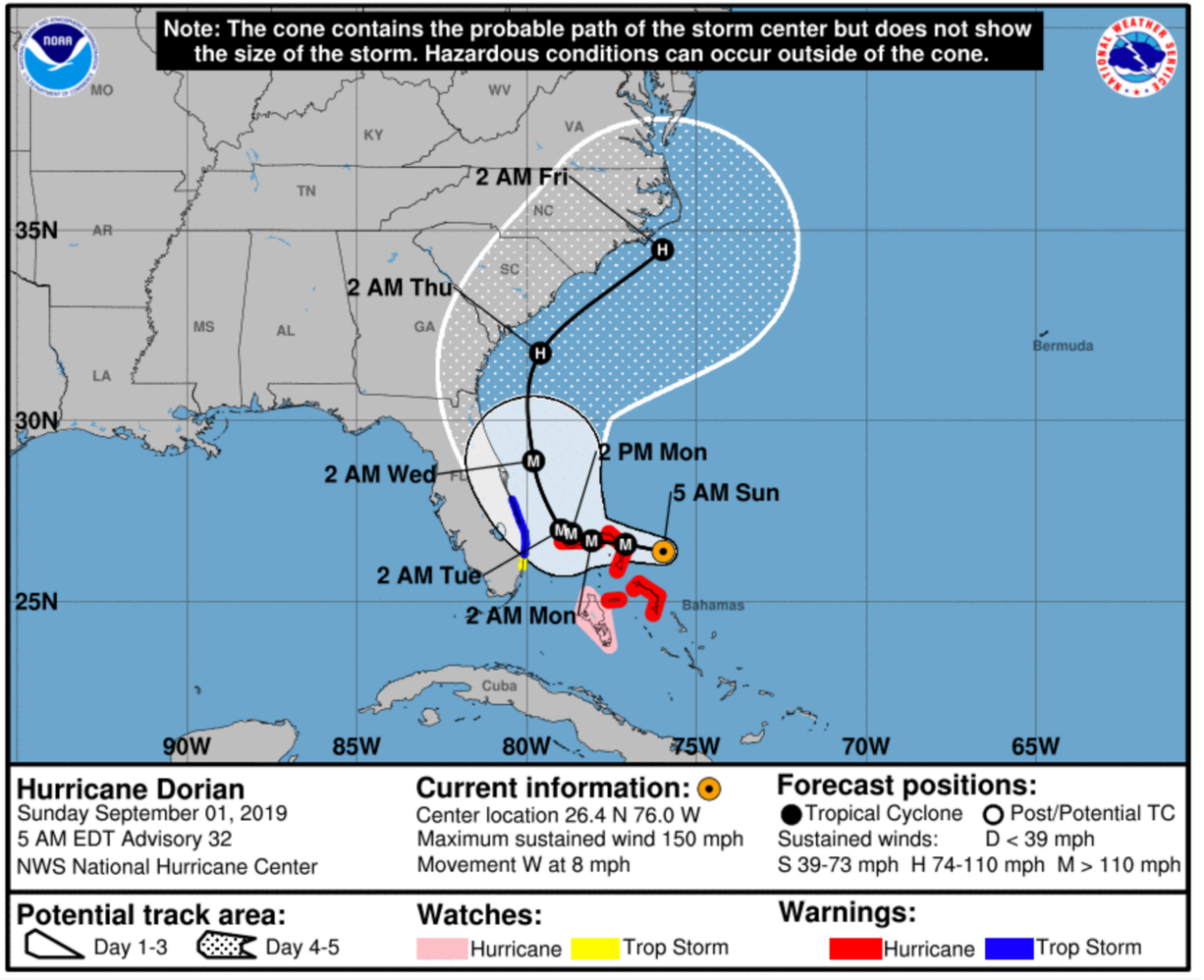
In the Oval Office today, President @realDonaldTrump received a briefing on the ongoing Government-wide response to Hurricane #Dorian and shared important next steps his Administration will be taking to support local relief efforts.

1600 Daily: 45.wh.gov/5yKBD8

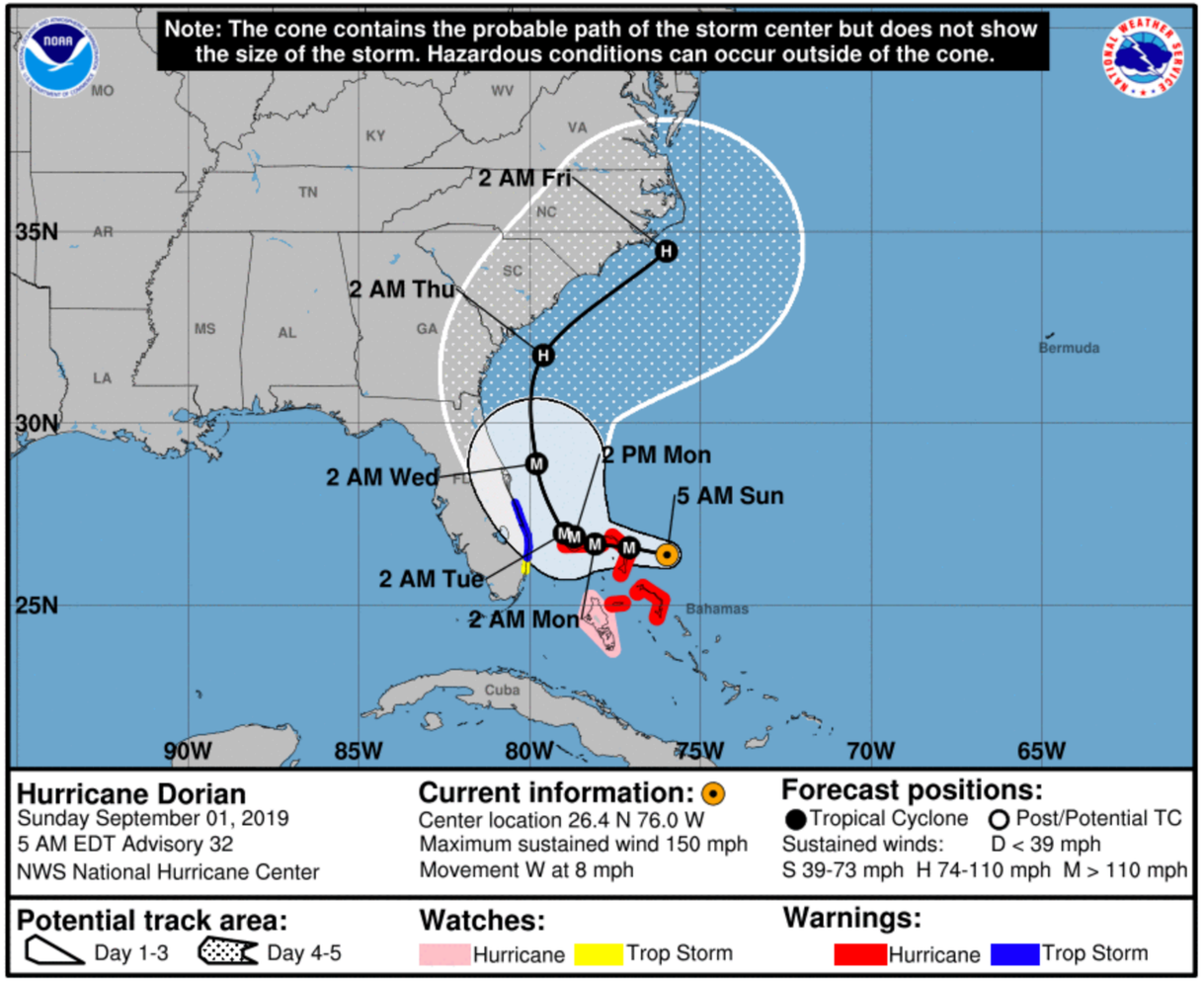
6:15 PM · Sep 4, 2019 · WH Digital

389 Retweets **1.6K** Likes

Sunday, September 1, 2019



Sunday, September 1, 2019

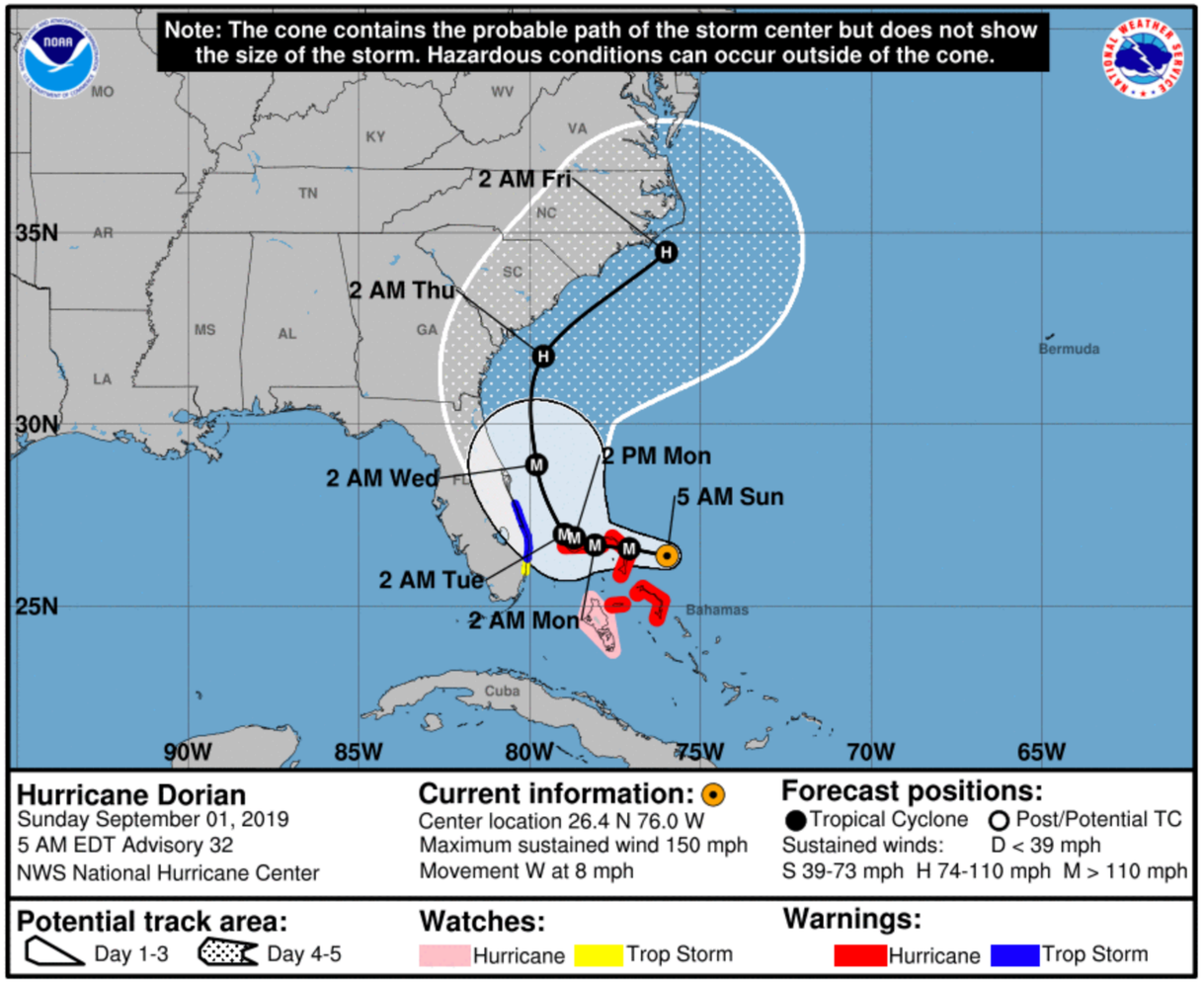


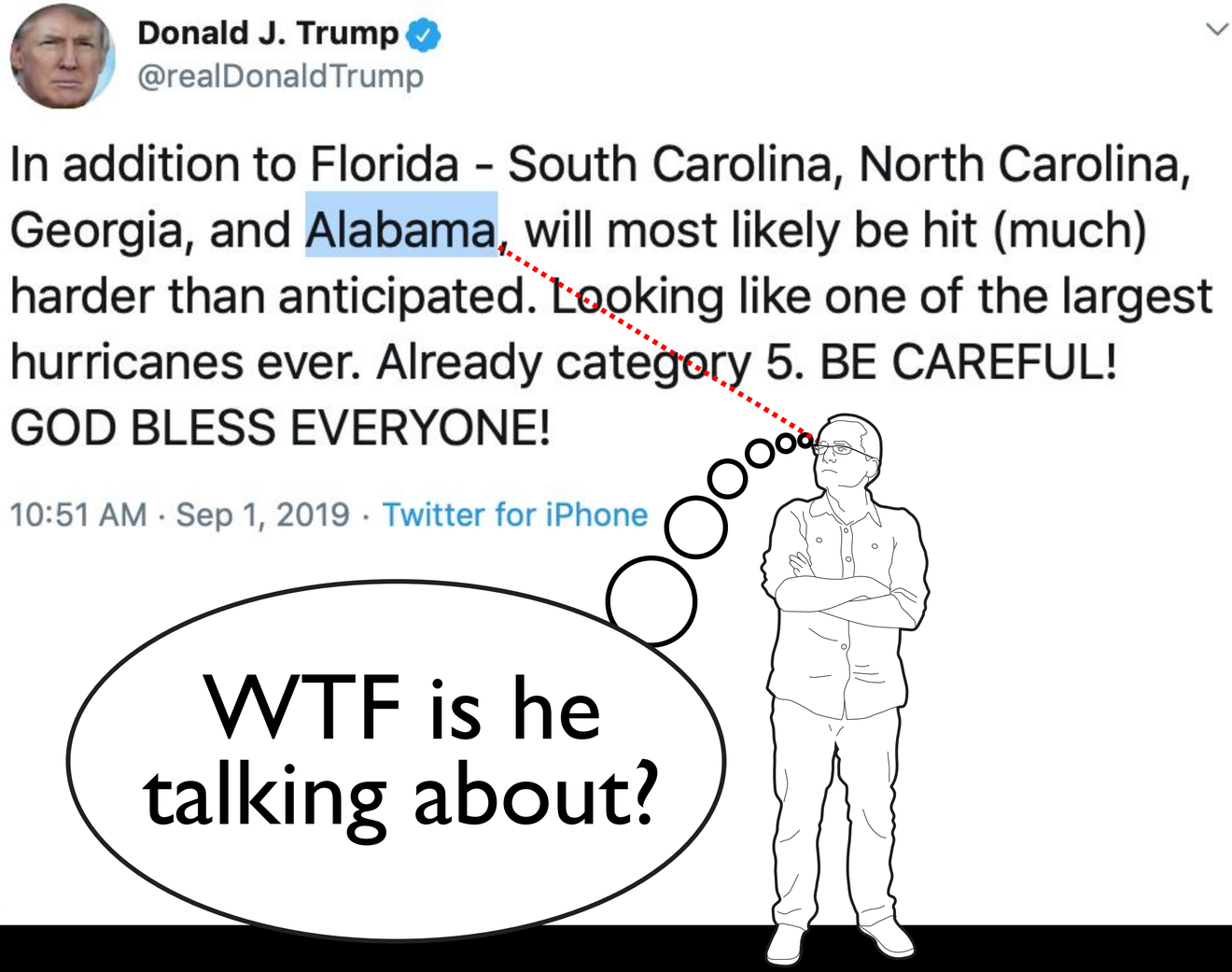
Donald J. Trump
@realDonaldTrump

In addition to Florida - South Carolina, North Carolina, Georgia, and Alabama, will most likely be hit (much) harder than anticipated. Looking like one of the largest hurricanes ever. Already category 5. BE CAREFUL! GOD BLESS EVERYONE!

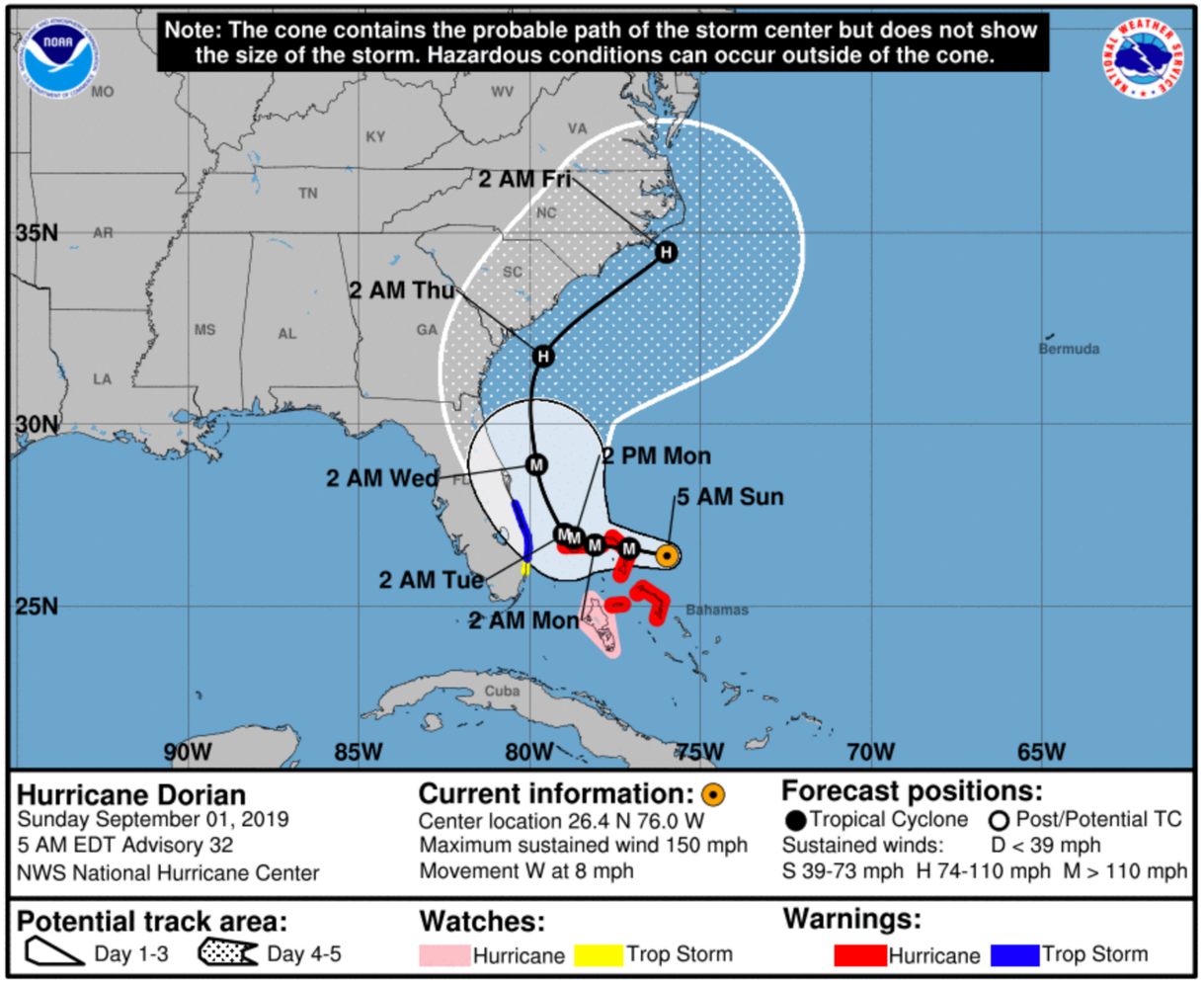
10:51 AM · Sep 1, 2019 · Twitter for iPhone

Sunday, September 1, 2019





Sunday, September 1, 2019



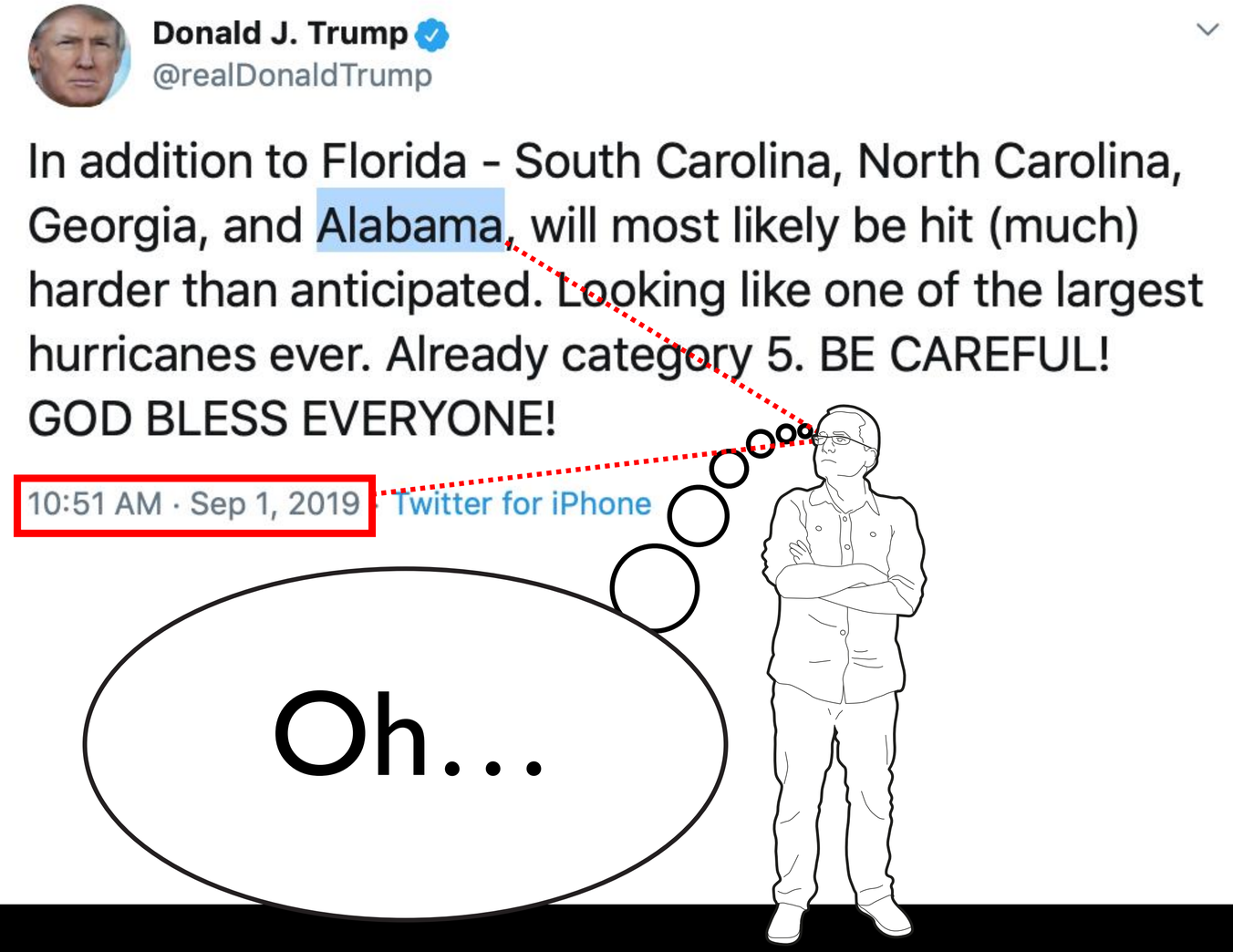
Sunday, September 1, 2019

Opinion

Those Hurricane Maps Don't Mean What You Think They Mean

We use hurricane forecasts to warn people. Why do we misinterpret them so often?

By Alberto Cairo
With Tala Schlossberg



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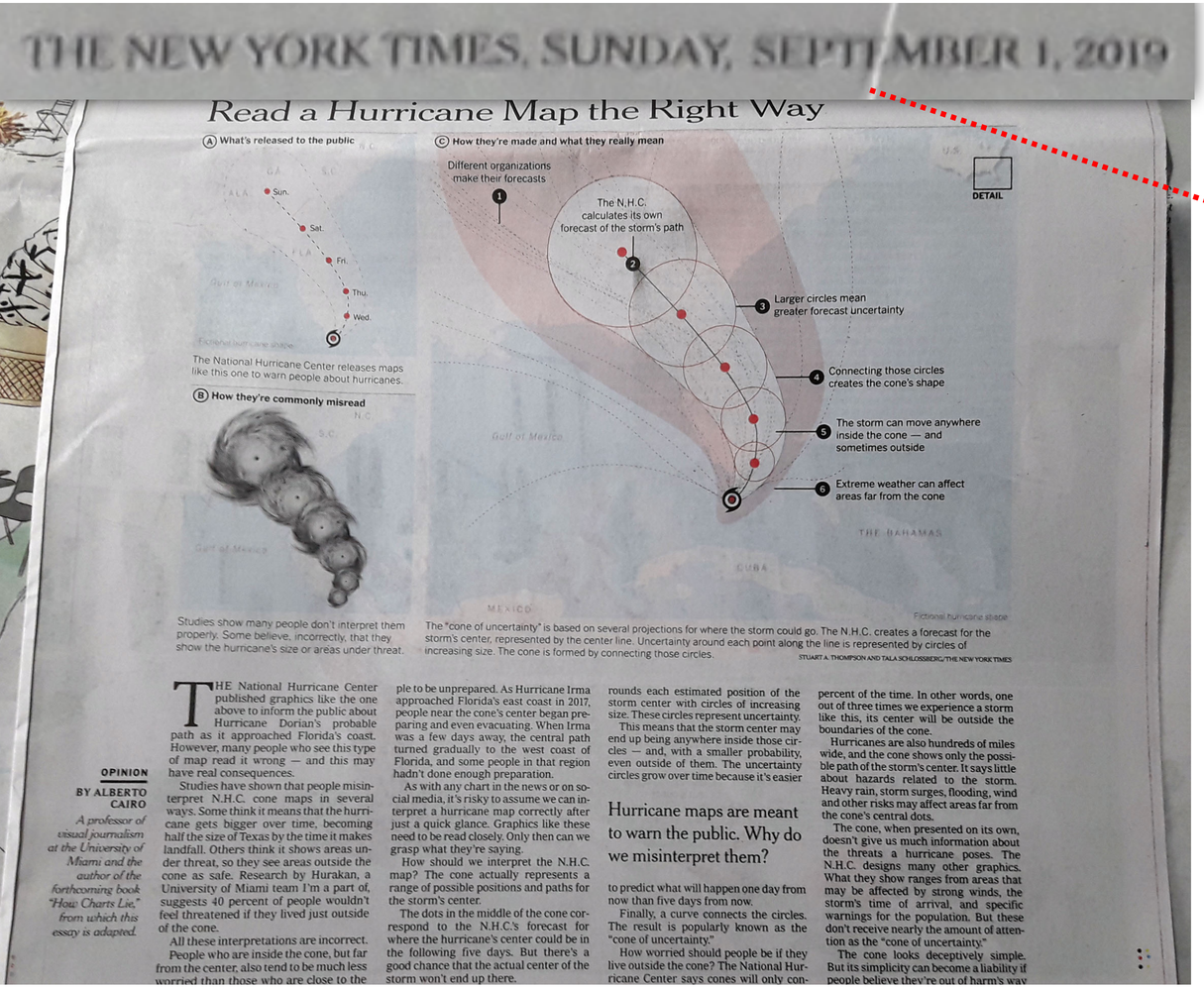


THE NEW YORK TIMES, SUNDAY, SEPTEMBER 1, 2019

Read a Hurricane Map the Right Way

OPINION

BY ALBERTO CAIRO

A professor of visual journalism at the University of Miami and the author of the forthcoming book "How Charts Lie," from which this essay is adapted.

THE National Hurricane Center published graphics like the one above to inform the public about Hurricane Dorian's probable path as it approached Florida's coast. However, many people who see this type of map read it wrong — and this may have real consequences.

Studies have shown that people misinterpret N.H.C. cone maps in several ways. Some think it means that the hurricane gets bigger over time, becoming half the size of Texas by the time it makes landfall. Others think it shows areas under threat, so they see areas outside the cone as safe. Research by Hurakan, a University of Miami team I'm a part of, suggests 40 percent of people wouldn't feel threatened if they lived just outside of the cone.

All these interpretations are incorrect.

People who are inside the cone, but far from the center, also tend to be much less worried than those who are close to the ple to be unprepared. As Hurricane Irma approached Florida's east coast in 2017, people near the cone's center began preparing and even evacuating. When Irma was a few days away, the central path turned gradually to the west coast of Florida, and some people in that region hadn't done enough preparation.

As with any chart in the news or on social media, it's risky to assume we can interpret a hurricane map correctly after just a quick glance. Graphics like these need to be read closely. Only then can we grasp what they're saying.

How should we interpret the N.H.C. map? The cone actually represents a range of possible positions and paths for the storm's center.

The dots in the middle of the cone correspond to the N.H.C.'s forecast for where the hurricane's center could be in the following five days. But there's a good chance that the actual center of the storm won't end up there.

rounds each estimated position of the storm center with circles of increasing size. These circles represent uncertainty.

This means that the storm center may end up being anywhere inside those circles — and, with a smaller probability, even outside of them. The uncertainty circles grow over time because it's easier

Hurricane maps are meant to warn the public. Why do we misinterpret them?

to predict what will happen one day from now than five days from now.

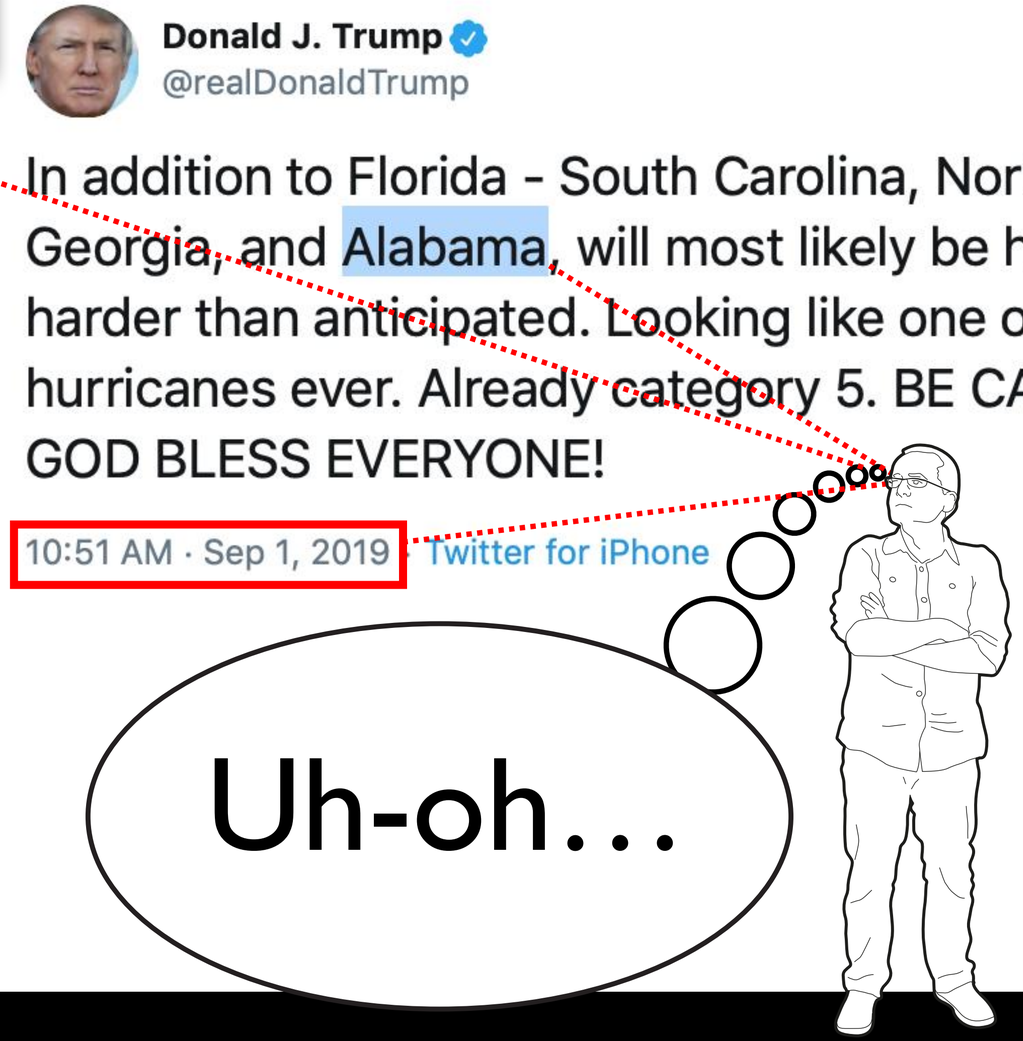
Finally, a curve connects the circles. The result is popularly known as the "cone of uncertainty."

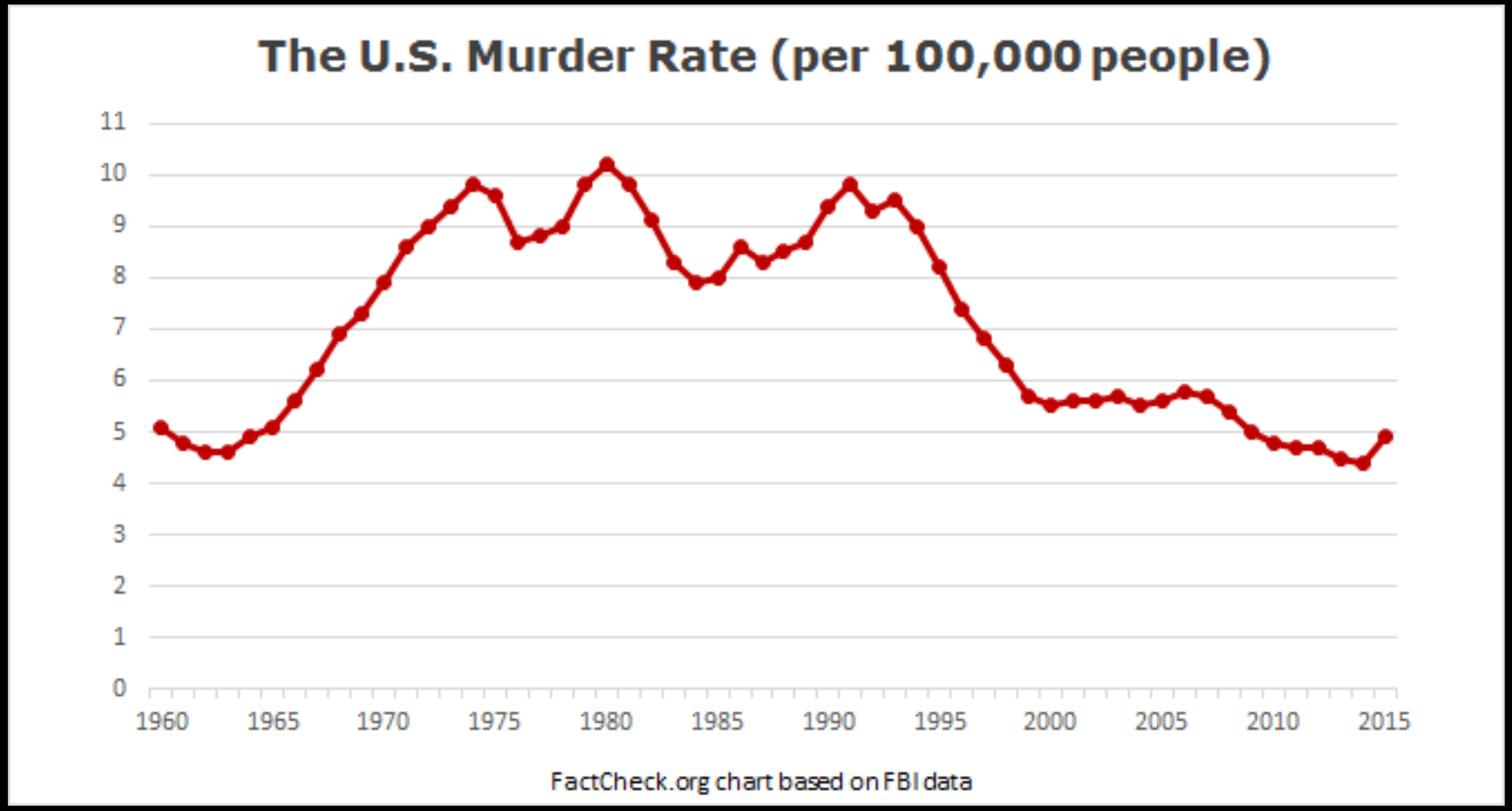
How worried should people be if they live outside the cone? The National Hurricane Center says cones will only con- percent of the time. In other words, one out of three times we experience a storm like this, its center will be outside the boundaries of the cone.

Hurricanes are also hundreds of miles wide, and the cone shows only the possible path of the storm's center. It says little about hazards related to the storm. Heavy rain, storm surges, flooding, wind and other risks may affect areas far from the cone's central dots.

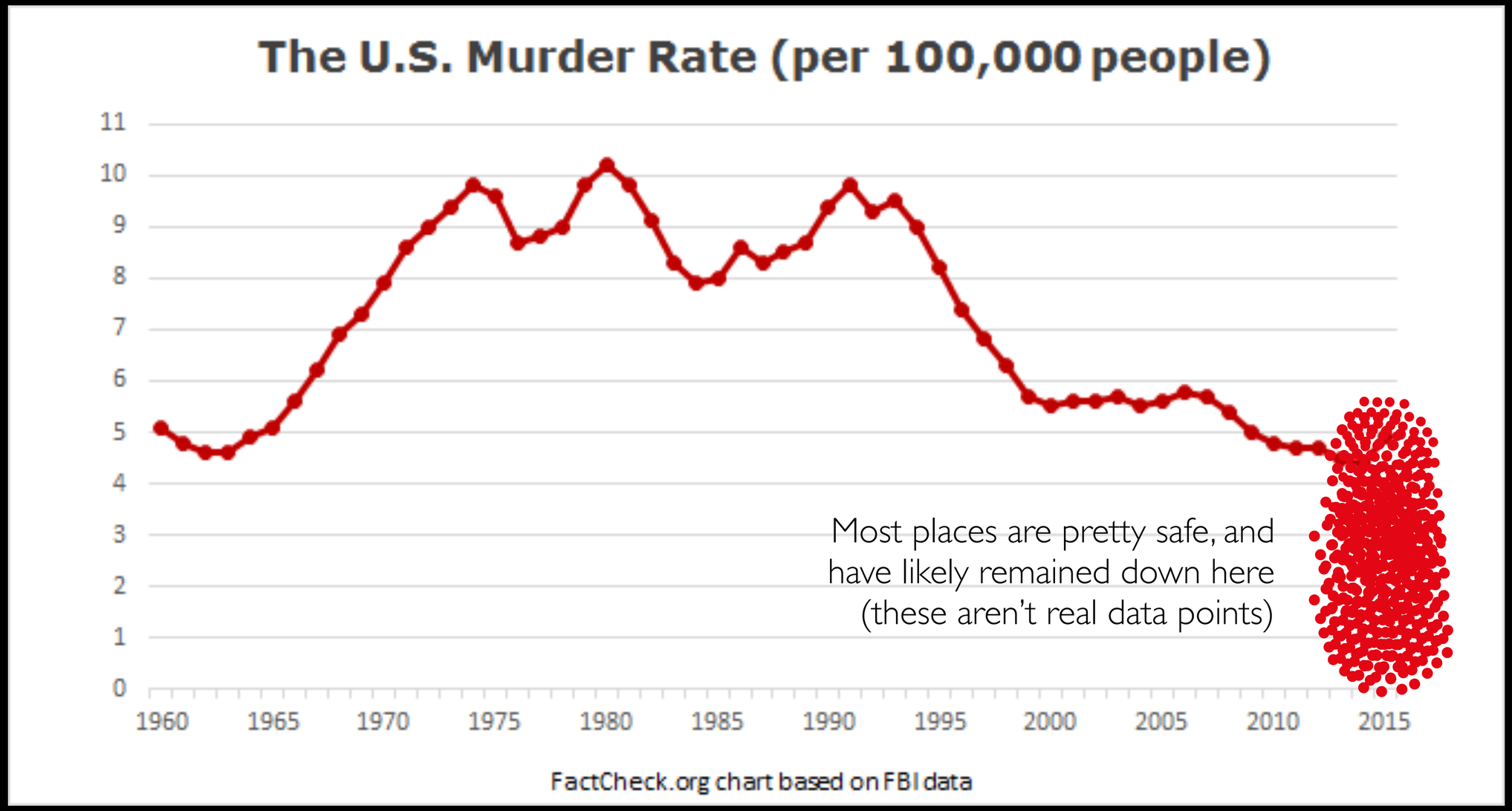
The cone, when presented on its own, doesn't give us much information about the threats a hurricane poses. The N.H.C. designs many other graphics. What they show ranges from areas that may be affected by strong winds, the storm's time of arrival, and specific warnings for the population. But these don't receive nearly the amount of attention as the "cone of uncertainty."

The cone looks deceptively simple. But its simplicity can become a liability if people believe they're out of harm's way

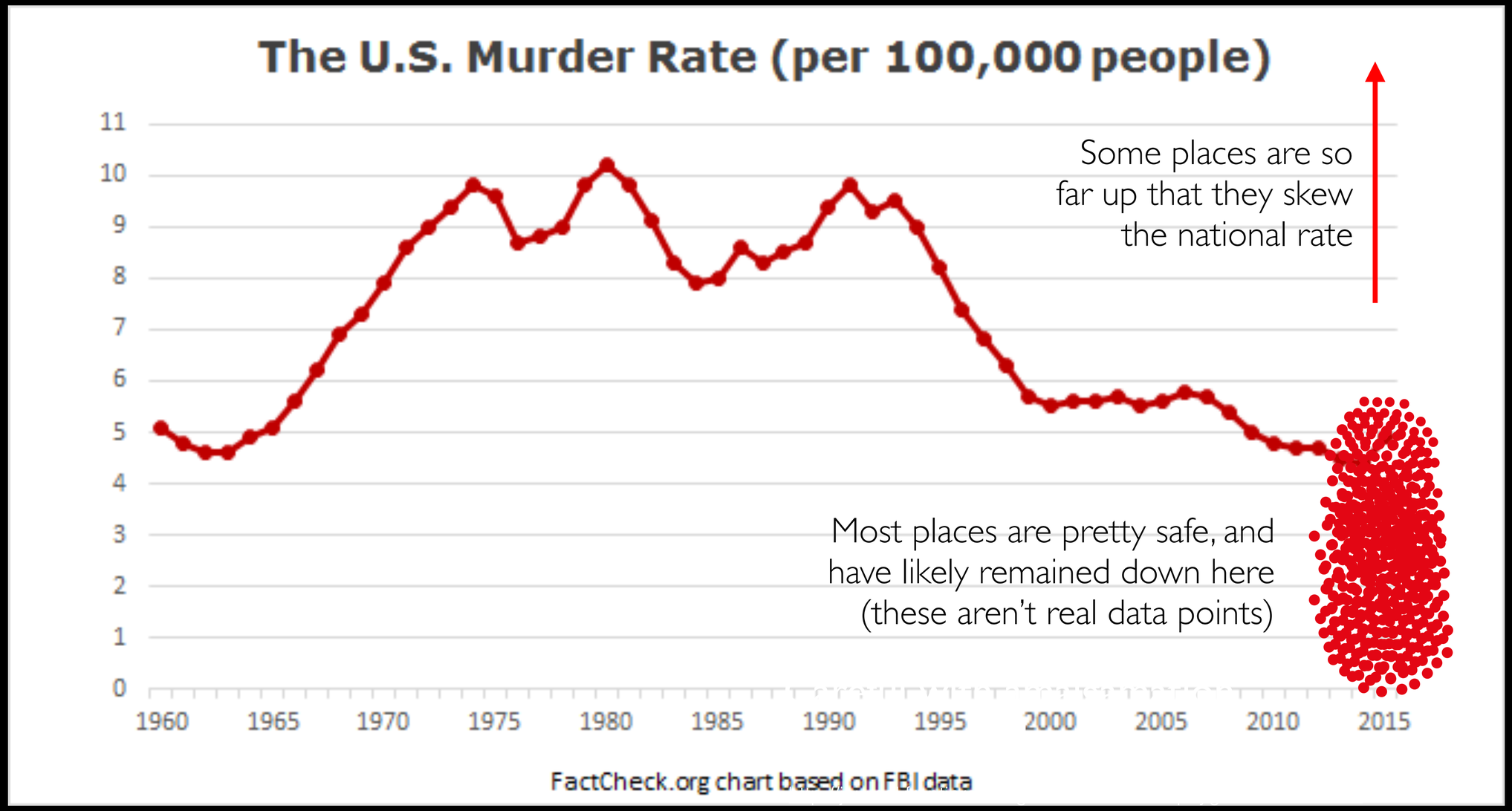



The U.S. Murder Rate (per 100,000 people)
11
10
9
8
7
6
5
4
3
2
1
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
FactCheck.org chart based on FBI data

The danger of aggregating data too much, and presenting just averages and other simplistic summaries



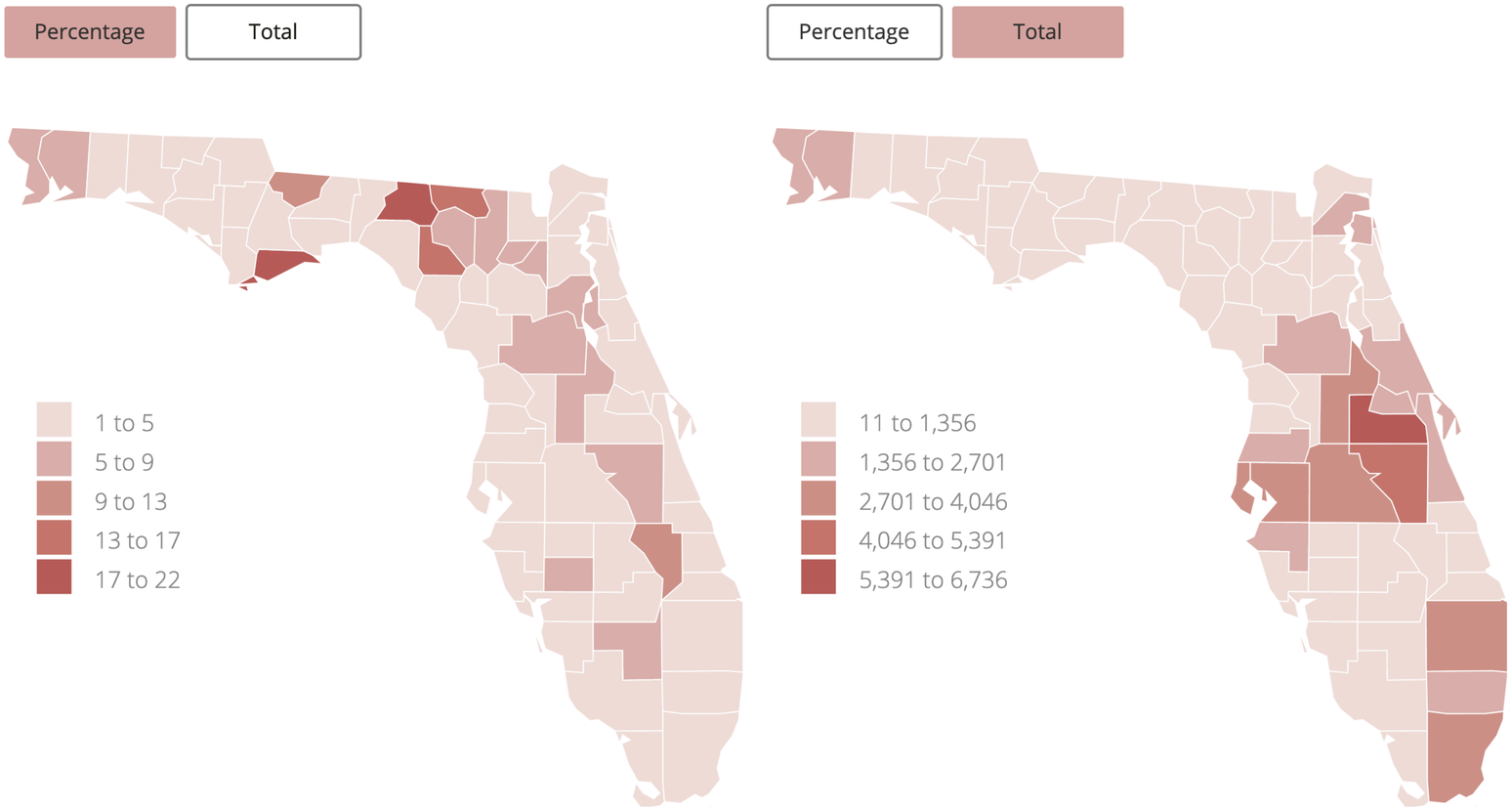
The danger of aggregating data too much, and presenting just averages and other simplistic summaries



AT SCHOOL WITHOUT A ROOF

http://www.lmelgar.me/without-a-roof/

In Florida more than 71,000 students are homeless. During the last decade, this population rocketed as a result of the recession and how hard it has become for the poorest families to find affordable housing.



Alberto Cairo • University of Miami • www.thefunctionalart.com • Twitter: @albertocairo

Elements of a data visualization:

1. Framework or scaffolding

Features that support the content such as legends, scales, axes, etc.

2. Encodings (also called "aesthetics" by some authors)

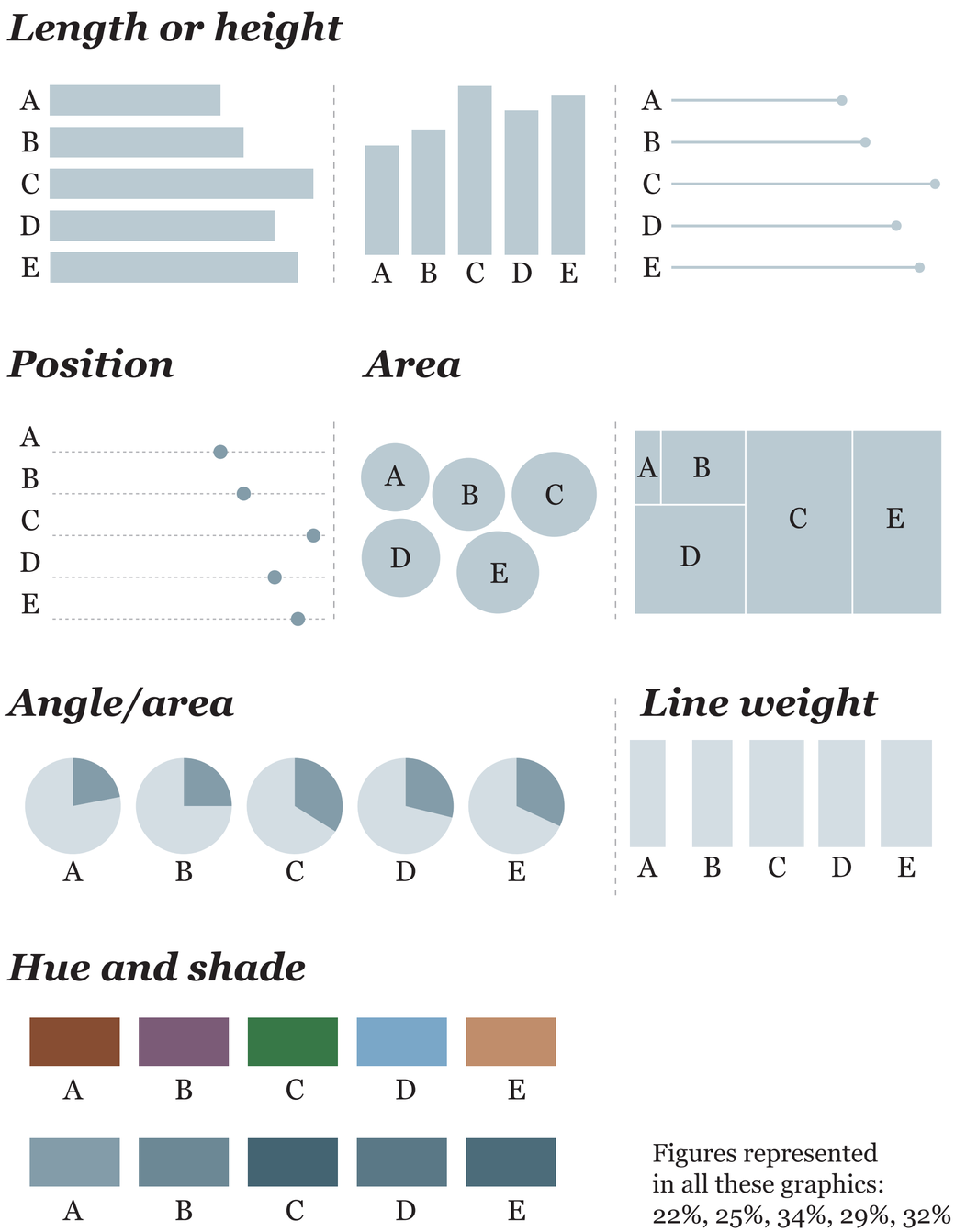
The features that represent the data

3. Annotations and copy

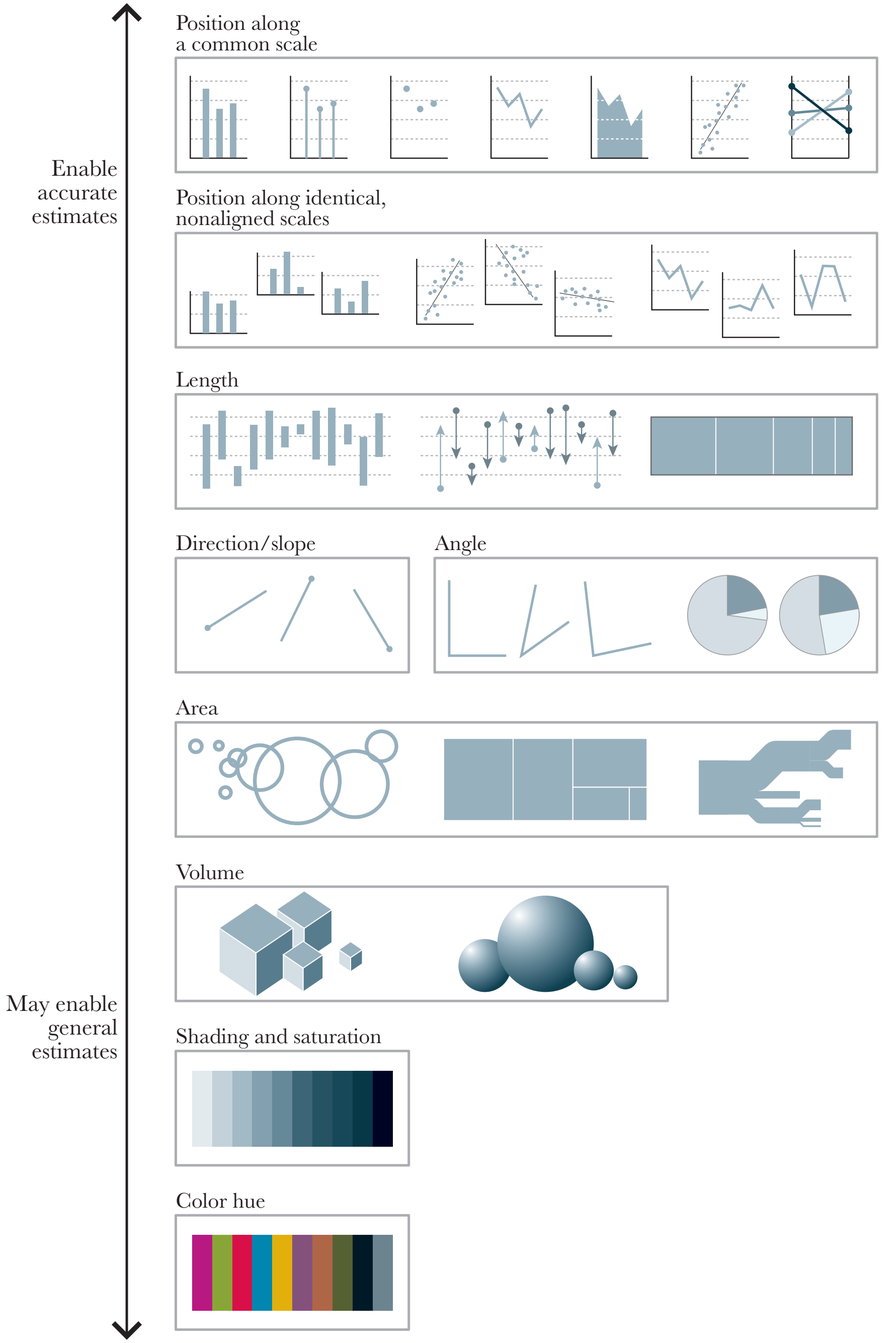
Text on the visualization itself that explains data points, put them in context, or connects one chart to the next one to form a narrative or story.

Symbols
(usually geometric objects)

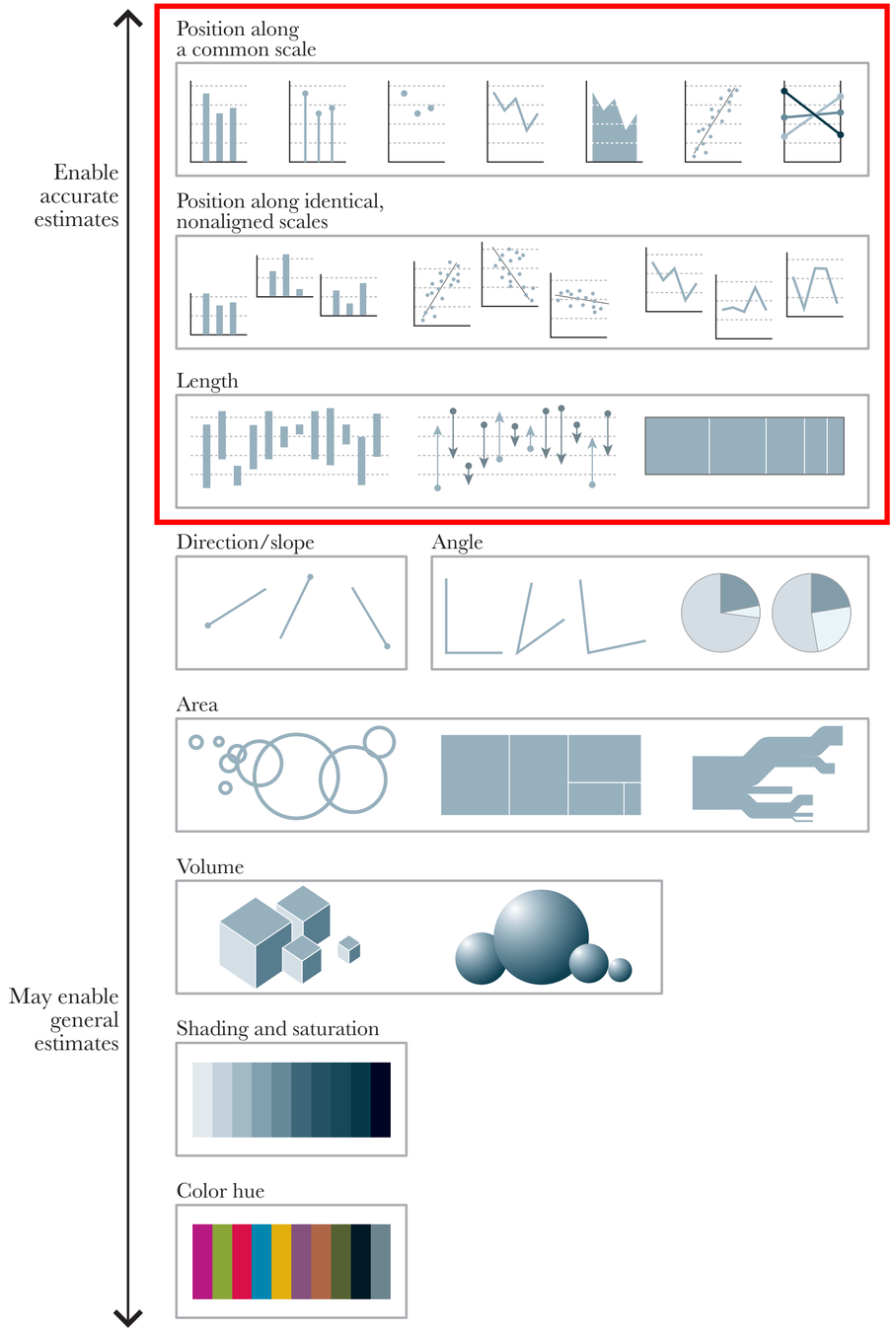
Visual encodings
(the properties of those objects that vary according to the data)



Figures represented in all these graphics: 22%, 25%, 34%, 29%, 32%

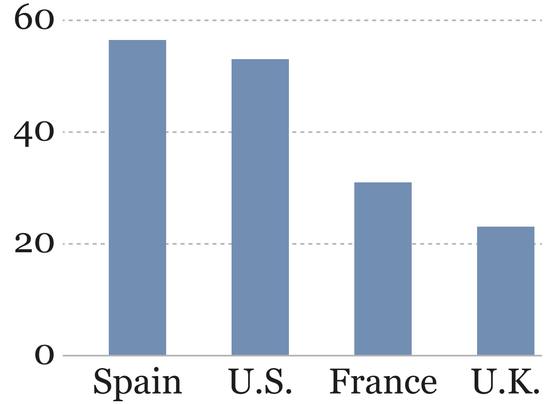


Based on Cleveland and Robert McGill (1984)

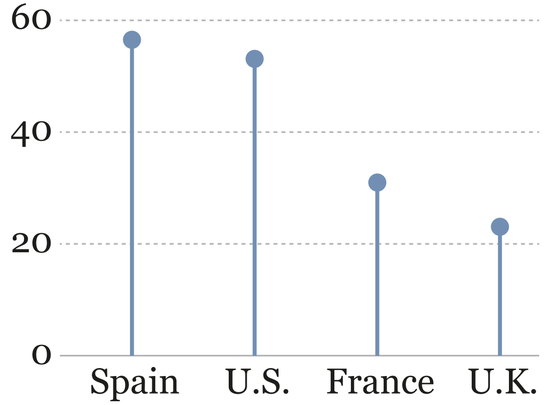


Based on Cleveland and Robert McGill (1984)

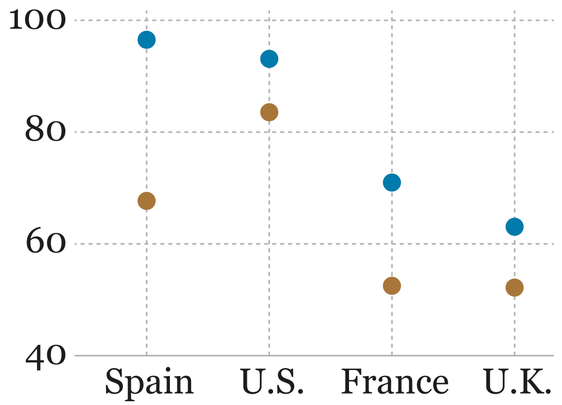
More accurate estimates



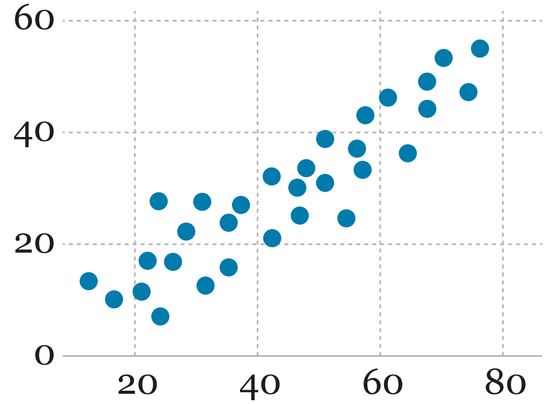
BAR CHART



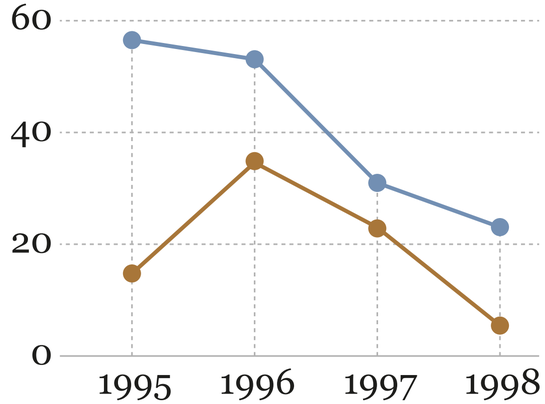
LOLLIPOP CHART



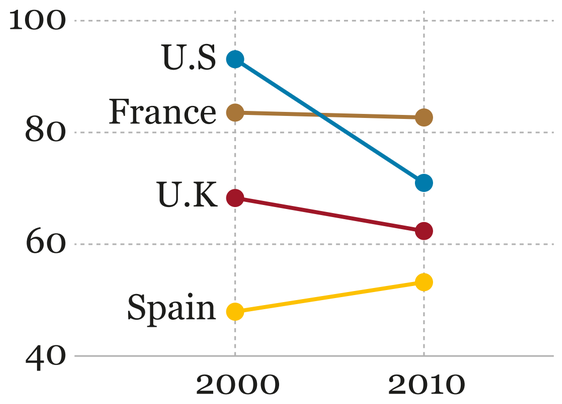
DOT CHART
(or dot plot)



SCATTER CHART
(or scatter plot)

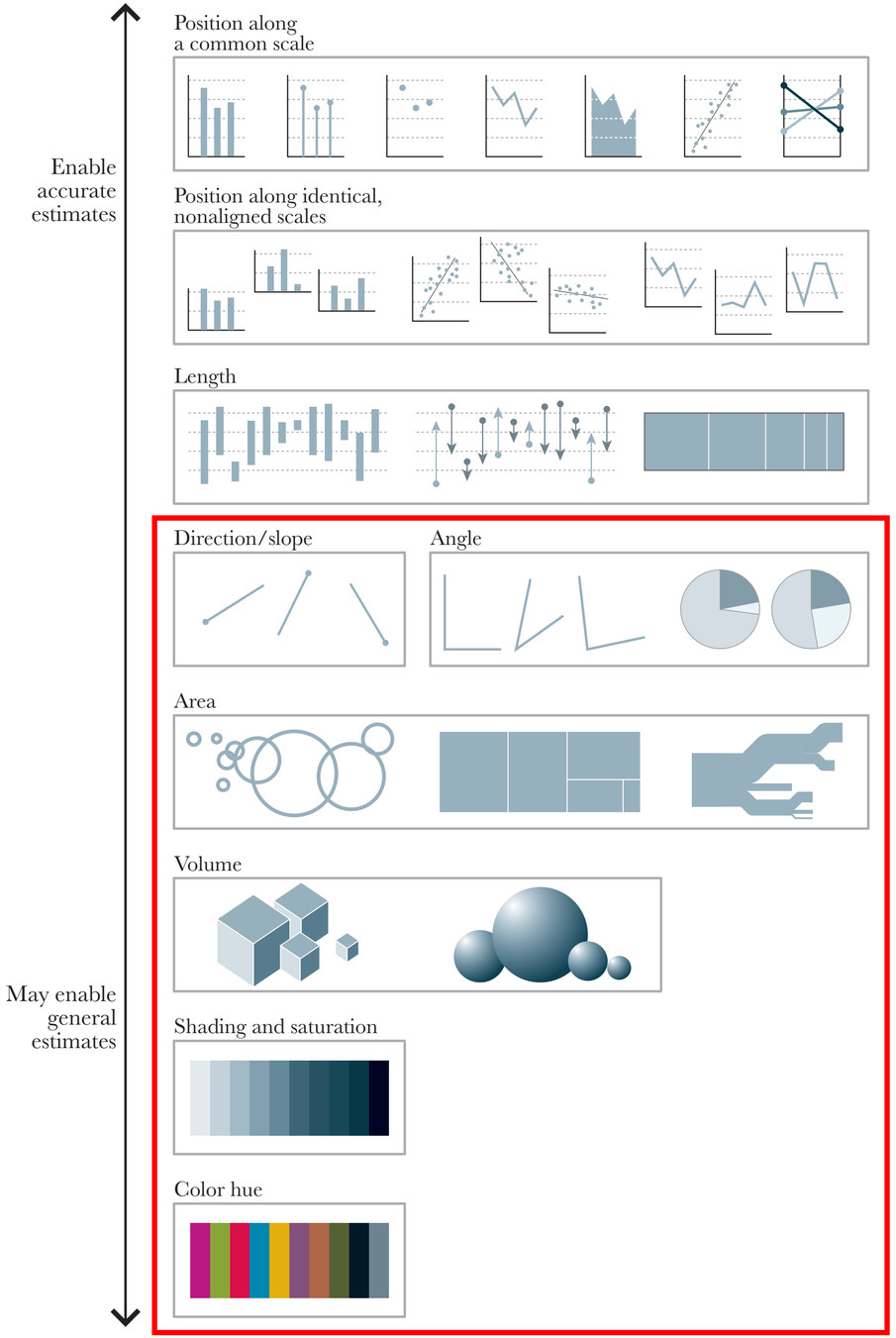


LINE CHART
(or time series chart)



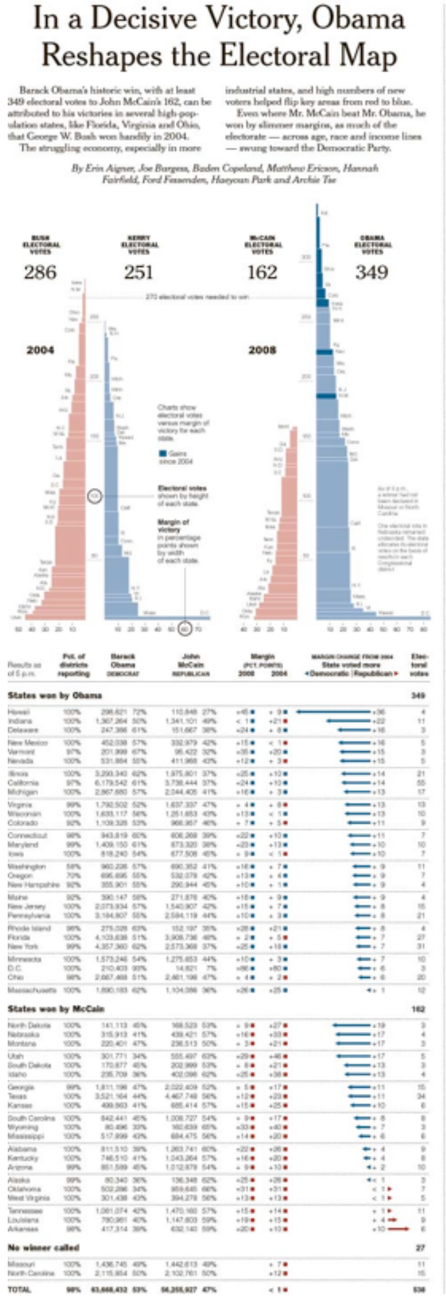
SLOPE CHART

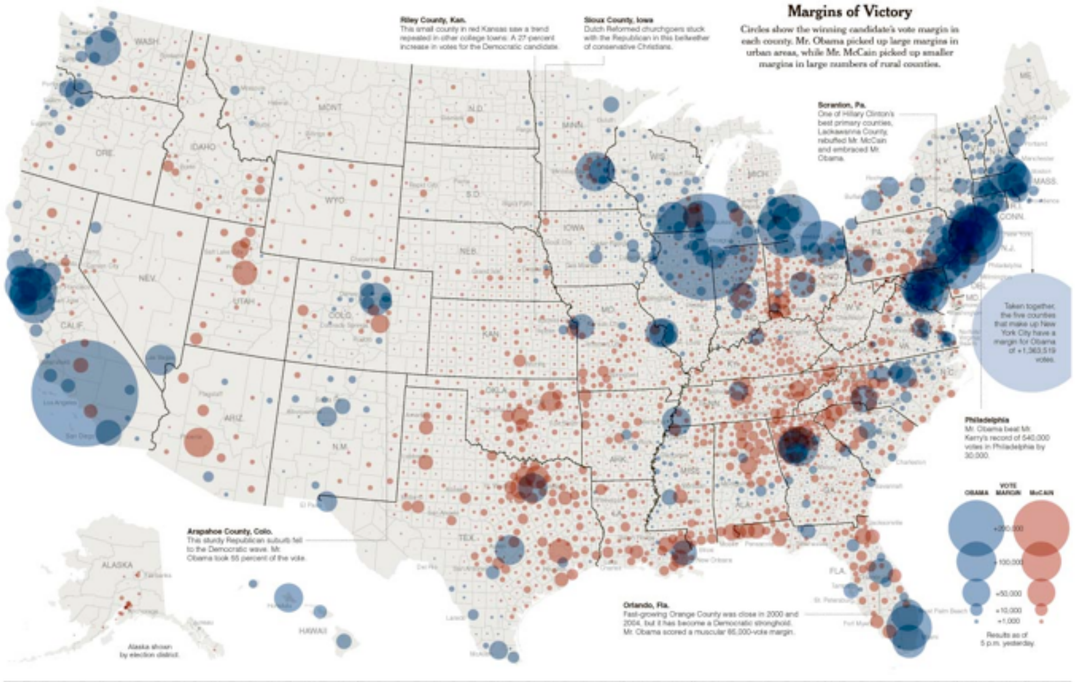
Great for accurate estimates: Comparisons, associations, change over time, etc.

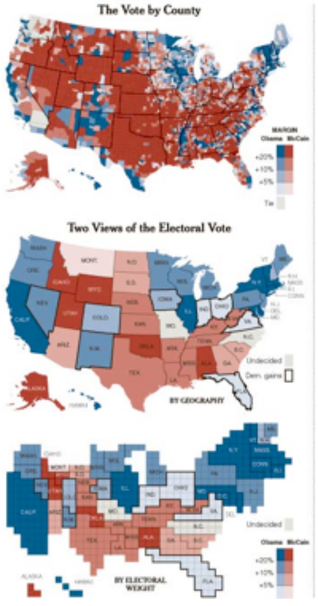


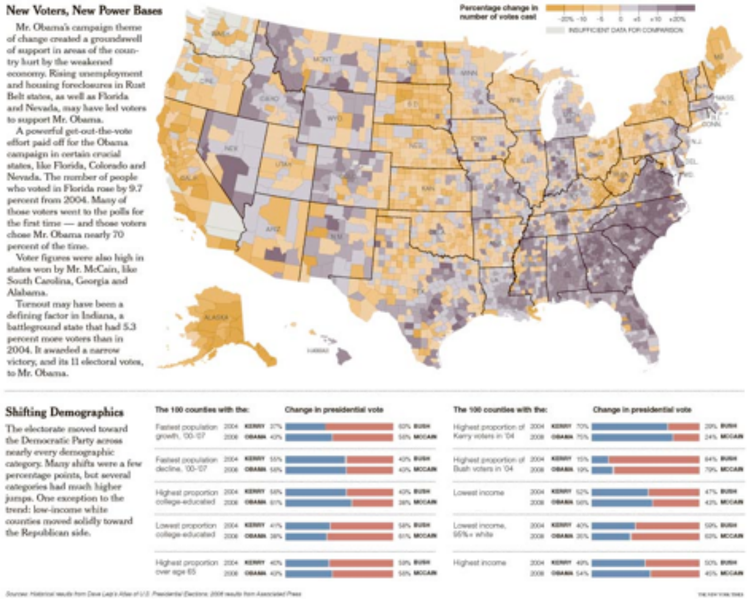
Based on Cleveland and Robert McGill (1984)

Less accurate estimates, but still useful when the purpose of a graphic is instead to reveal large patterns









Good for general patterns, trends, etc.

Lupa | Google News Initiative

AT THE EPICENTER

What if all Covid-19 deaths in Brazil happened in your neighborhood?

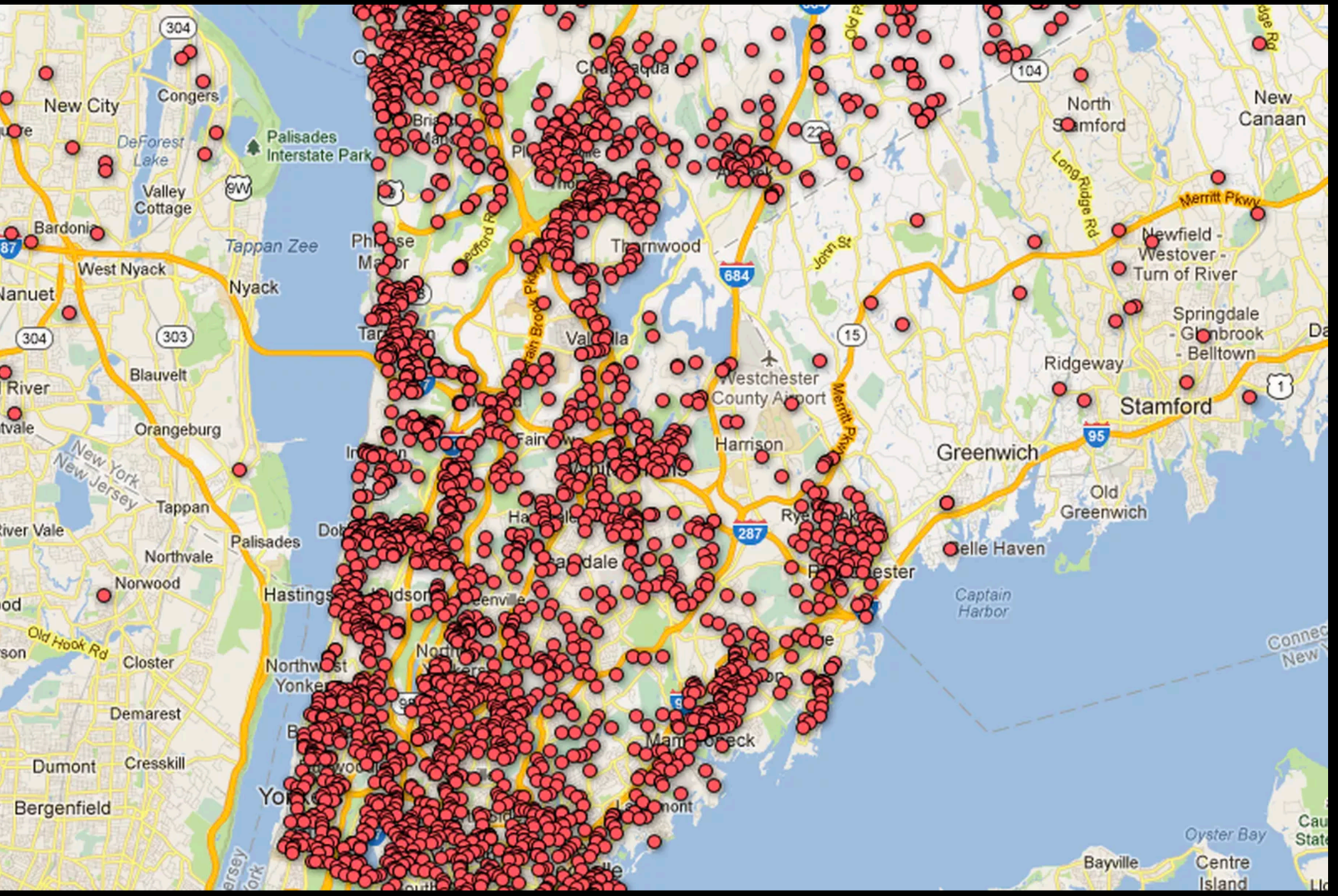
Find out what would happen if your address was the epicenter of the Covid-19 pandemic in Brazil.

Published on July 24, 2020.

Data updated on August 9, 2020.

http://piaui.folha.uol.com.br/lupa/epicentro/en/

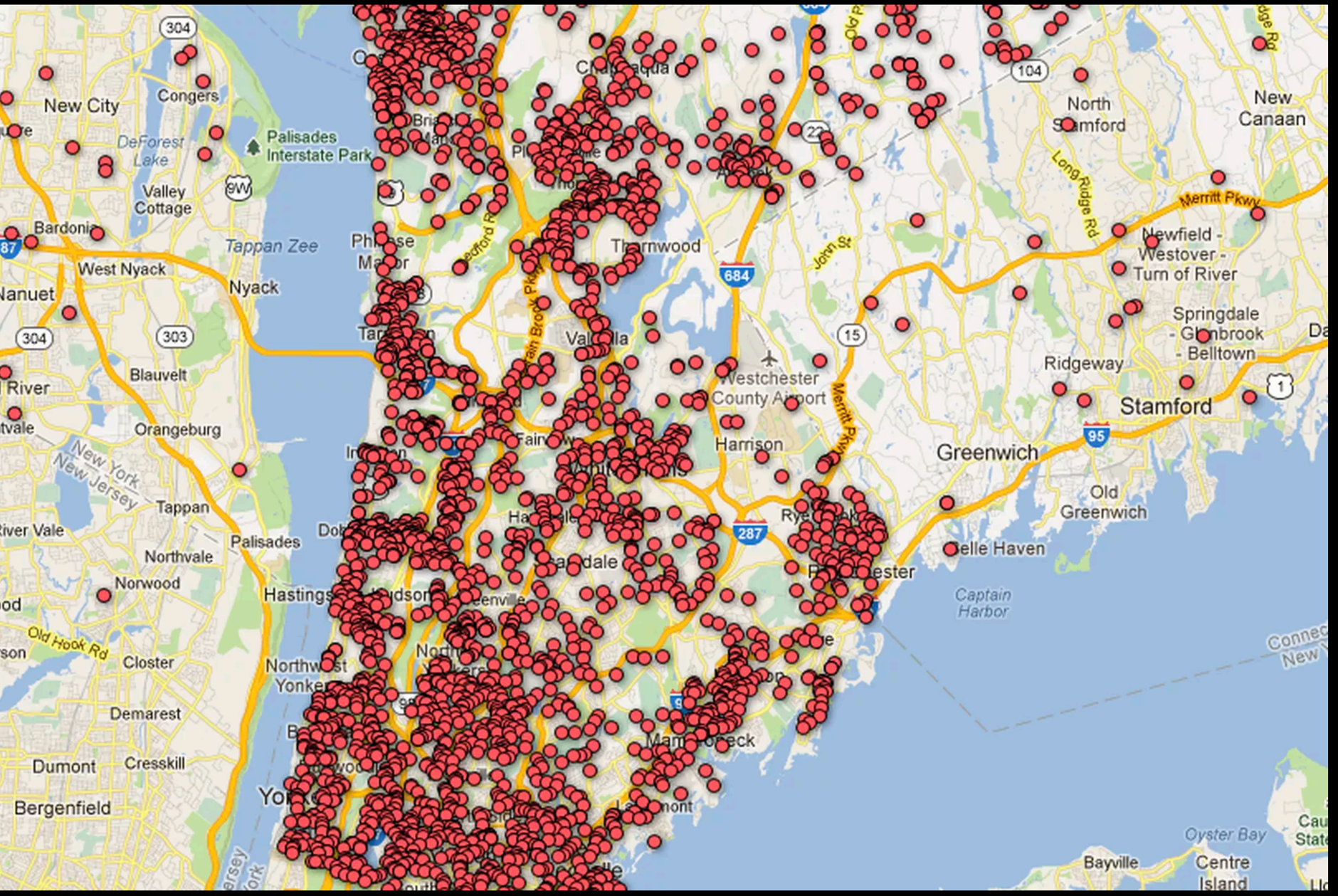
Published Dec. 23, 2012 (the Sandy Hook Elementary School shooting was on Dec. 14)



"Where are the gun permits in your neighborhood?" That's the question posed by **The Journal News**, a New York newspaper that published a Google map on Sunday that shows the names and addresses of pistol or revolver permits in Westchester and Rockland counties."

https://www.theverge.com/2012/12/25/3802960/new-york-newspaper-posts-map-with-names-addresses-of-gun-owners

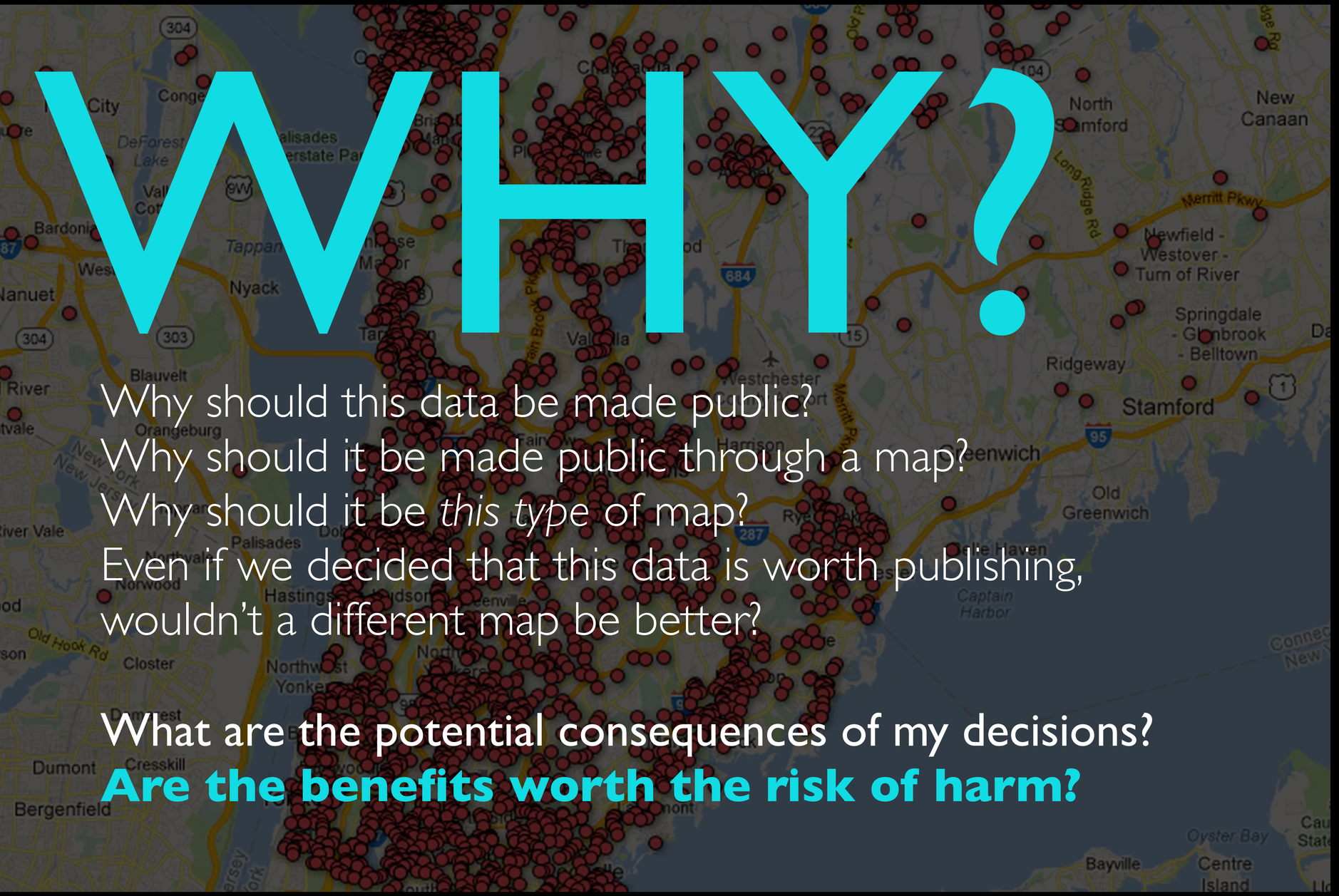
Published Dec. 23, 2012 (the Sandy Hook Elementary School shooting was on Dec. 14)



"We felt sharing information about gun permits in our area was important in the aftermath of the Newtown shootings."

Janet Hasson, president and publisher of the Journal News Media Group

Published Dec. 23, 2012 (the Sandy Hook Elementary School shooting was on Dec. 14)



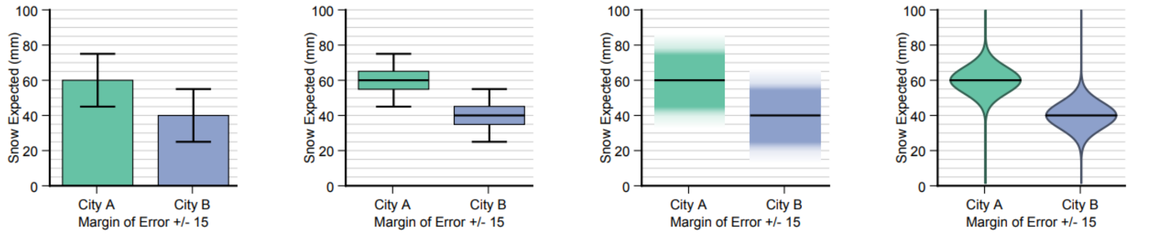
Disclosing limitations and uncertainty

Uncertainty and graphicacy
How should statisticians, journalists, and designers reveal uncertainty in graphics for public consumption?

https://ec.europa.eu/eurostat/cros/powerfromstatistics/OR/PfS-OutlookReport-Cairo.pdf

Error Bars Considered Harmful:
Exploring Alternate Encodings for Mean and Error

Michael Correll *Student Member, IEEE*, and Michael Gleicher *Member, IEEE*



(a) **Bar chart** with error bars: the height of the bars encodes the sample mean, and the whiskers encode a 95% t-confidence interval.

(b) **Modified box plot**: The whiskers are the 95% t-confidence interval, the box is a 50% t-confidence interval.

(c) **Gradient plot**: the transparency of the colored region corresponds to the cumulative density function of a t-distribution.

(d) **Violin plot**: the width of the colored region corresponds to the probability density function of a t-distribution.

https://graphics.cs.wisc.edu/Papers/2014/CG14/Preprint.pdf

Collection of papers about visualizing uncertainty:
https://www.dropbox.com/sh/jk4ginxyai6ylqu/AABvqdyT1hJtyFN9nKNHyX9Ba?dl=0