VISUAL TRUMPERY

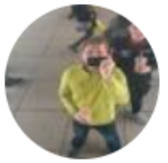
How Charts Lie —And How They Can Make Us Smarter

A talk by Alberto Cairo
www.trumperytour.com

To download these slides
and additional readings:

https://goo.gl/RLTSkK

alberto.cairo@gmail.com



Mike Foster
@mjfoster83

Following

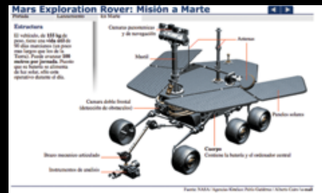
The word 'Trumpery' has origins tracing to 15th Century Middle English. How prescient. merriam-webster.com/dictionary/tru…

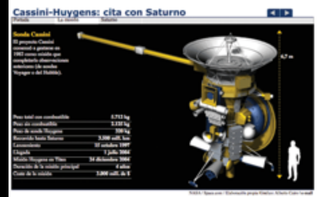
Trumpery derives from the Middle English *trompery* and ultimately from the Middle French *tromper,* meaning "to deceive." (You can see the meaning of this root reflected in the French phrase *trompe-l'oeil*-literally, "deceives the eye"-which in English refers to a style of painting with photographically realistic detail.) *Trumpery* first appeared in English in the mid-15th century with the meanings "deceit or fraud" (a sense that is now obsolete) and "worthless nonsense." Less than 100 years later, it was being applied to material objects of little or no value. The verb phrase *trump up* means "to concoct with the intent to deceive," but there is most likely no etymological connection between this phrase and *trumpery.*

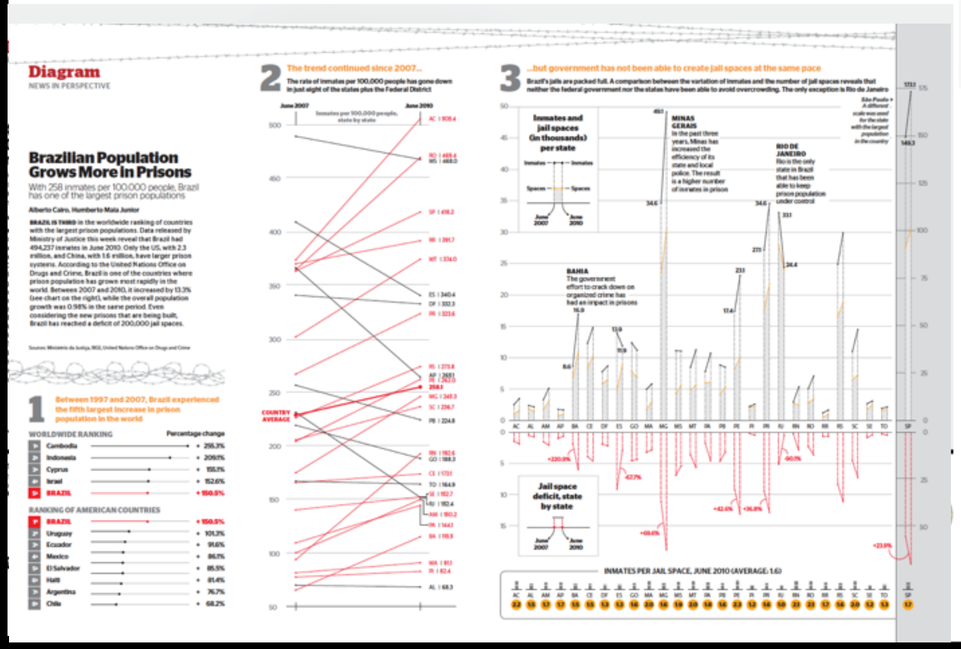
A celebration
and a concern

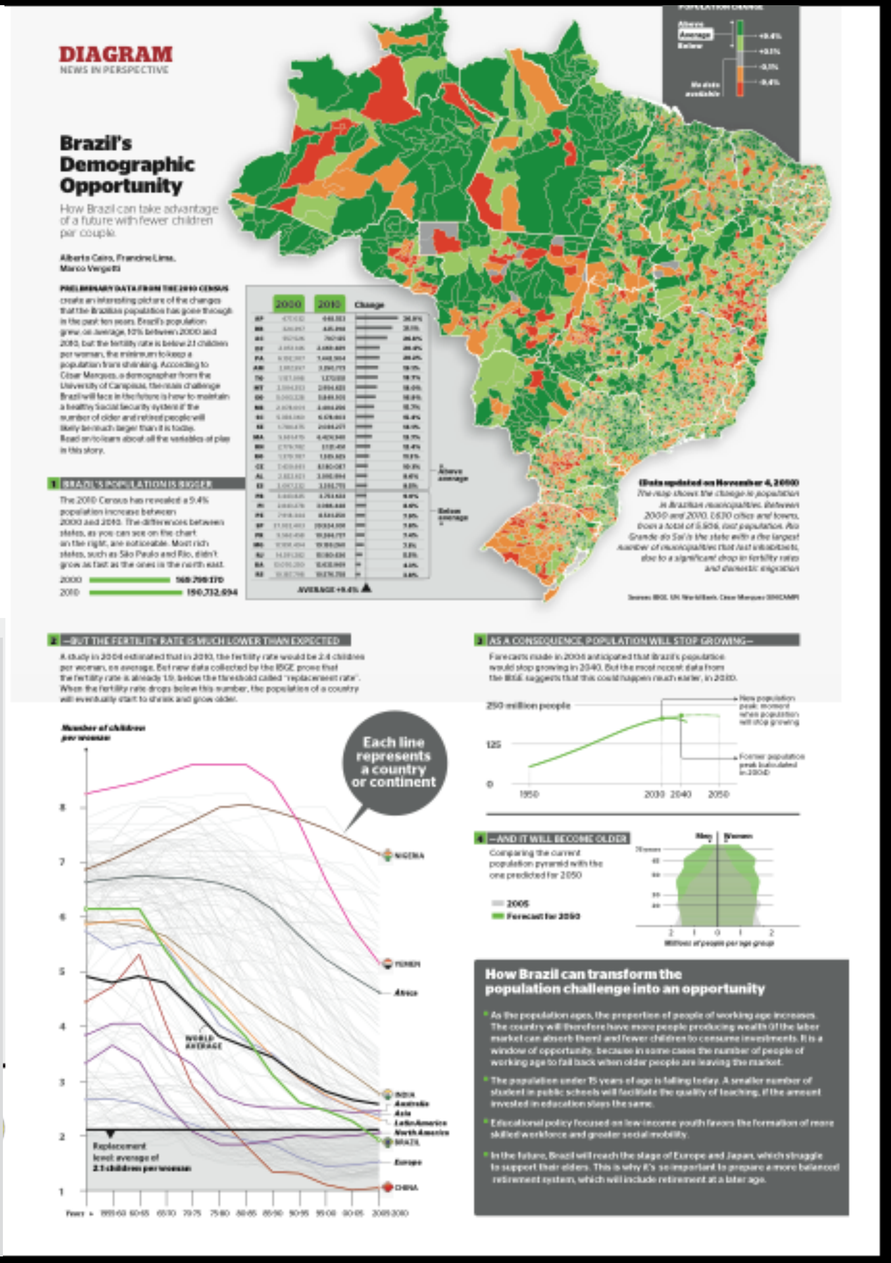
A celebration
and a concern

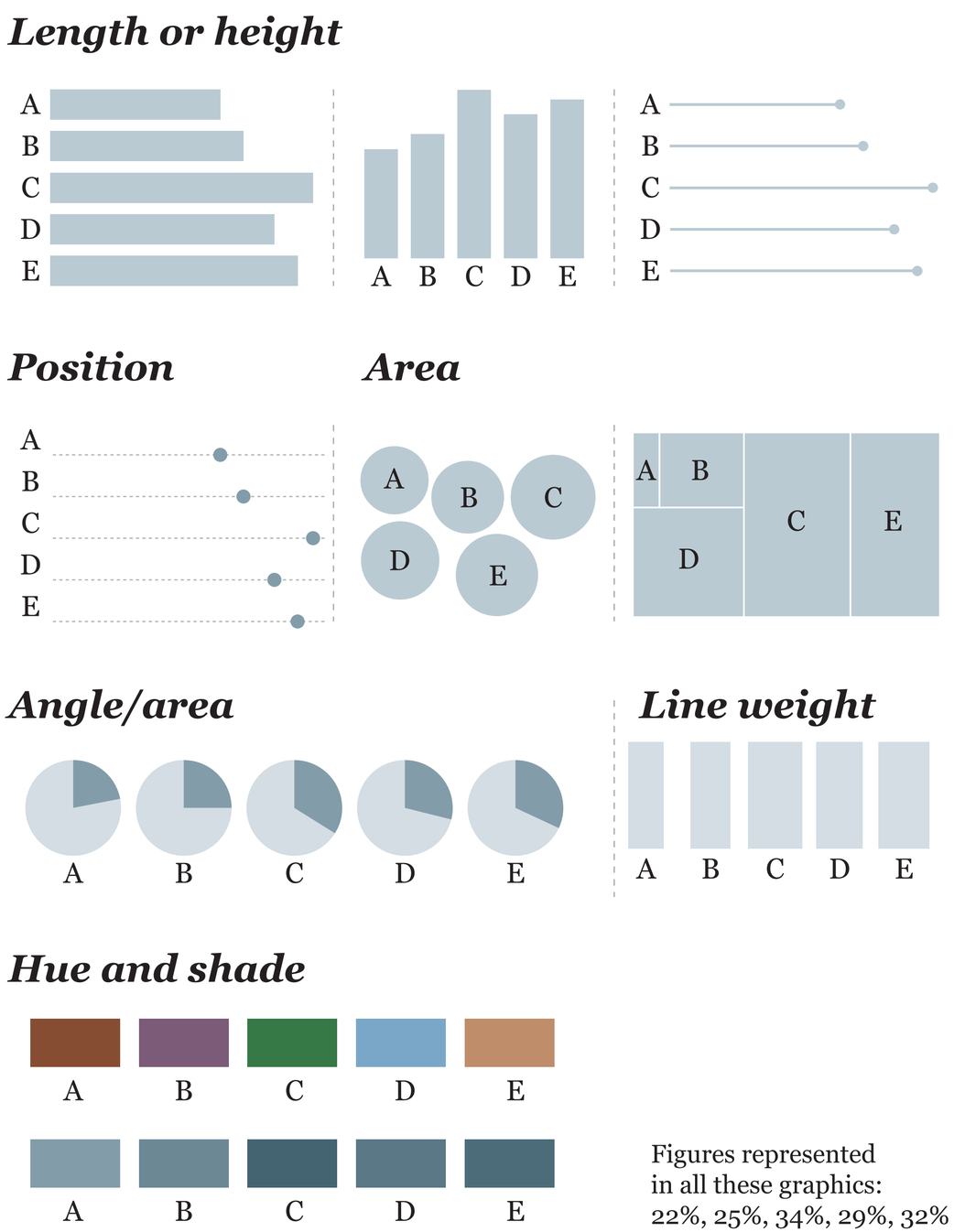
I've devoted my career to doing all kinds of charts for media publications









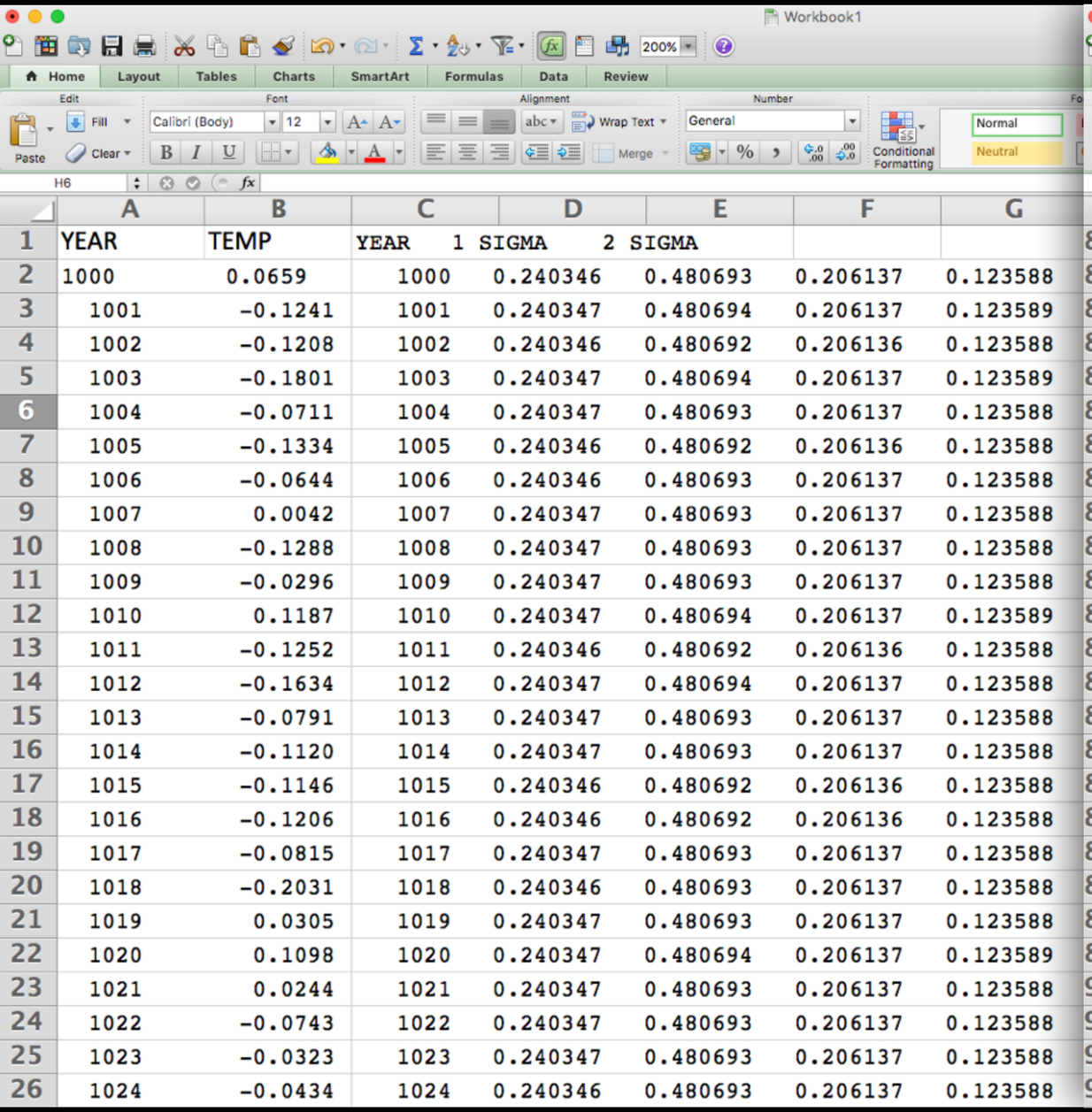


Figures represented
in all these graphics:
22%, 25%, 34%, 29%, 32%

Charts (or "visualization") are based on the idea of **visual encoding.**

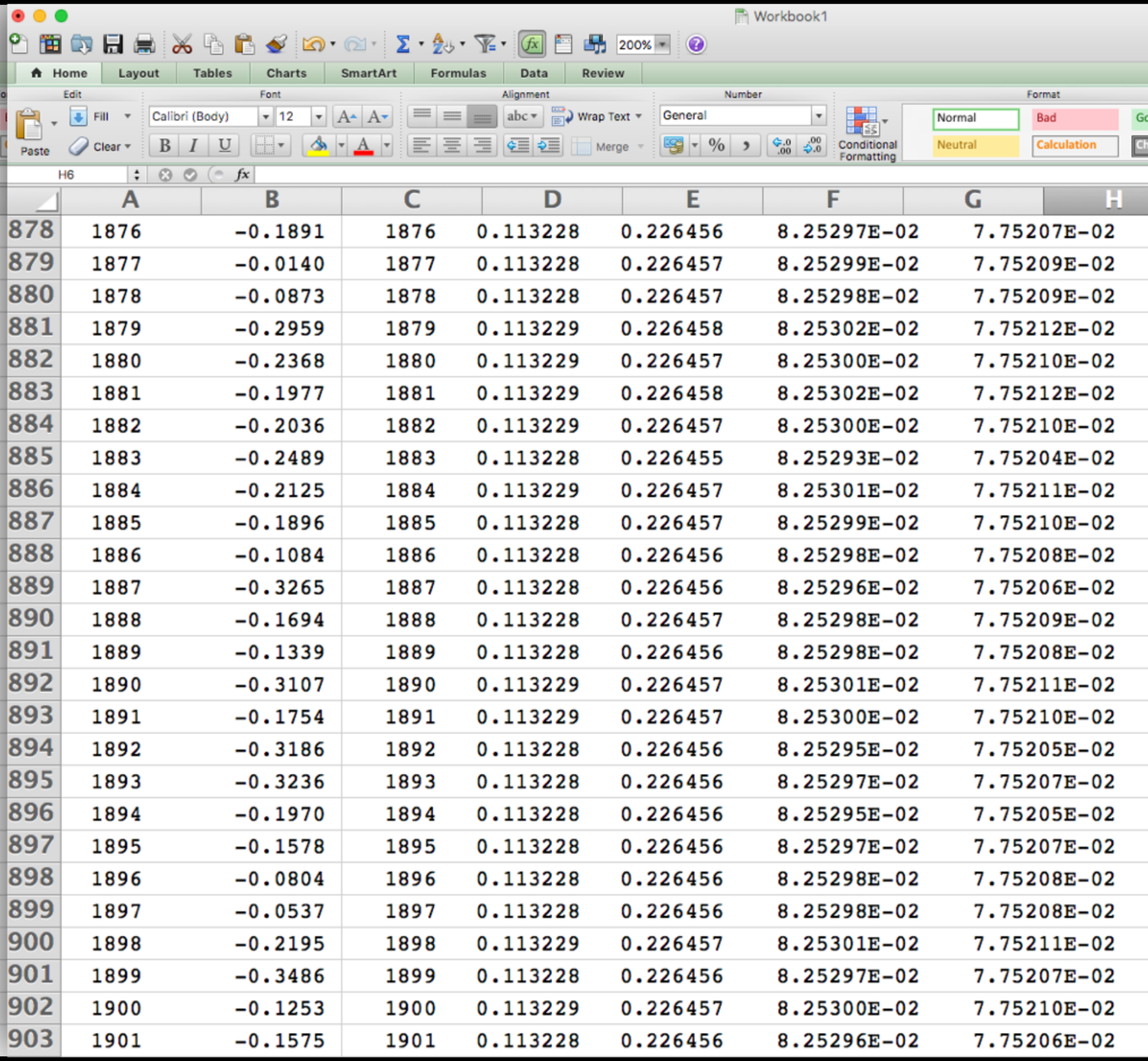
Visualization is quickly becoming a mainstream language adopted by professional in many disciplines because it is useful to **explore** data and to **communicate** it

Try to extract useful information from this:



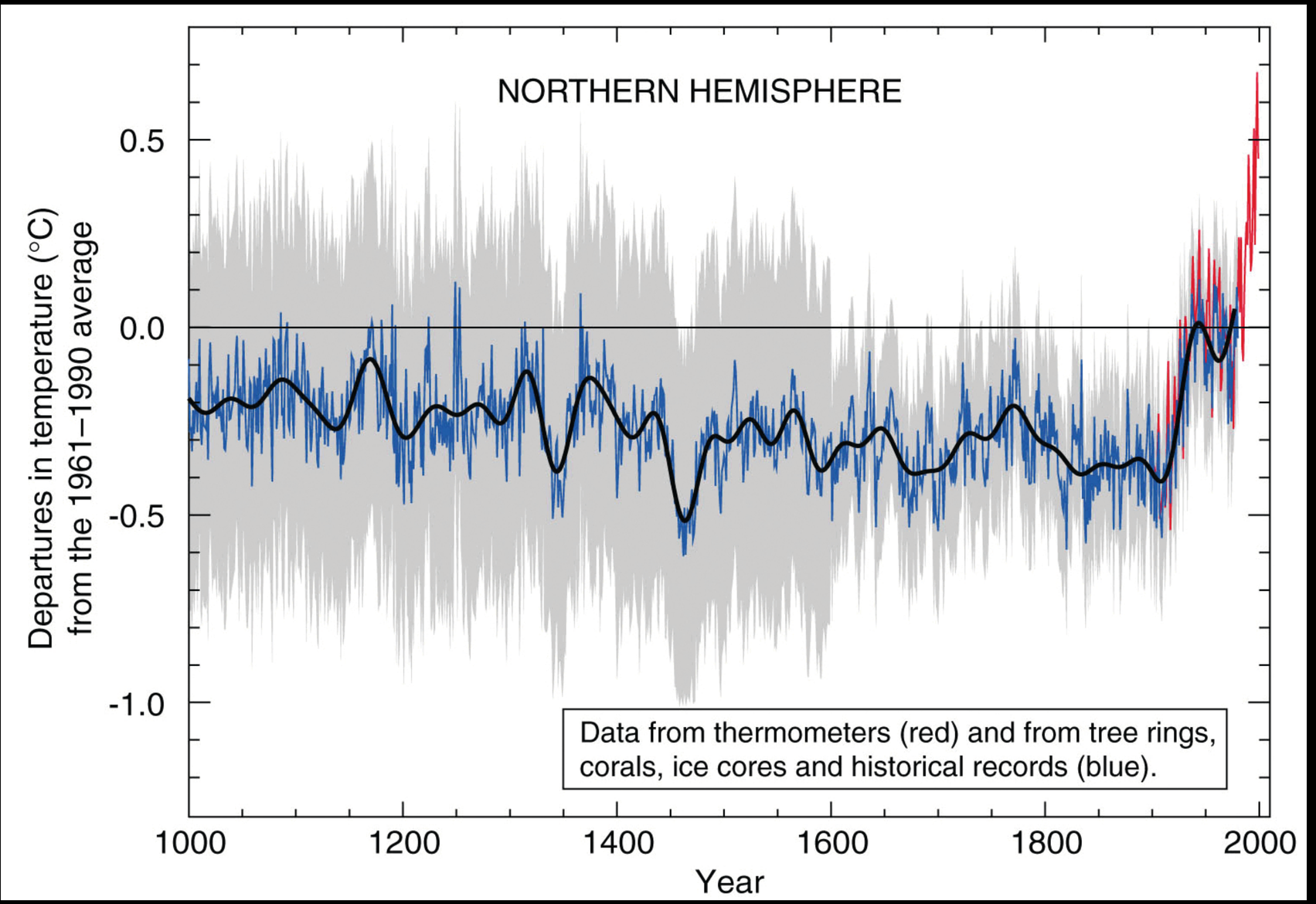
Workbook1

	A	B	C	D	E	F	G
1	YEAR	TEMP	YEAR	1 SIGMA	2 SIGMA		
2	1000	0.0659	1000	0.240346	0.480693	0.206137	0.123588
3	1001	-0.1241	1001	0.240347	0.480694	0.206137	0.123589
4	1002	-0.1208	1002	0.240346	0.480692	0.206136	0.123588
5	1003	-0.1801	1003	0.240347	0.480694	0.206137	0.123589
6	1004	-0.0711	1004	0.240347	0.480693	0.206137	0.123588
7	1005	-0.1334	1005	0.240346	0.480692	0.206136	0.123588
8	1006	-0.0644	1006	0.240346	0.480693	0.206137	0.123588
9	1007	0.0042	1007	0.240347	0.480693	0.206137	0.123588
10	1008	-0.1288	1008	0.240347	0.480693	0.206137	0.123588
11	1009	-0.0296	1009	0.240347	0.480693	0.206137	0.123588
12	1010	0.1187	1010	0.240347	0.480694	0.206137	0.123589
13	1011	-0.1252	1011	0.240346	0.480692	0.206136	0.123588
14	1012	-0.1634	1012	0.240347	0.480694	0.206137	0.123588
15	1013	-0.0791	1013	0.240347	0.480693	0.206137	0.123588
16	1014	-0.1120	1014	0.240347	0.480693	0.206137	0.123588
17	1015	-0.1146	1015	0.240346	0.480692	0.206136	0.123588
18	1016	-0.1206	1016	0.240346	0.480692	0.206136	0.123588
19	1017	-0.0815	1017	0.240347	0.480693	0.206137	0.123588
20	1018	-0.2031	1018	0.240346	0.480693	0.206137	0.123588
21	1019	0.0305	1019	0.240347	0.480693	0.206137	0.123588
22	1020	0.1098	1020	0.240347	0.480694	0.206137	0.123589
23	1021	0.0244	1021	0.240347	0.480693	0.206137	0.123588
24	1022	-0.0743	1022	0.240347	0.480693	0.206137	0.123588
25	1023	-0.0323	1023	0.240347	0.480693	0.206137	0.123588
26	1024	-0.0434	1024	0.240346	0.480693	0.206137	0.123588



Workbook1

	A	B	C	D	E	F	G	H
878	1876	-0.1891	1876	0.113228	0.226456	8.25297E-02	7.75207E-02	
879	1877	-0.0140	1877	0.113228	0.226457	8.25299E-02	7.75209E-02	
880	1878	-0.0873	1878	0.113228	0.226457	8.25298E-02	7.75209E-02	
881	1879	-0.2959	1879	0.113229	0.226458	8.25302E-02	7.75212E-02	
882	1880	-0.2368	1880	0.113229	0.226457	8.25300E-02	7.75210E-02	
883	1881	-0.1977	1881	0.113229	0.226458	8.25302E-02	7.75212E-02	
884	1882	-0.2036	1882	0.113229	0.226457	8.25300E-02	7.75210E-02	
885	1883	-0.2489	1883	0.113228	0.226455	8.25293E-02	7.75204E-02	
886	1884	-0.2125	1884	0.113229	0.226457	8.25301E-02	7.75211E-02	
887	1885	-0.1896	1885	0.113228	0.226457	8.25299E-02	7.75210E-02	
888	1886	-0.1084	1886	0.113228	0.226456	8.25298E-02	7.75208E-02	
889	1887	-0.3265	1887	0.113228	0.226456	8.25296E-02	7.75206E-02	
890	1888	-0.1694	1888	0.113228	0.226457	8.25298E-02	7.75209E-02	
891	1889	-0.1339	1889	0.113228	0.226456	8.25298E-02	7.75208E-02	
892	1890	-0.3107	1890	0.113229	0.226457	8.25301E-02	7.75211E-02	
893	1891	-0.1754	1891	0.113229	0.226457	8.25300E-02	7.75210E-02	
894	1892	-0.3186	1892	0.113228	0.226456	8.25295E-02	7.75205E-02	
895	1893	-0.3236	1893	0.113228	0.226456	8.25297E-02	7.75207E-02	
896	1894	-0.1970	1894	0.113228	0.226456	8.25295E-02	7.75205E-02	
897	1895	-0.1578	1895	0.113228	0.226456	8.25297E-02	7.75207E-02	
898	1896	-0.0804	1896	0.113228	0.226456	8.25298E-02	7.75208E-02	
899	1897	-0.0537	1897	0.113228	0.226456	8.25298E-02	7.75208E-02	
900	1898	-0.2195	1898	0.113229	0.226457	8.25301E-02	7.75211E-02	
901	1899	-0.3486	1899	0.113228	0.226456	8.25297E-02	7.75207E-02	
902	1900	-0.1253	1900	0.113229	0.226457	8.25300E-02	7.75210E-02	
903	1901	-0.1575	1901	0.113228	0.226456	8.25296E-02	7.75206E-02	

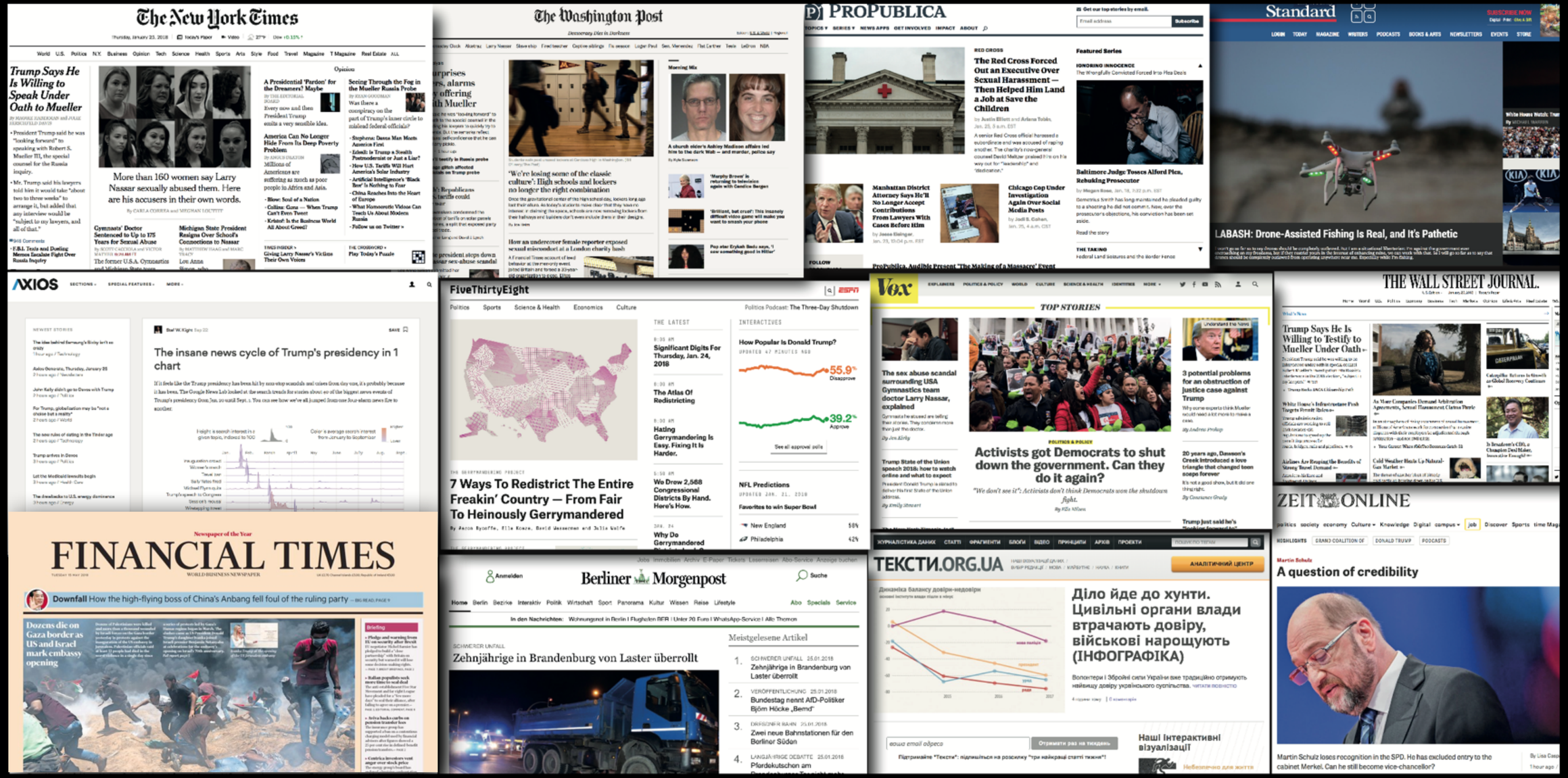


It's easier with a chart

Michael E. Mann, Raymond S. Bradley, and Malcolm K. Hughes

Intergovernmental Panel on Climate Change (IPCC), Third Report, 2001

CHARTS ARE EVERYWHERE,
in part thanks to news media



How Y'all, Youse and You Guys Talk

By **JOSH KATZ** and **WILSON ANDREWS** DEC. 21, 2013

What does the way you speak say about where you're from? Answer all the questions below to see your personal dialect map.

QUESTION 1 OF 25

How would you address a group of two or more people?

- you all
- yous / youse
- you lot
- you guys
- you 'uns
- yinz
- you
- other
- y'all

Next ▸

ADVERTISEMENT

How Y'all, Youse and You Guys Talk

What does the way you speak say about where you're from?
Answer all the questions below to see your personal dialect map.

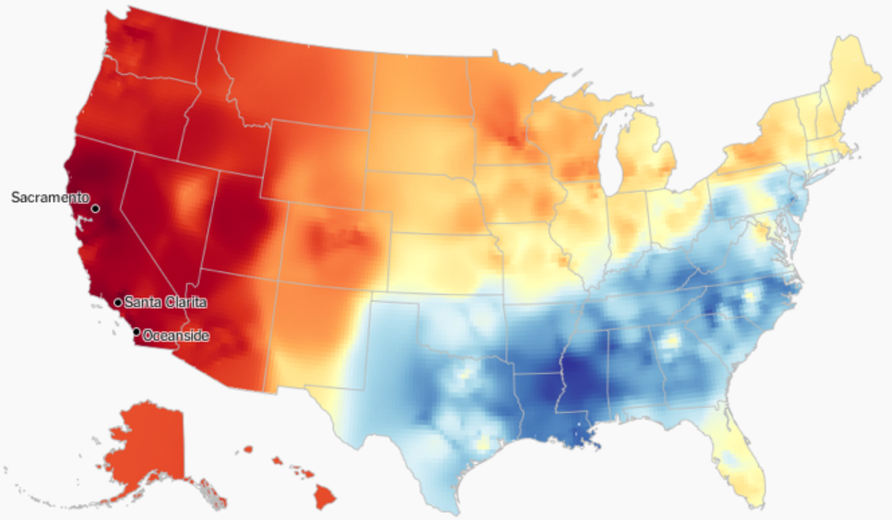
You're viewing another reader's map. Click here to take the quiz and see your own.

Your Map

See the pattern of your dialect in the map below. Three of the most similar cities are shown.

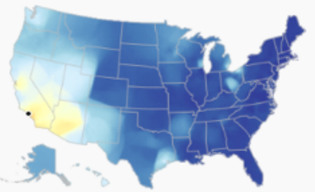
Least similar — Most similar

Show least similar | Take the quiz



These maps show your most distinctive answer for each of these cities.

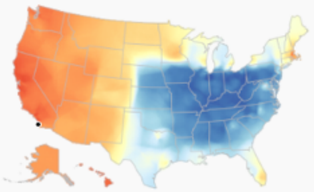
SANTA CLARITA



What do you call a big road on which you drive relatively fast?

freeway

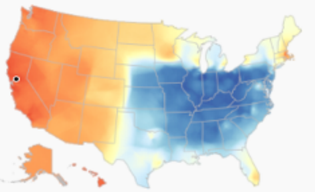
OCEANSIDE



What do you call the insect that flies around in the summer and glows in the dark?

firefly

SACRAMENTO



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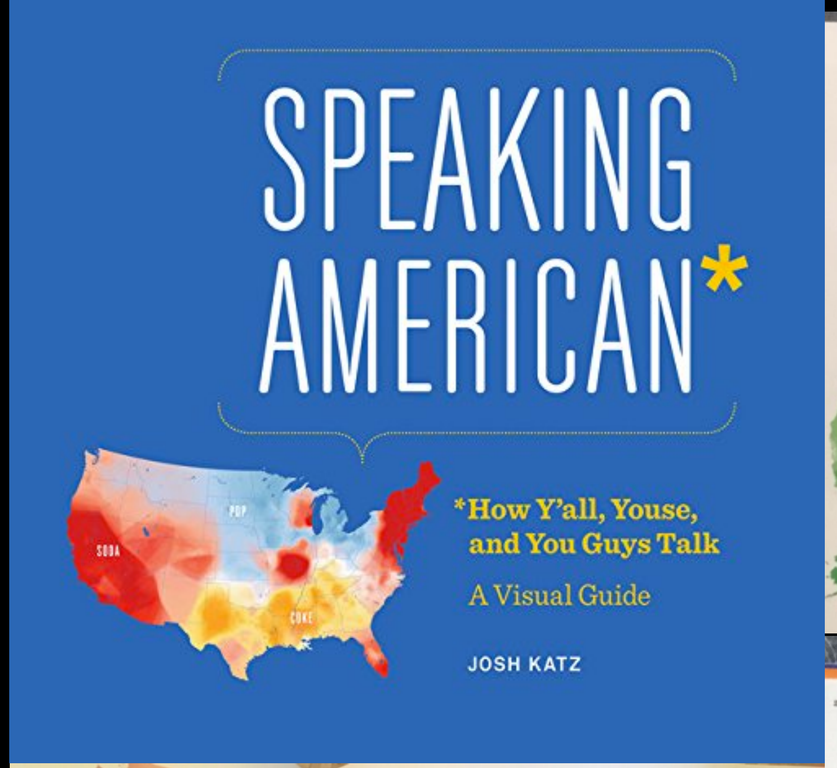

SPEAKING AMERICAN*
SODA
POP
COKE
*How Y'all, Youse, and You Guys Talk
A Visual Guide
JOSH KATZ

EITHER 24%
DAT-UH 23%
YOU SAY DATA. I SAY DATA.
DAYT-UH 52%

DRINKING FOUNTAIN
BUBBLER
BUBBLER
WATER FOUNTAIN

Nineteenth-century migration in the United States was primarily a tale of westward expansion. As settlers moved west, they carried their culture—and their language—with them. Thus the divisions seen on the East Coast perpetuated themselves westward, as people from different parts of the East moved to different parts of the West. A linguistic fault line runs from Texas up through Arkansas, then tracks the Ohio River along the northern border of Kentucky toward the Mason-Dixon Line.
One of the clearest expressions of this fault line is the boundary between where they say you guys and where they say y'all.
YOU GUYS 50%
Y'ALL 28%
YOU ALL 10%
YOU 10%
YINS <1%
PERCENT SAYING

CHARTS ARE EVERYWHERE,
in part, thanks to new software

the functional art

alberto cairo's weblog on visualization, infographics, and data journalism

Home | Contact the author | Speaking & Consulting | The Truthful Art book | The Functional Art book | Reviews | Tutorials & Resources | Reading now

Thursday, February 1, 2018

A new data visualization tool: Flourish

(Full disclosure: the development of Flourish was partially supported by the Google News Lab. I have an ongoing consulting collaboration with the Lab, so I provided some feedback before the tool was launched.)

In the past I've praised several visualization tools, some of which are still part of my workflow — INZight or RAWGraphs— and others that I've been planning to incorporate into classes for a while, such as DataWrapper, Quadrigram, or Plotly. These tools contribute to the democratization of visualization, something I care about quite a bit. A new one, Flourish, has been launched today. I'd like to bring it to your attention.

I've been playing with Flourish's beta for a few weeks, and liked it so much that I recorded an informal video tutorial for my students. You can download it here or find it in the tutorials section of this website.

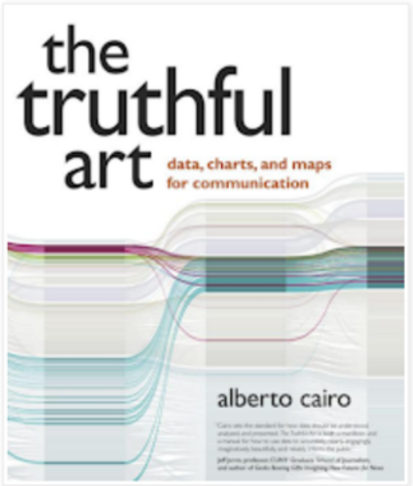
(Update: I've uploaded the videos to a YouTube playlist.)

Flourish lets you quickly develop tons of different kinds of graphs and maps. This is a screenshot of the templates available so far, with more coming soon:

Follow by Email

Email address... Submit

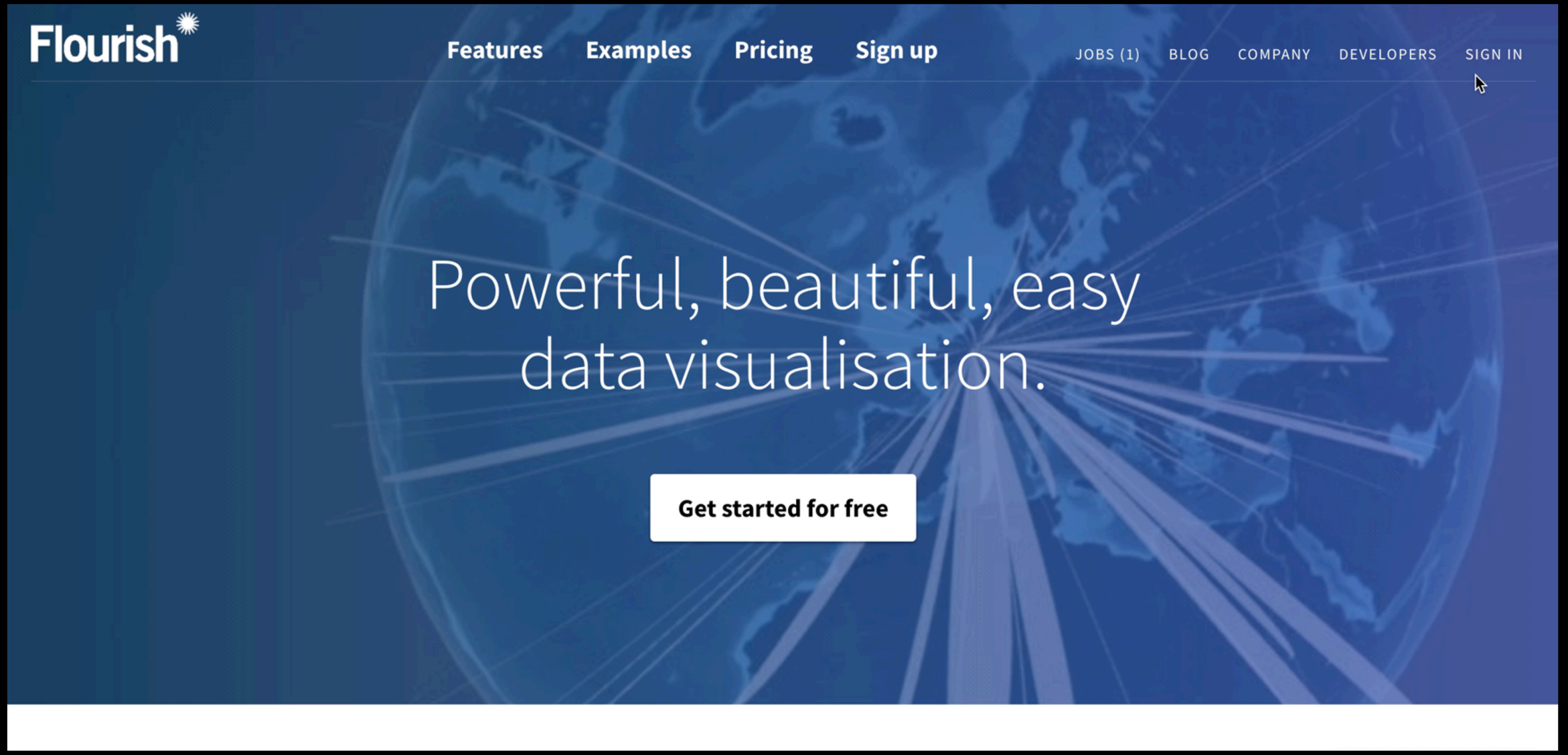
NEW BOOK AVAILABLE



ORDER IT NOW

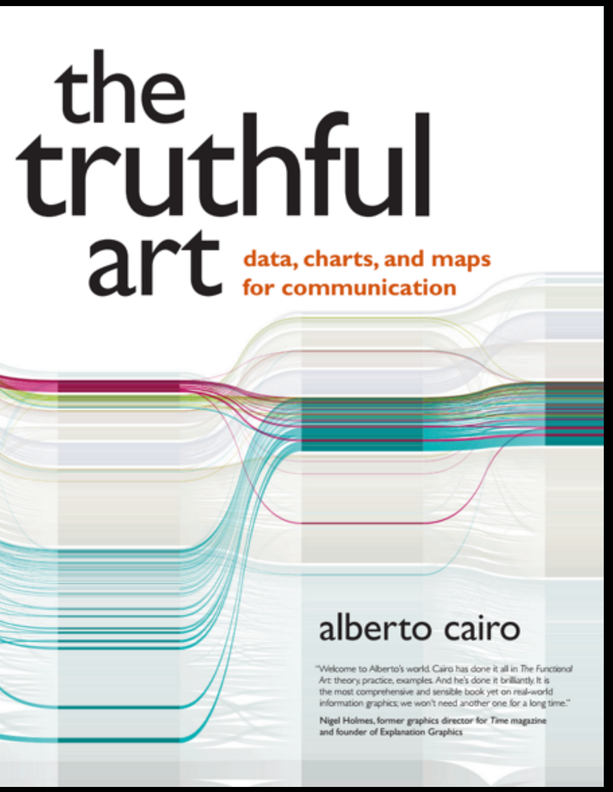
http://www.thefunctionalart.com/p/instructors-guide.html

Google News Initiative + KILN: https://flourish.studio/

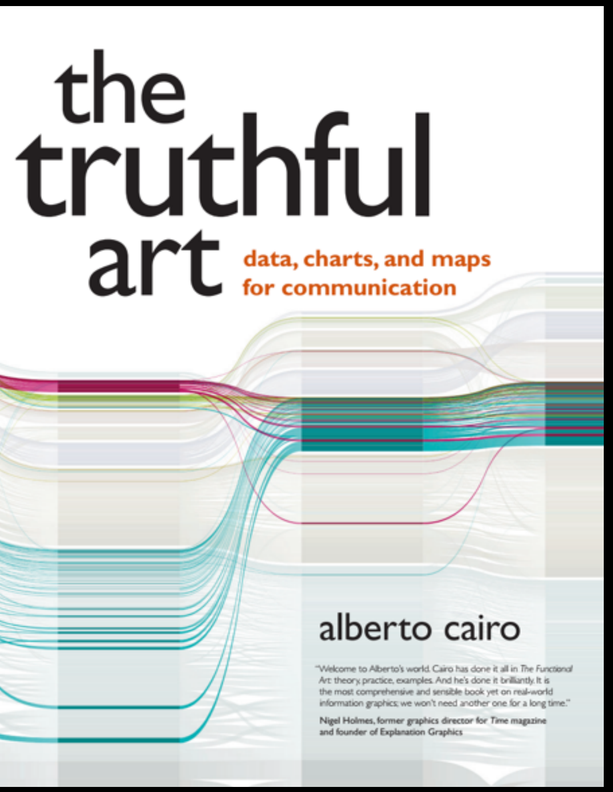


All our projects: https://trends.google.com/trends/story/US_cu_6fXtAFIBAABWdM_en
How we work: https://www.fastcodesign.com/90111367/what-happens-when-google-turns-artists-loose-on-its-search-data

A celebration
and a concern



MOST BOOKS AND WEBSITES FOCUS ON THE DESIGNER'S RESPONSIBILITIES: HOW TO APPLY SOUND PRINCIPLES OF DESIGN OR HOW TO USE A TOOL



MOST BOOKS AND WEBSITES FOCUS ON THE DESIGNER'S RESPONSIBILITIES: HOW TO APPLY SOUND PRINCIPLES OF DESIGN OR HOW TO USE A TOOL

BUT WHAT ABOUT READERS?

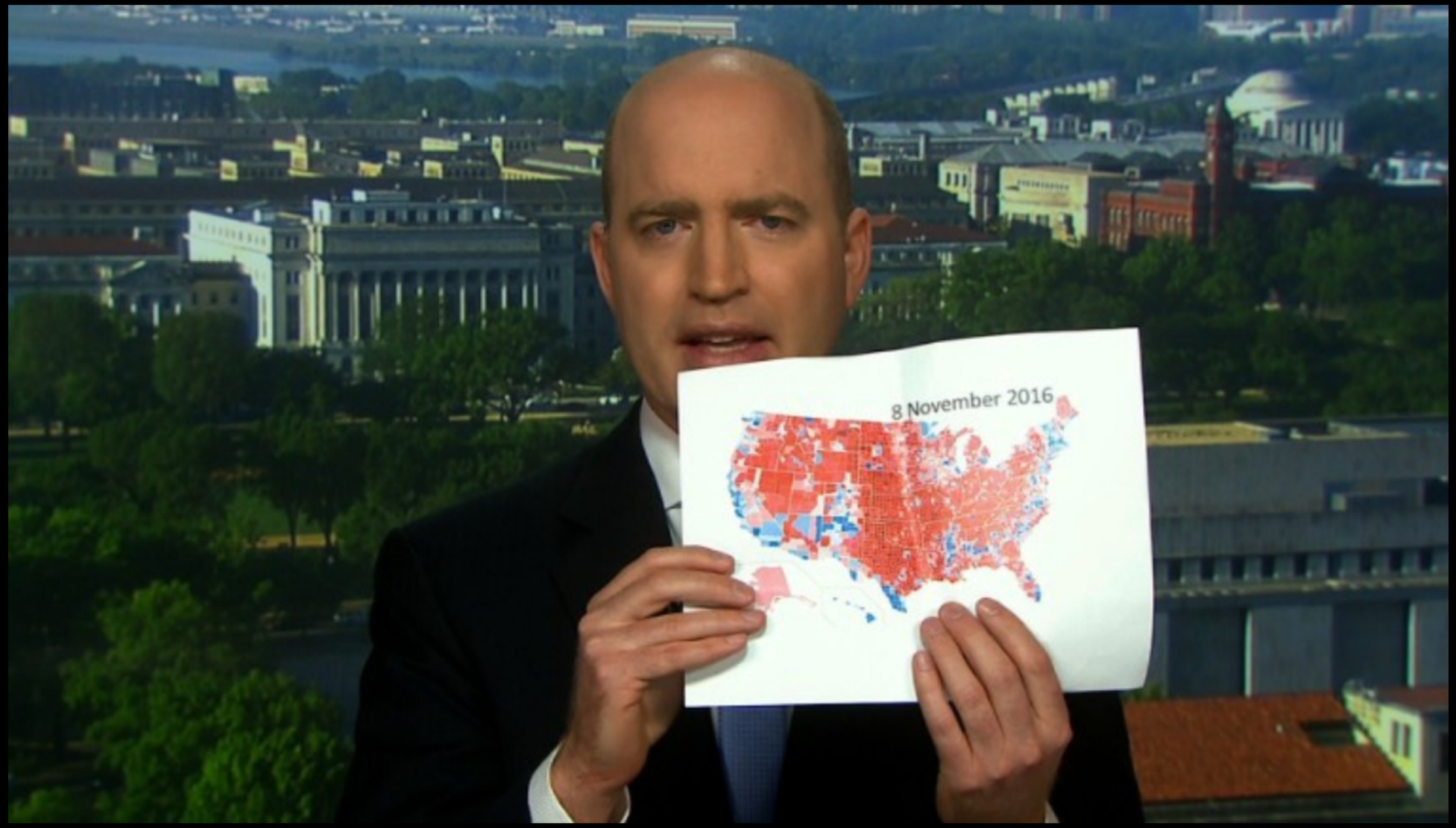
CAN PEOPLE GRASP THE GRAMMAR AND VOCABULARY OF CHARTS?

AND, IF THEY DO, DO THEY EXTRACT THE RIGHT MESSAGES?

April 27, 2017

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



Stephen J. Adler, Steve Holland and Jeff Mason

https://www.cnn.com/videos/politics/2017/04/28/trump-electoral-maps-reuters-interview-newday.cnn

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

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

Donald J. Trump @realDonaldTrump · Feb 27

I want to encourage all of my many Texas friends to vote in the primary for Governor Greg Abbott, Senator Ted Cruz, Lt. Gov. Dan Patrick, and Attorney General Ken Paxton. They are helping me to Make America Great Again! Vote early or on March 6th.

20K 27K 99K

Trevor @trevorHartje · Feb 27

You have no friends

553 223 4.9K

Nancy Steffan
@steffan_nancy

Follow

Replying to @trevorHartje @realDonaldTrump

Really?

Donald J. Trump @realDonaldTrump · Feb 27

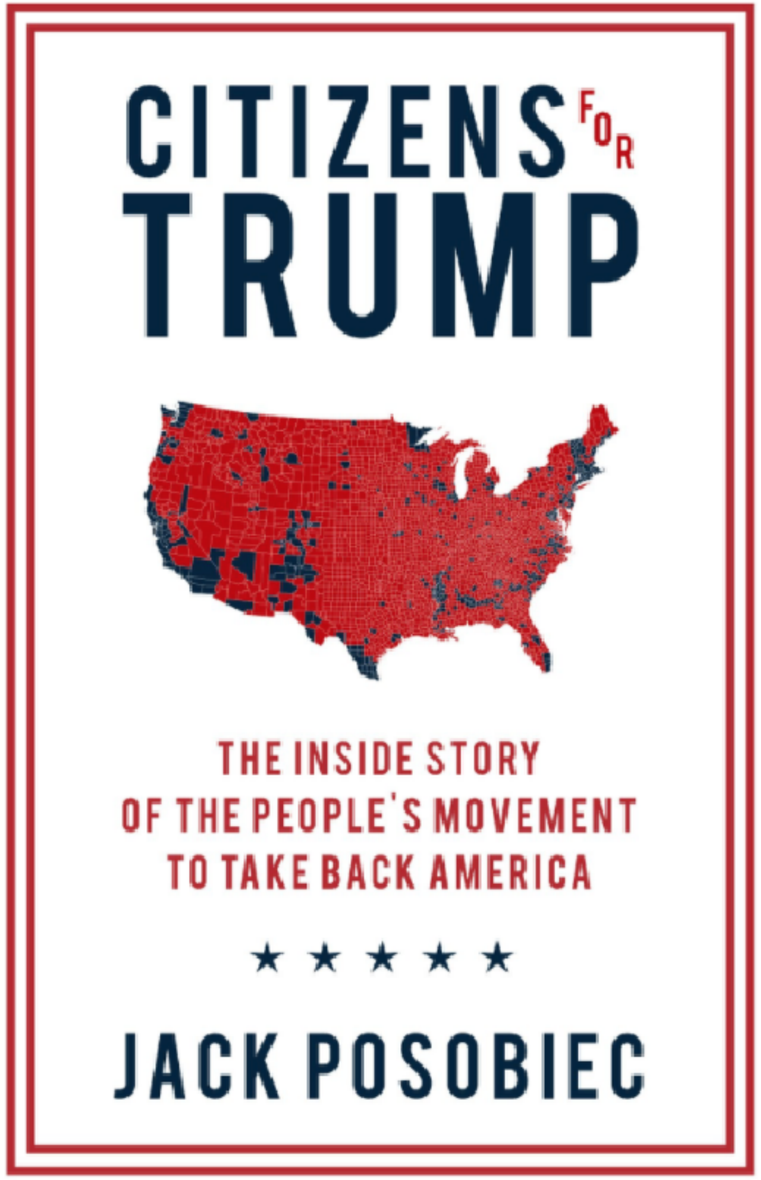
Such a beautiful map, thank you!

Nancy Steffan @steffan_nancy

Replying to @trevorHartje @realDonaldTrump

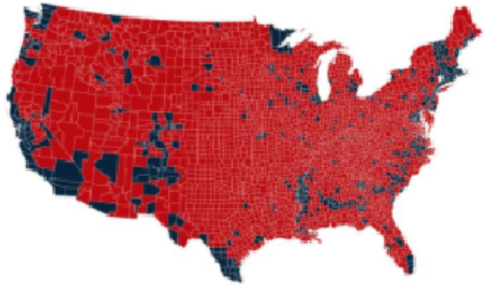
Really?

13K 16K 65K


CITIZENS FOR
TRUMP
THE INSIDE STORY
OF THE PEOPLE'S MOVEMENT
TO TAKE BACK AMERICA
★ ★ ★ ★ ★
JACK POSOBIEC

WRONG

CITIZENS FOR
TRUMP



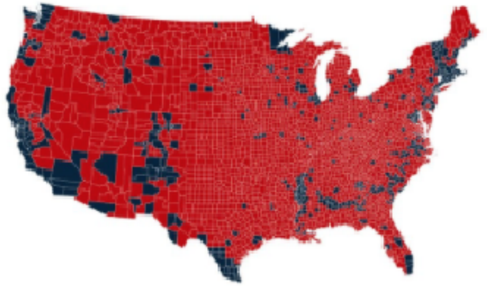
THE INSIDE STORY
OF THE PEOPLE'S MOVEMENT
TO TAKE BACK AMERICA

★ ★ ★ ★ ★

JACK POSOBIEC

RIGHT

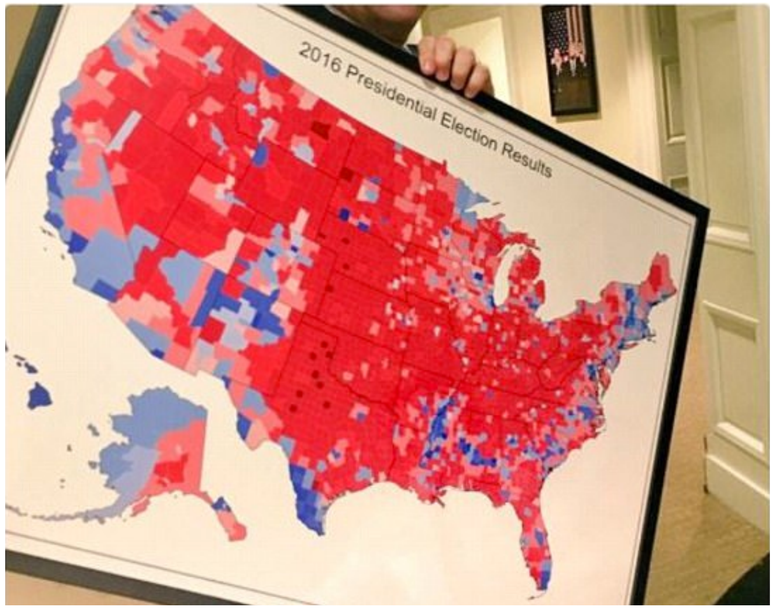
COUNTIES FOR
TRUMP



THE INSIDE STORY
OF 46% OF VOTERS' MOVEMENT
TO TAKE BACK AMERICA

★ ★ ★ ★ ★

JACK POSOBIEC

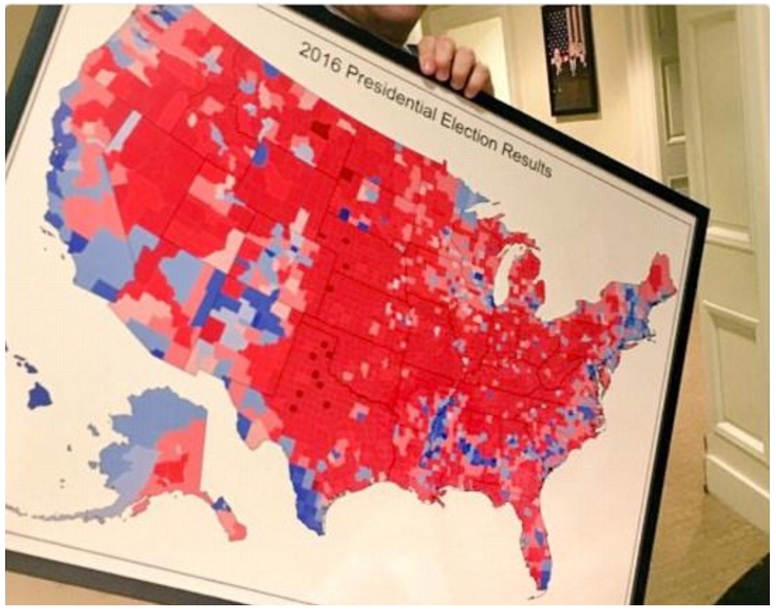


Surface on the
county-level map:

Red: 80%

Blue: 20%

VICTORY BY A LANDSLIDE!!!!!!

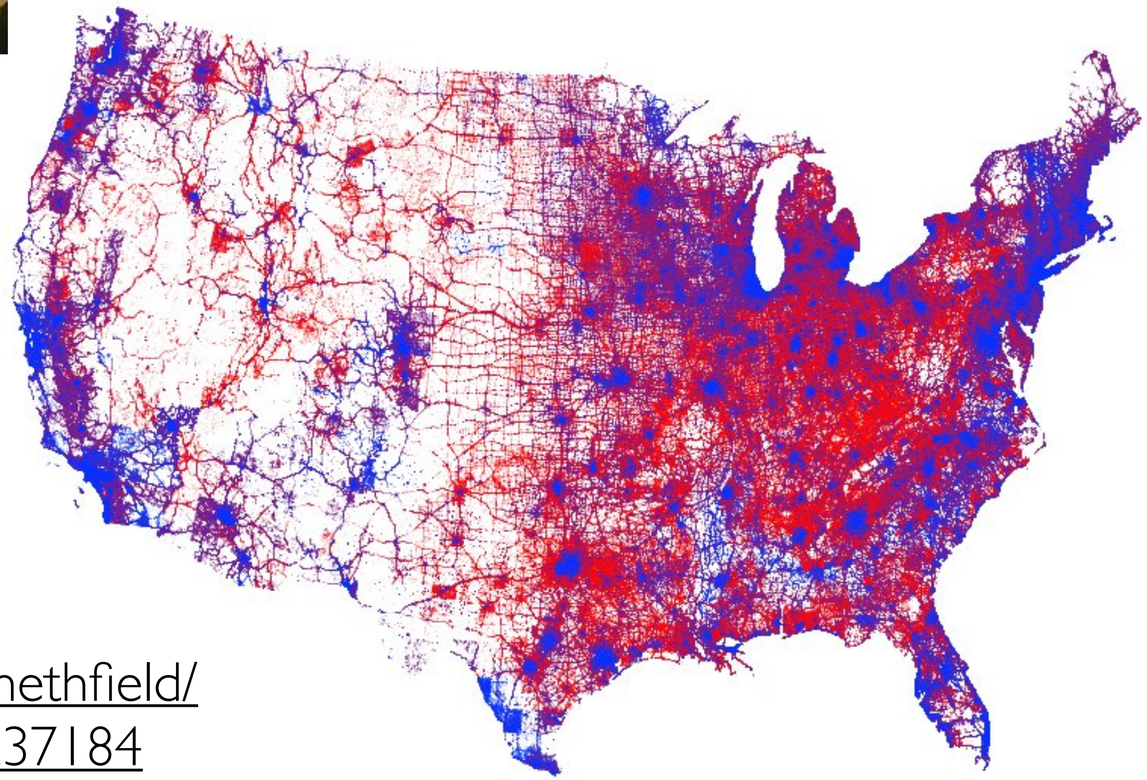


Surface on the county-level map:

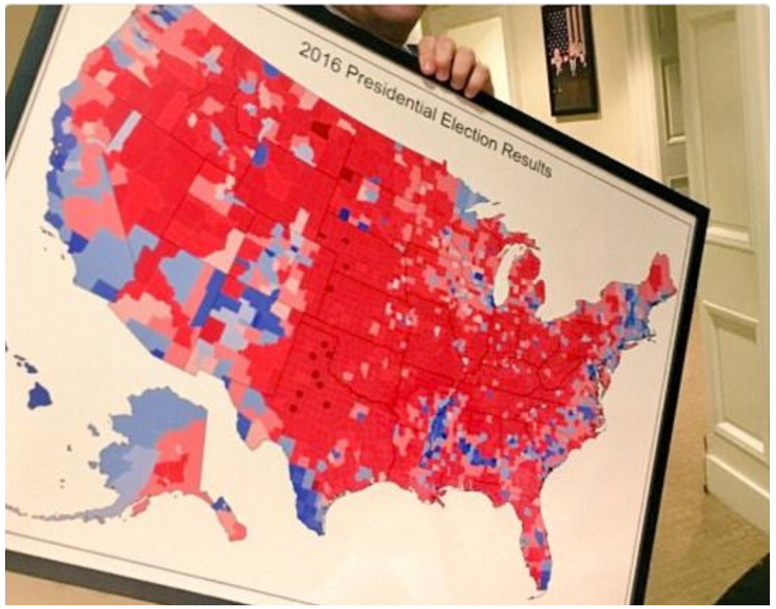
Red: 80%

Blue: 20%

VICTORY BY A LANDSLIDE?



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



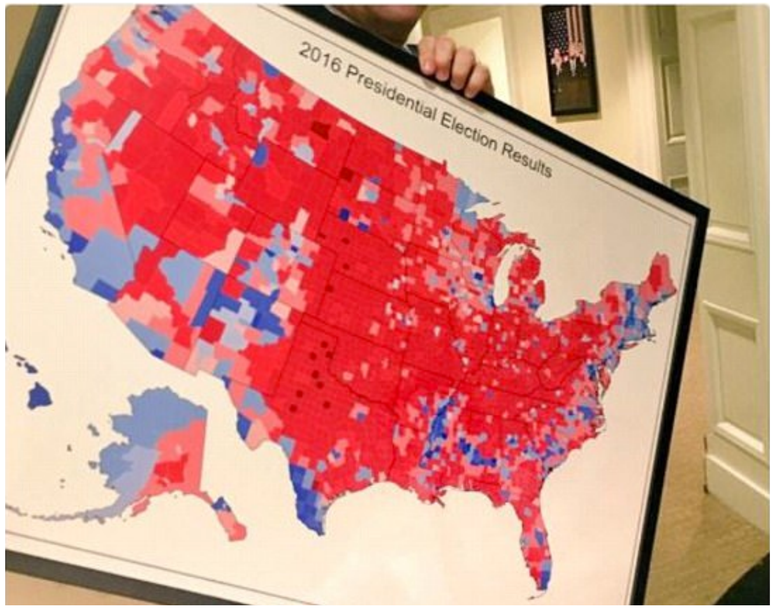
Surface on the county-level map:

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%**	



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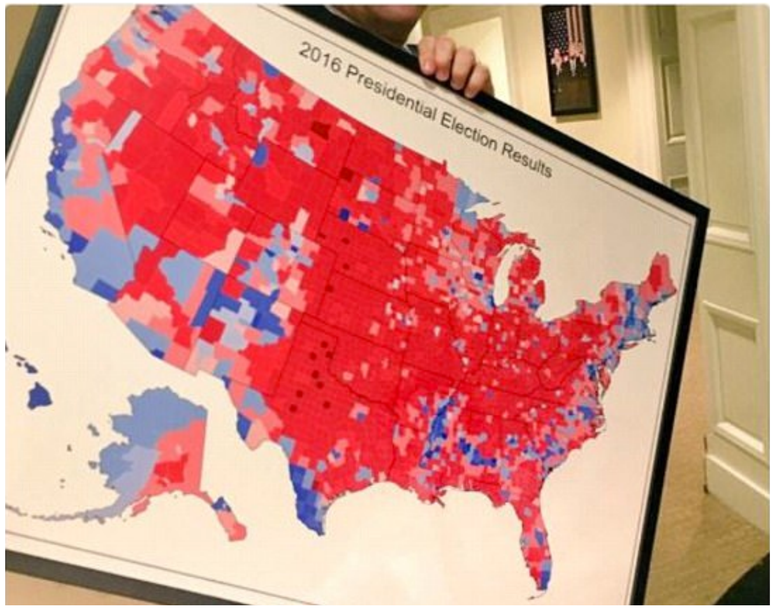
PERCENTAGE OF ELIGIBLE VOTERS

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



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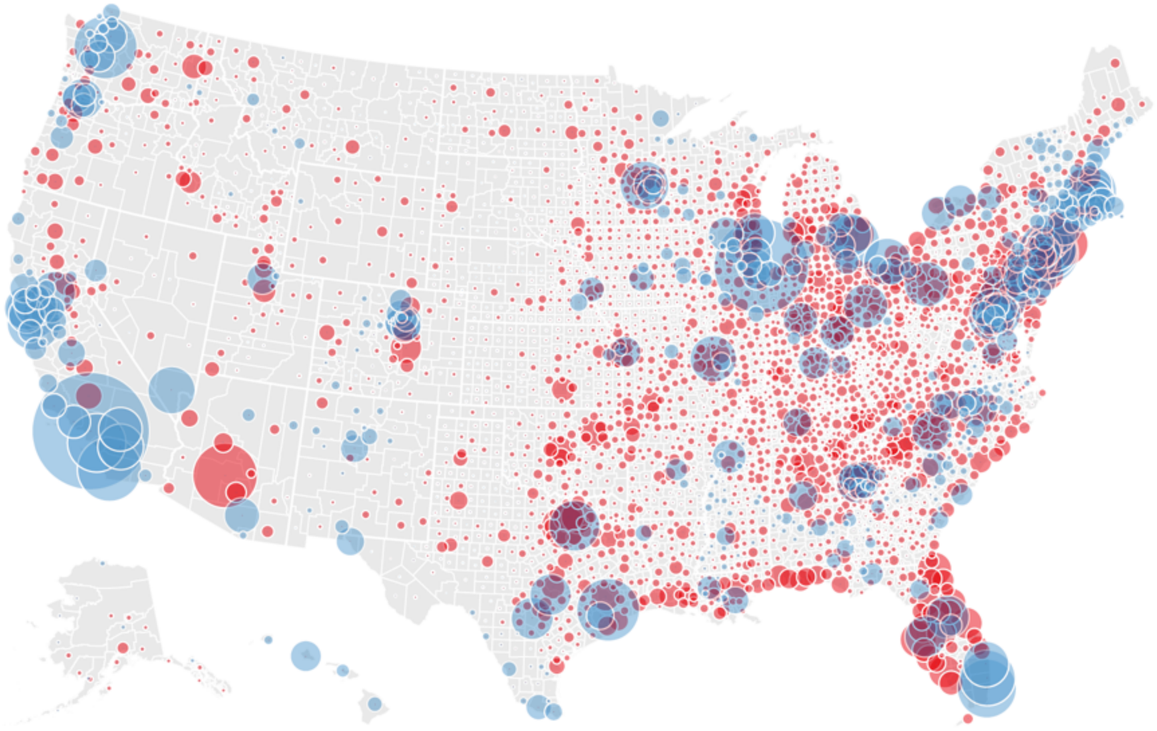
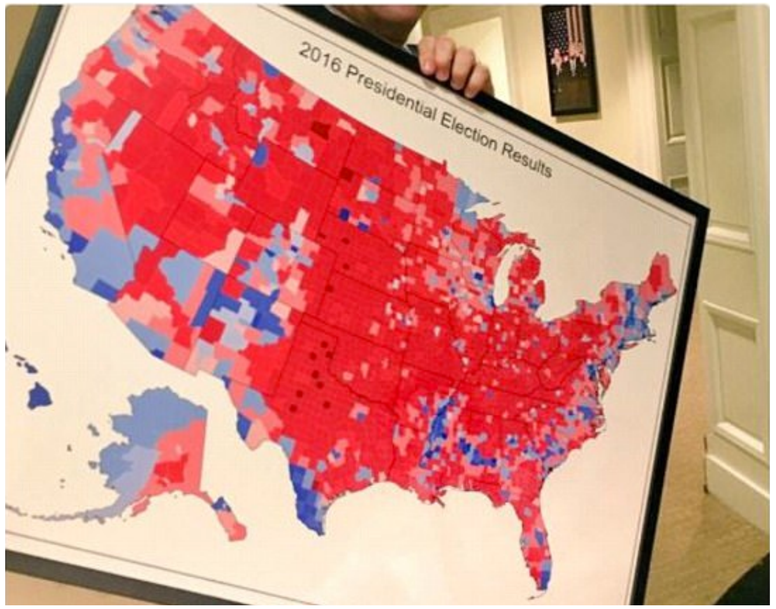
Blue: 20%

Bubble size is proportional to the number of votes received just by the candidate who won on each county





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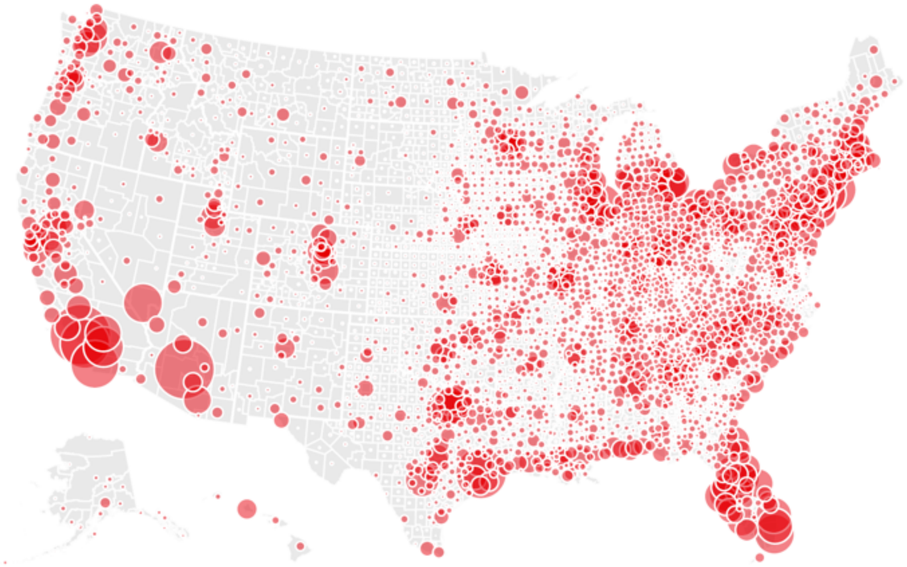
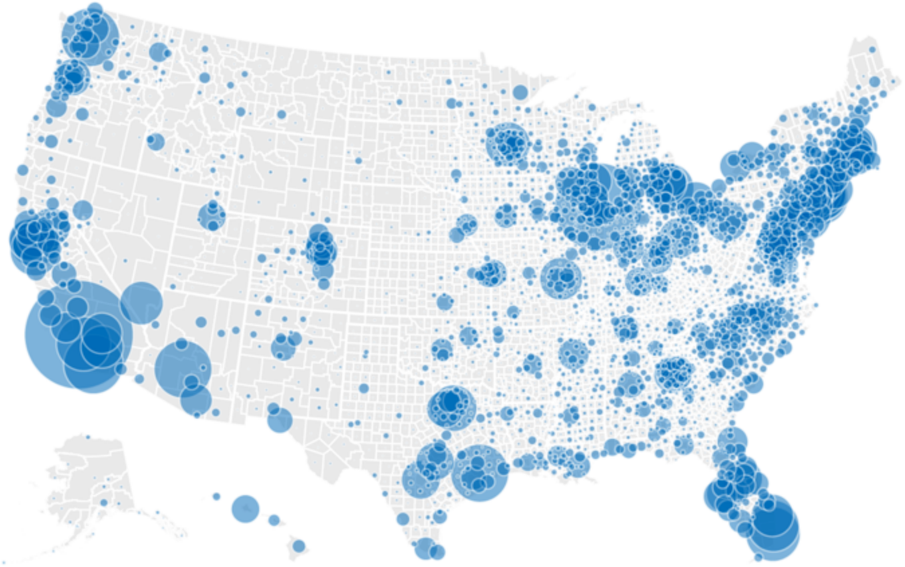
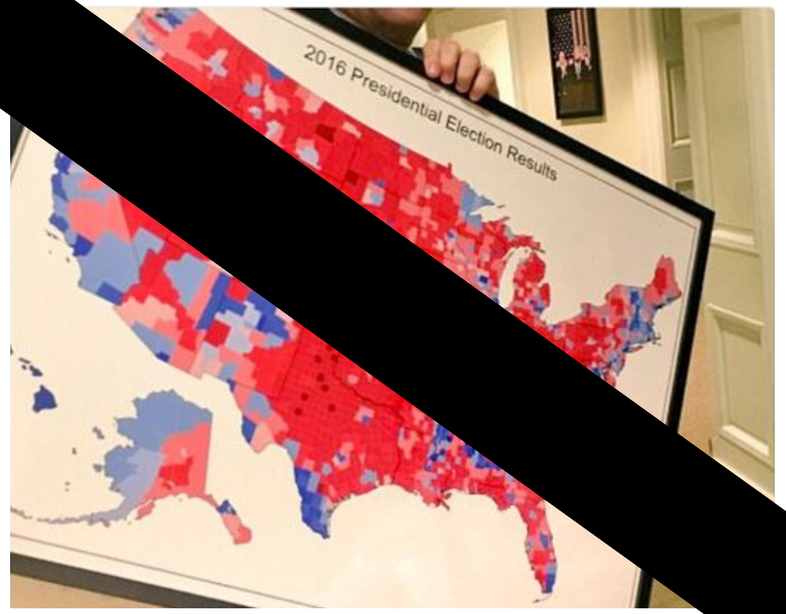
VOTES FOR DONALD TRUMP



VOTES FOR HILLARY CLINTON



Bubble size is proportional to the number of votes per county



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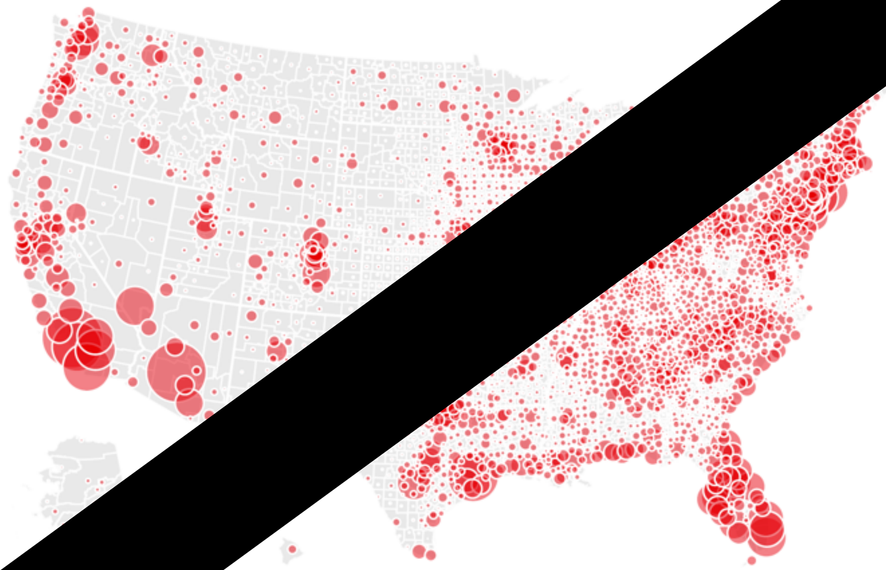

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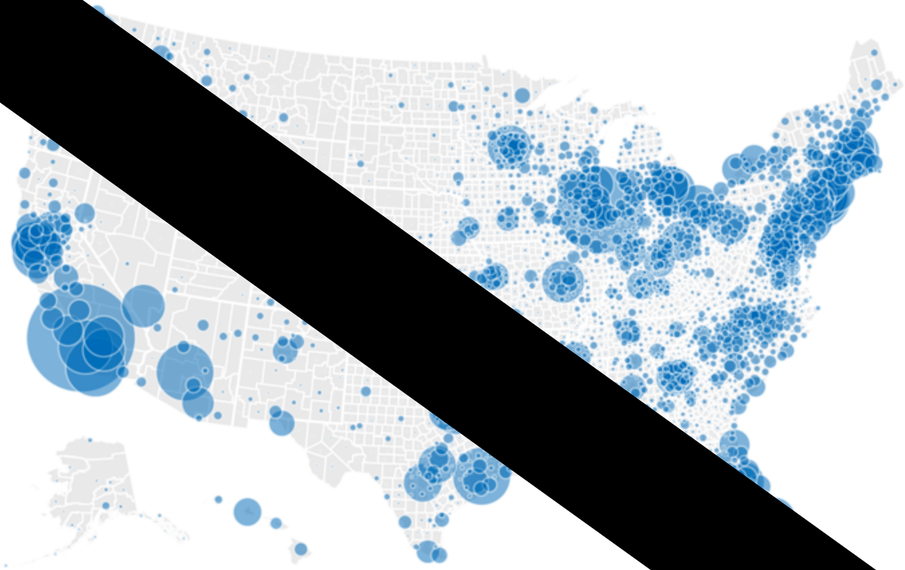


Bubble size is proportional to the number of votes per county

These are the numbers that truly matter in a U.S. Presidential Election

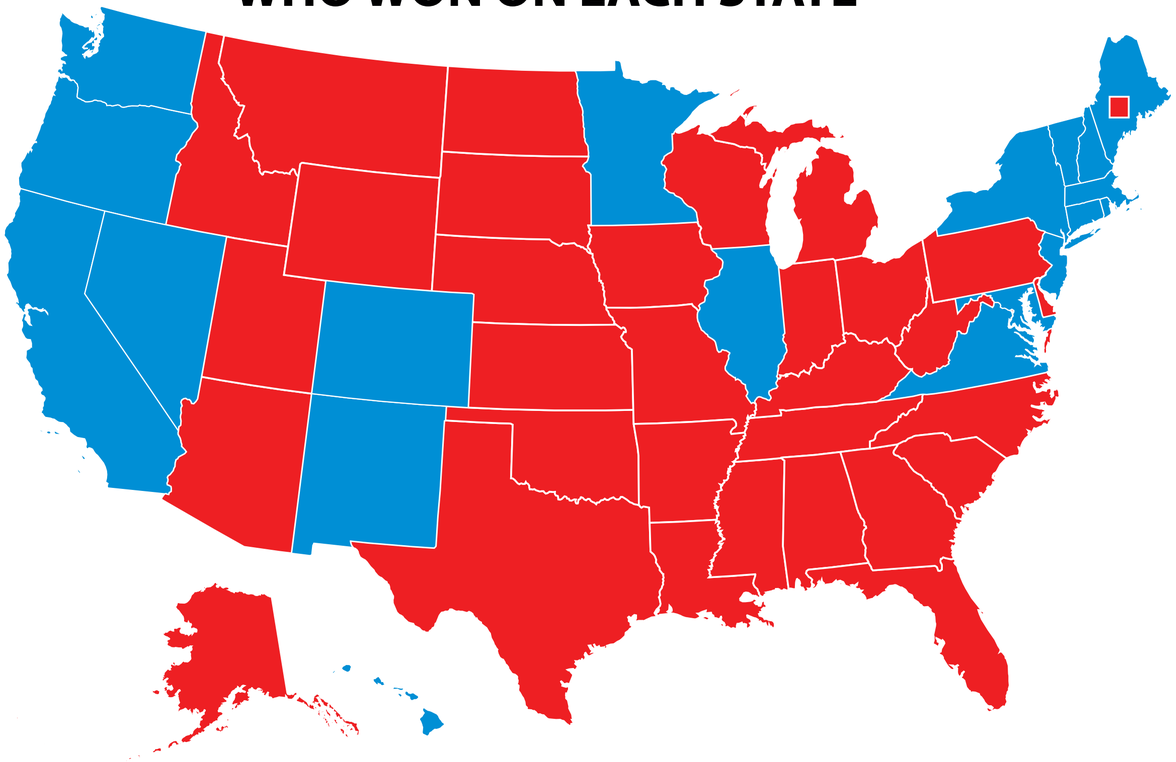
ELECTORAL VOTES

TRUMP
304

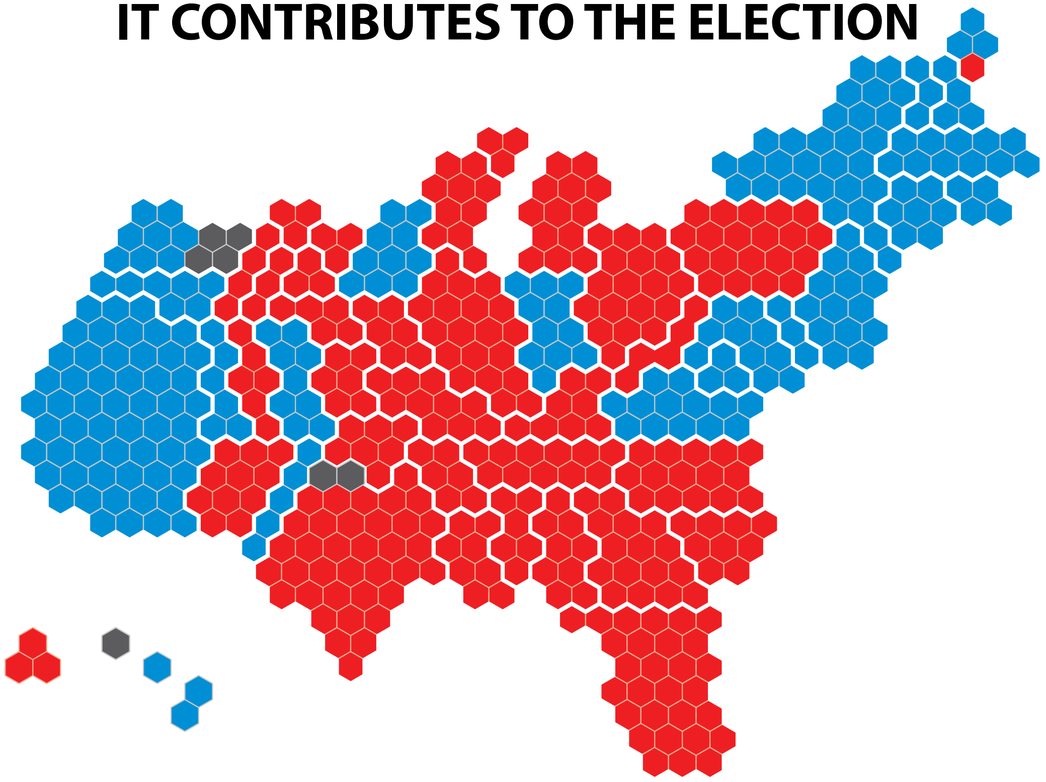
Other: 7

CLINTON
227

WHO WON ON EACH STATE



STATE SIZE ADJUSTED BY ELECTORAL VOTES IT CONTRIBUTES TO THE ELECTION



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

Charts lie

Charts lie

mainly because we love to lie to ourselves

The Persuasive Power of Data Visualization

Anshul Vikram Pandey
New York University

Anjali Manivannan
New York University

Oded Nov
New York University

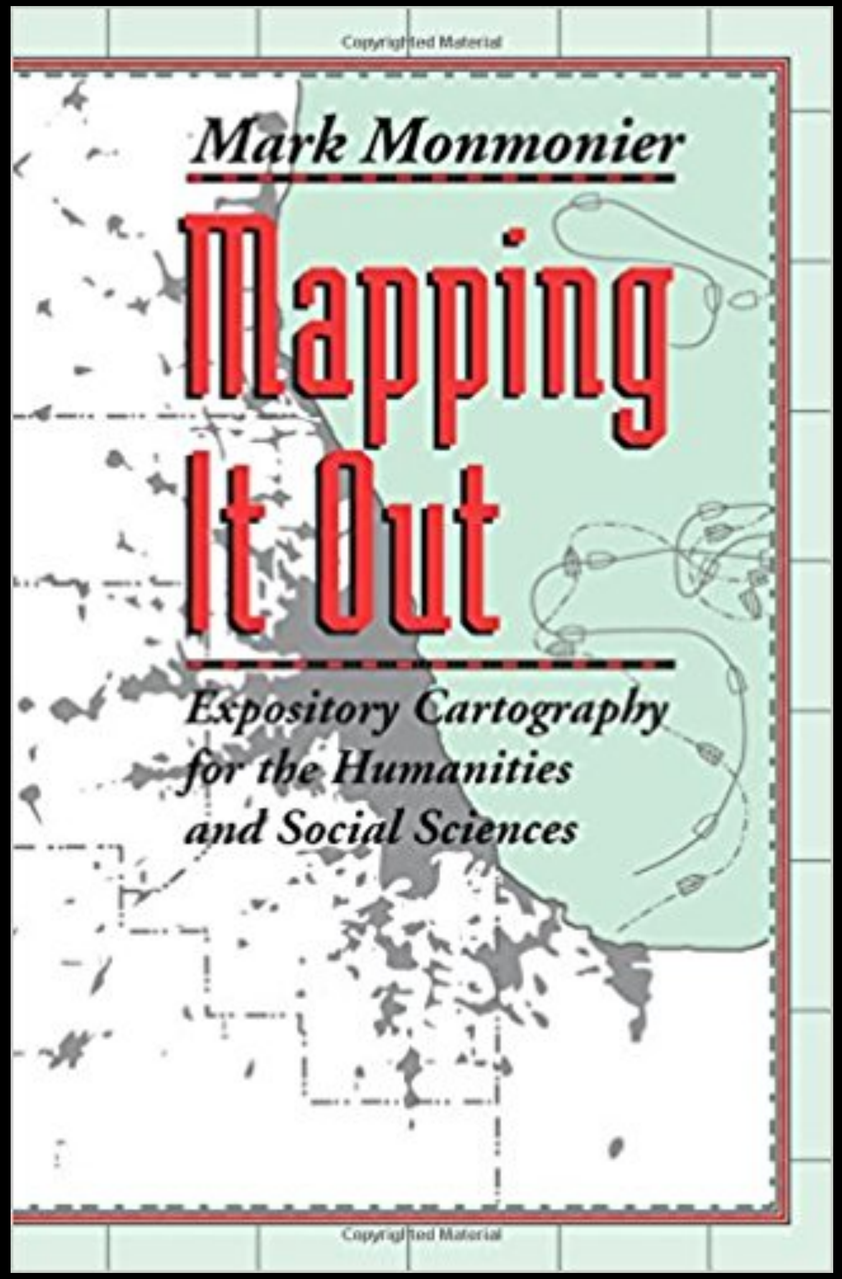
Margaret L. Satterthwaite
NYU School of Law, satterth@exchange.law.nyu.edu

Enrico Bertini
New York University

After looking into common effects in attitude formation and change we searched for specific mentions to the graphical appearance of charts as a driver for persuasion. Some of the comments we collected seem to back up the findings we found in our results. Some participants explicitly mention the charts as being the main reason for their change: "*I already knew that increased incarceration didn't lower crime, but I wasn't sure of the statistics. To see it on the graphs is really eye opening.*"; "*I was influenced by the bar graph showing the reasons why the survey respondents played video games.*"; "*I would not know exact numbers on this issue - the graphs gave a visual and helped identify the numbers*"; "*Seeing the graphs conflicted with my previous opinion, so I feel like I need to reevaluate my stance in a way.*"

It is also important to mention that the graphical appearance of charts is not the only factor that has a strong impact on people's attitude. In our collected feedback, we found numerous references to statistics and numbers, suggesting that mere exposure to data does have a persuasive effect – maybe at least partially due to the increased sense of objectivity evidence supported by numbers carries. We found comments like: "*It was concrete data that seemed compelling.*; "*Seeing numbers is a good indicator of change rather than just reading what someone has to say*"; "*It showed a large amount of different sources, which made it more credible*". More research is needed to disentangle what kind of specific effects each of these components have on persuasion.

http://lsr.nellco.org/cgi/viewcontent.cgi?article=1476&context=nyu_plltwp



Skills for a modern educated citizen:

—Literacy
—Articulacy
—Numeracy
—**Graphicacy**

ARE WE GRAPHICATE ENOUGH?

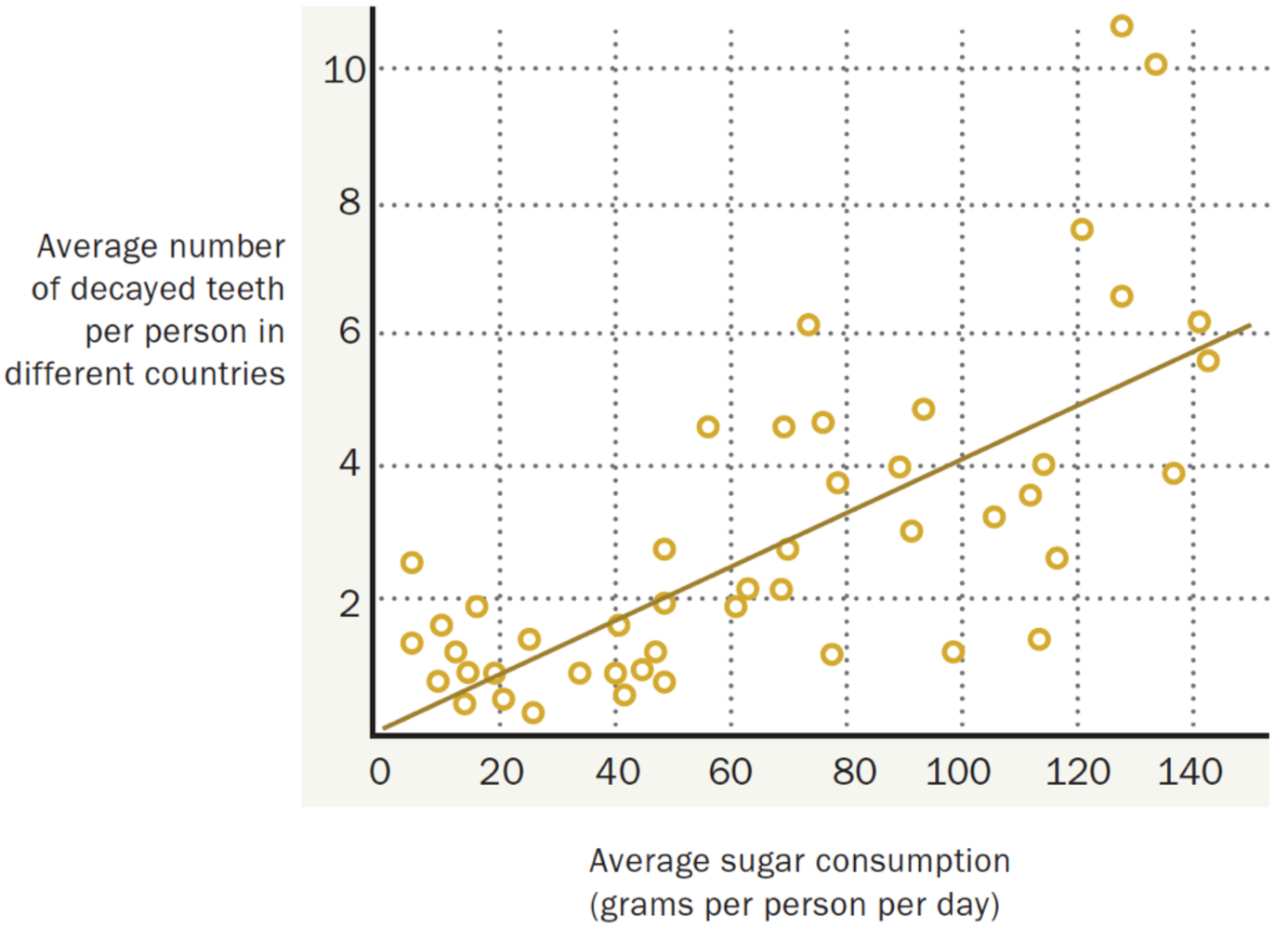
SYMBOLS + GRAMMAR + SEMANTICS

ARE WE GRAPHICATE ENOUGH?

SYMBOLS + GRAMMAR + SEMANTICS

Pew Research Center. Survey 2014

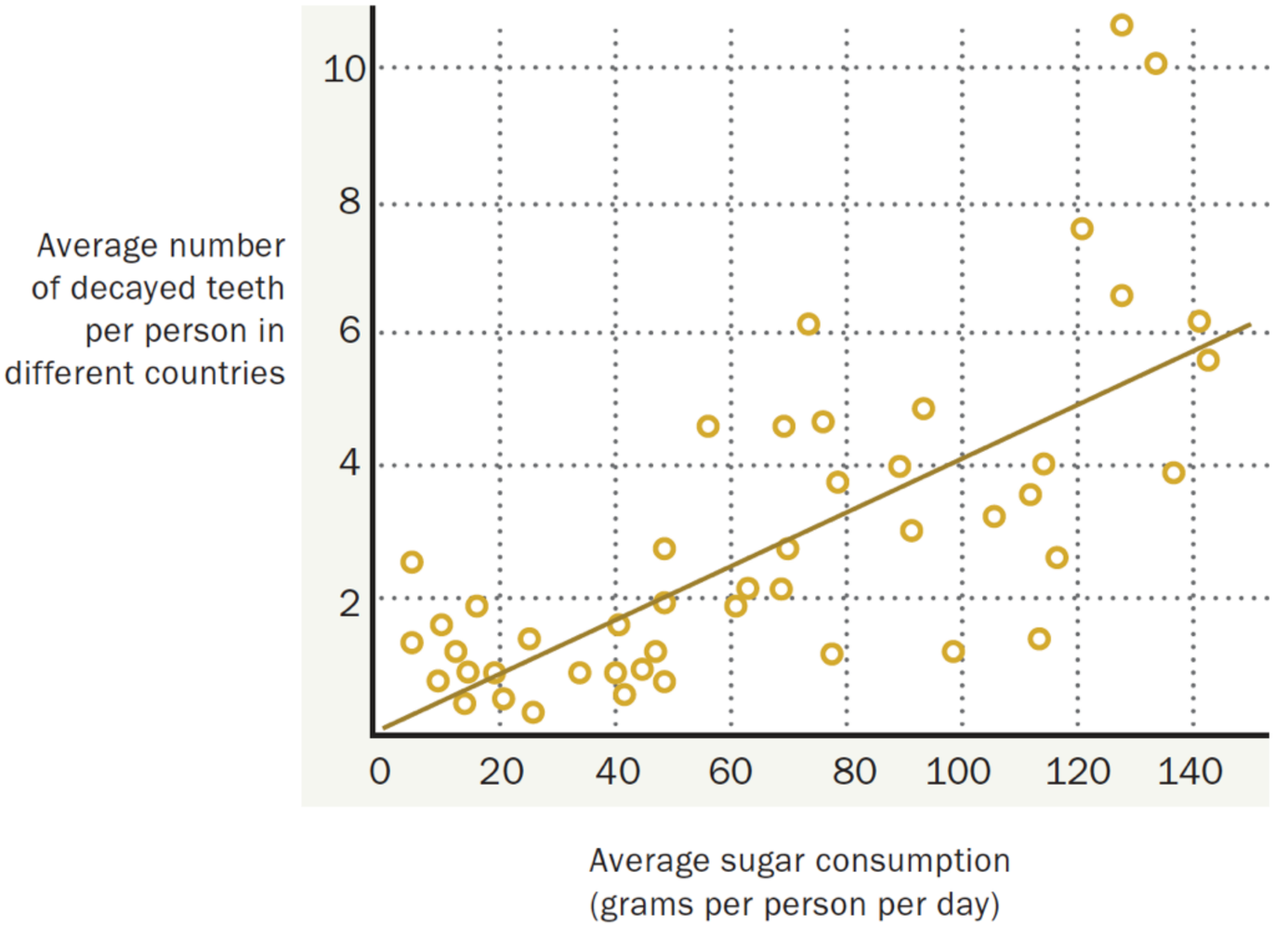
Each circle is a country



Pew Research Center. Survey 2014

63% of American Adults Can Correctly Read This Chart

Each circle is a country



ARE WE GRAPHICATE ENOUGH?

SYMBOLS + GRAMMAR + SEMANTICS

Despite of everything you've heard,
charts are NEVER intuitive, can't be interpreted
at a glance, and can't always be "simple"

Above all, pay attention
Charts aren't meant to be ***seen***
They are meant to be ***read***

What to pay attention to

1. Is the designer using appropriate data and disclosing its origin?
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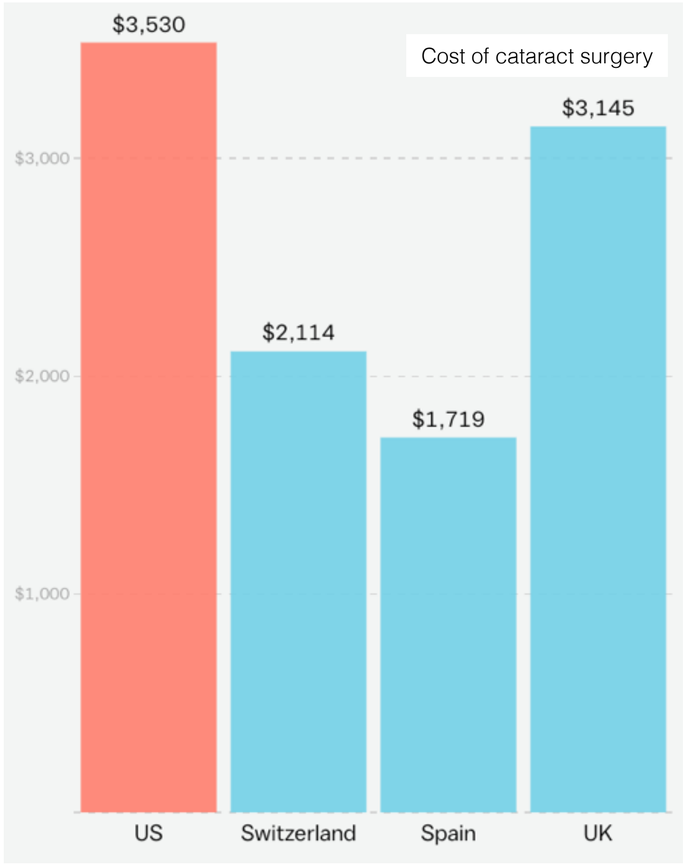
What is being counted, and how?

Vox

TWEET SHARE

America's health care prices are out of control. These 11 charts prove it.



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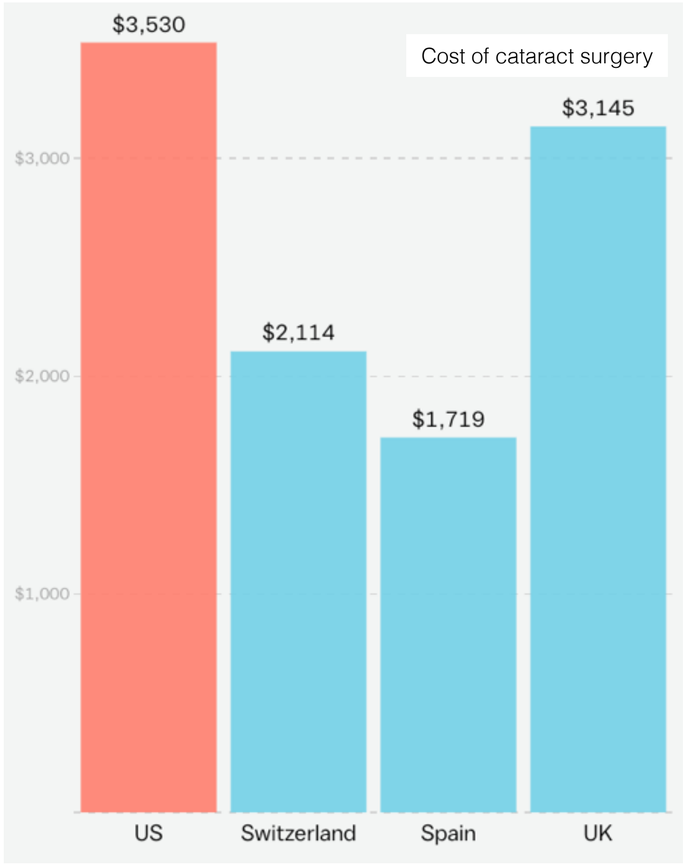

Average household disposable income

U.S: **$41,000**
Switzerland: **$36,000**
Spain: **$22,000**
UK: **$35,000**
Australia: **$33,000**

Relative cost of cataract surgery:
U.S: **8%**
Switzerland: **6%**
Spain: **8%**
UK: **9%**

2015 Survey Overview

International Federation of Health Plans

2015 Comparative Price Report

Variation in Medical and Hospital Prices by Country

This year's survey has been conducted in much the same way as the previous study, which includes pricing for several specialty prescription drugs, other prescription drugs and a selection of typical medical procedures. Prices for each country were submitted by participating federation member plans, and are drawn from public or commercial sectors as follows:

- Prices for the United States were derived from over 370 million medical claims and over 170 million pharmacy claims that reflect prices negotiated and paid to health care providers.
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Comparisons across different countries are complicated by differences in sectors, fee schedules, and systems. In addition, a single plan's prices may not be representative of prices paid by other plans in that market. *

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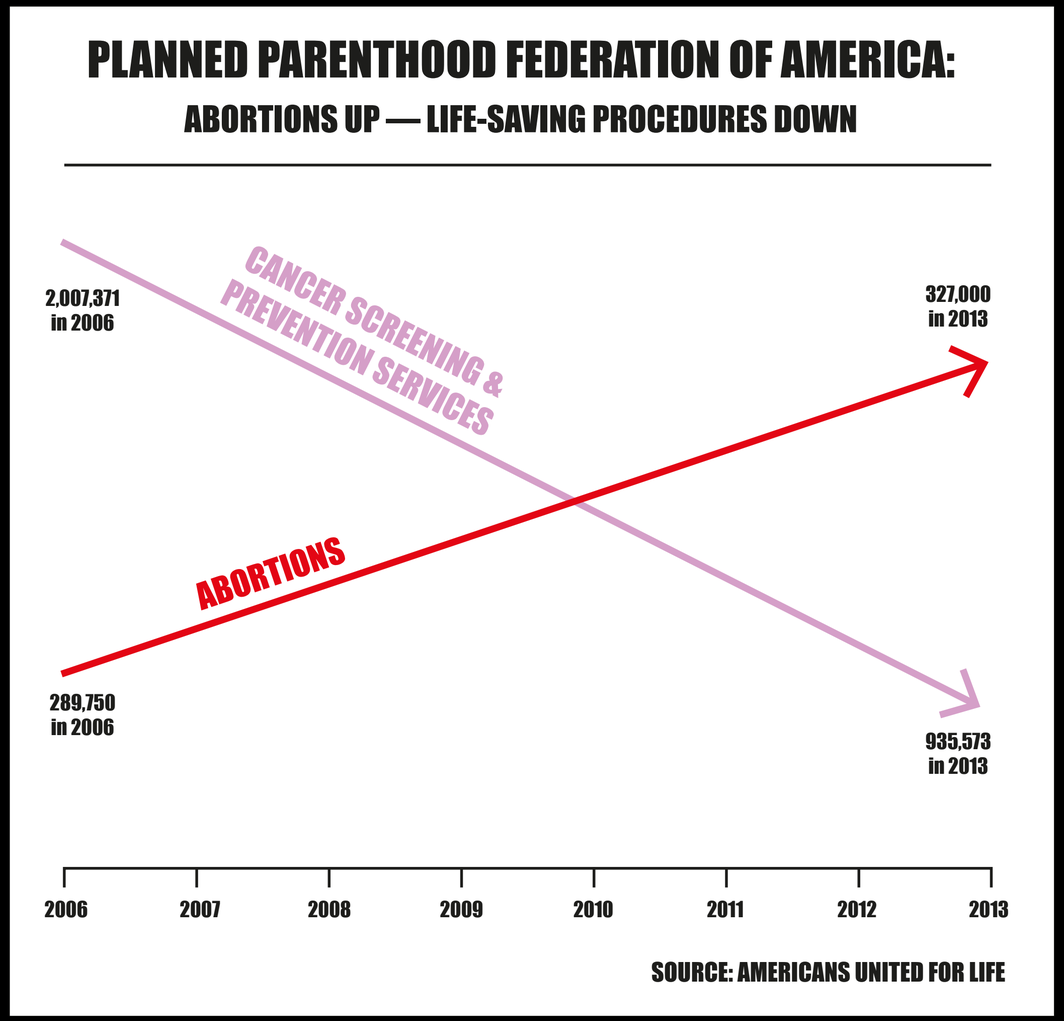
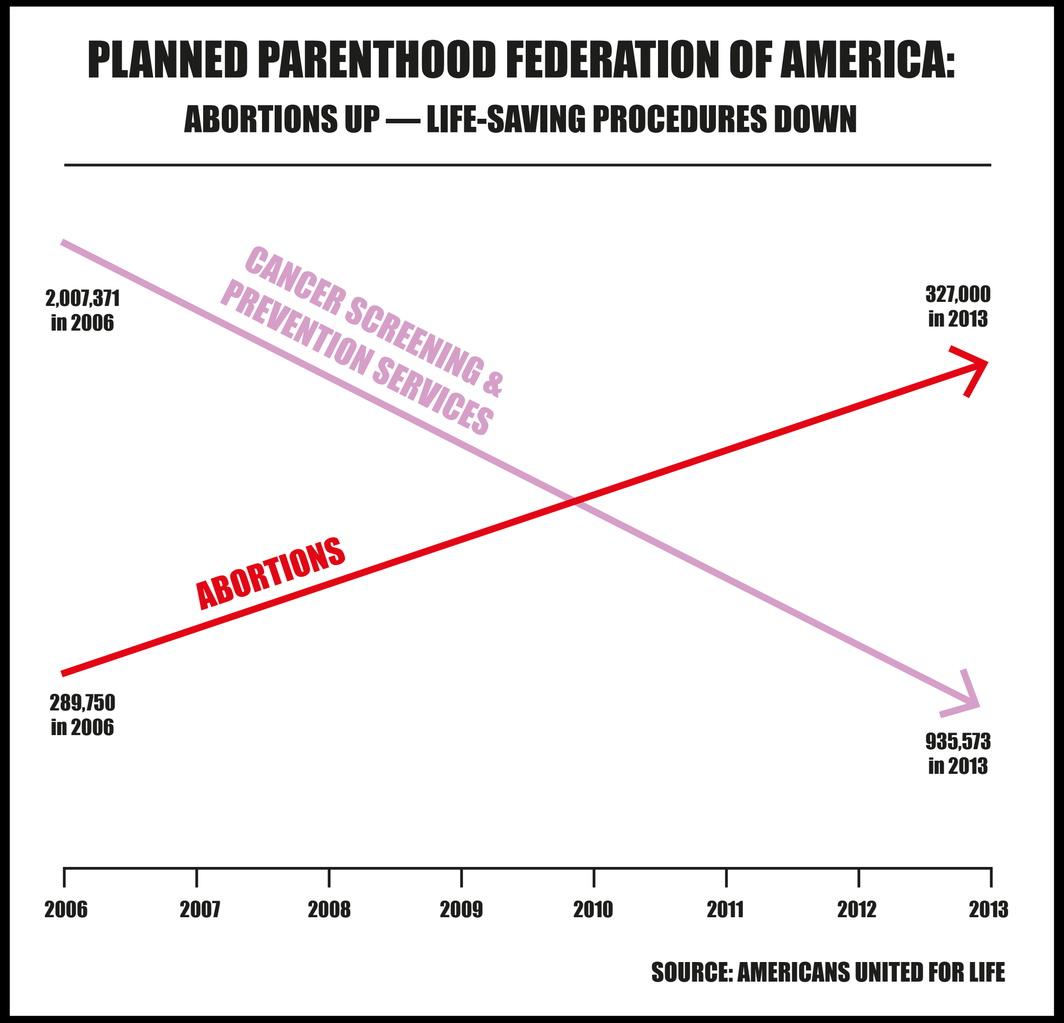
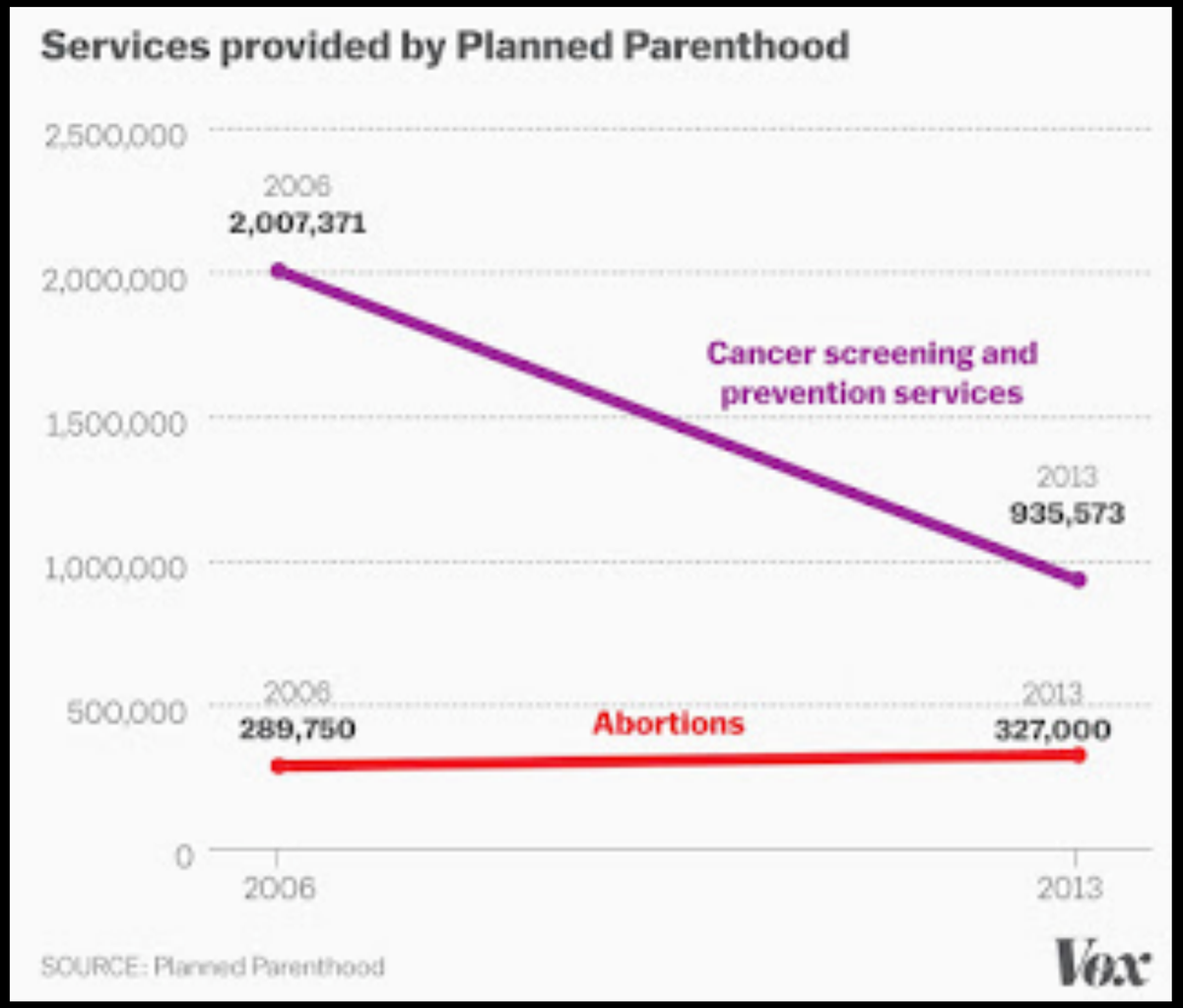


http://www.thefunctionalart.com/2015/10/if-you-see-bullshit-say-bullshit.html





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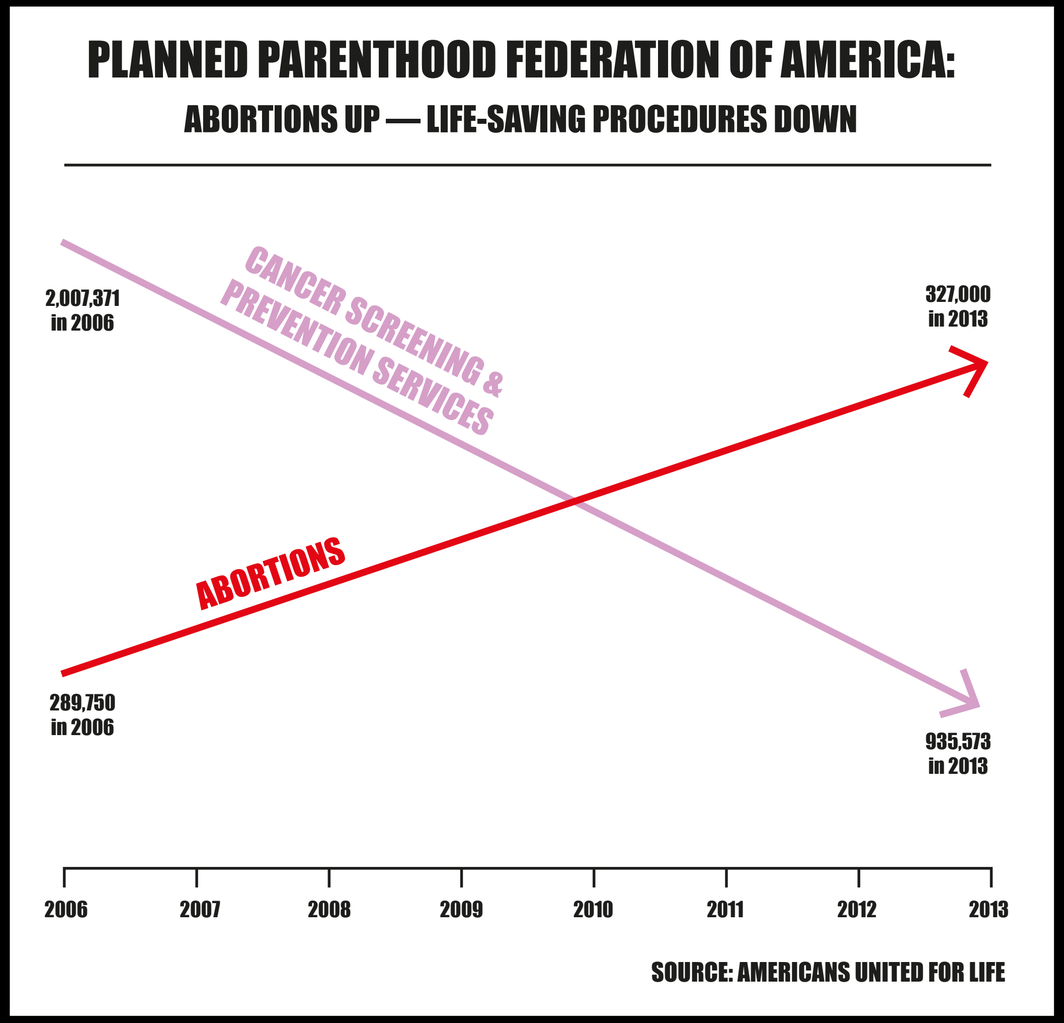

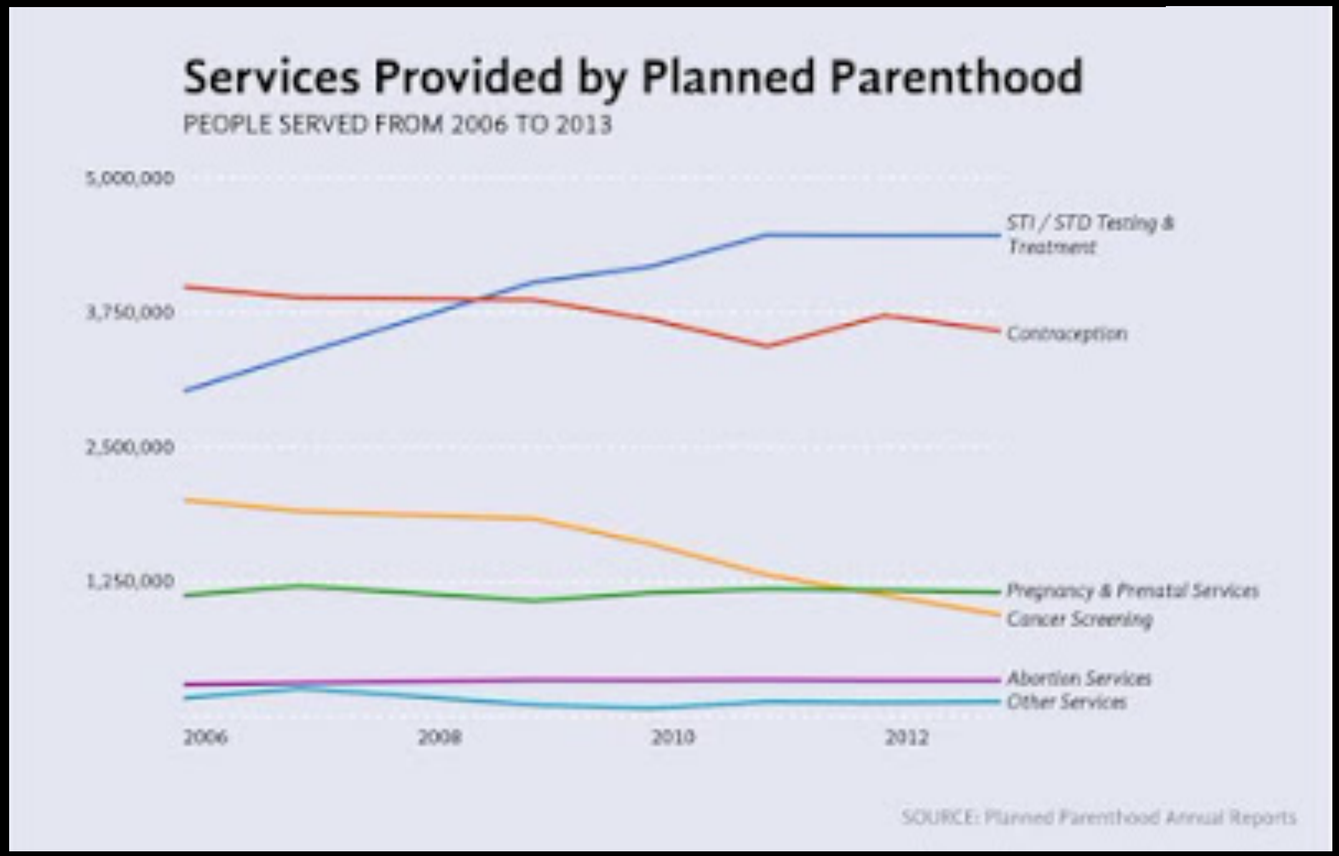

Graph by: Emily Schuch

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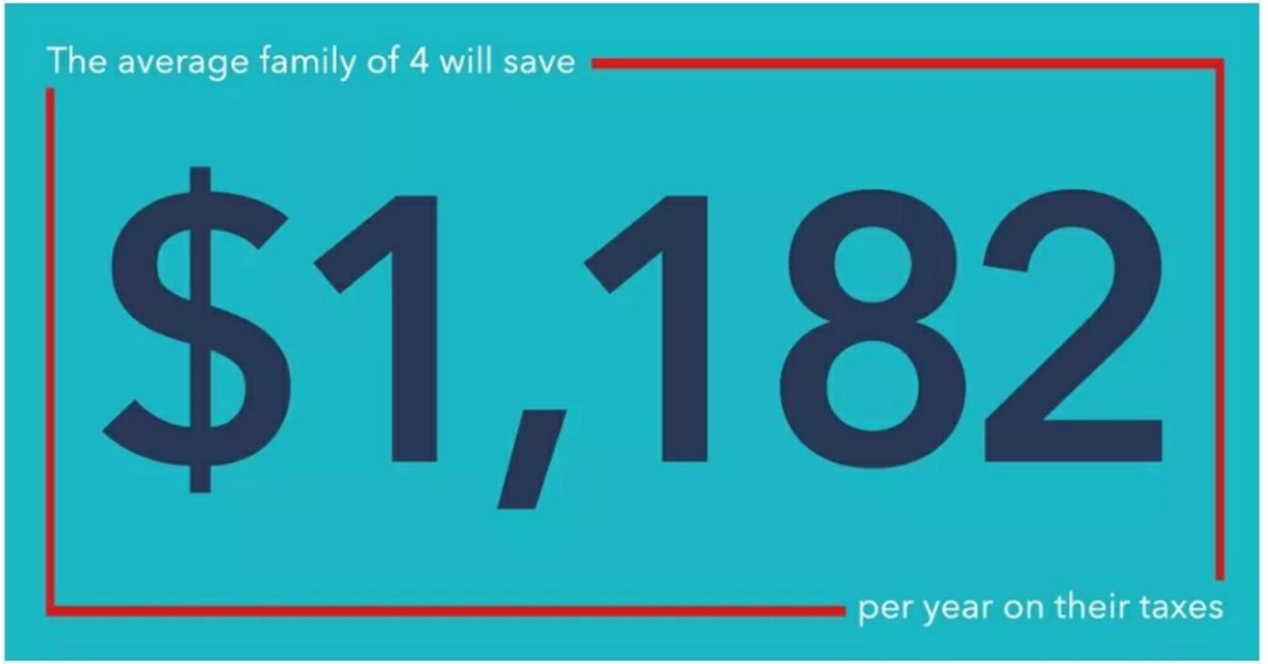
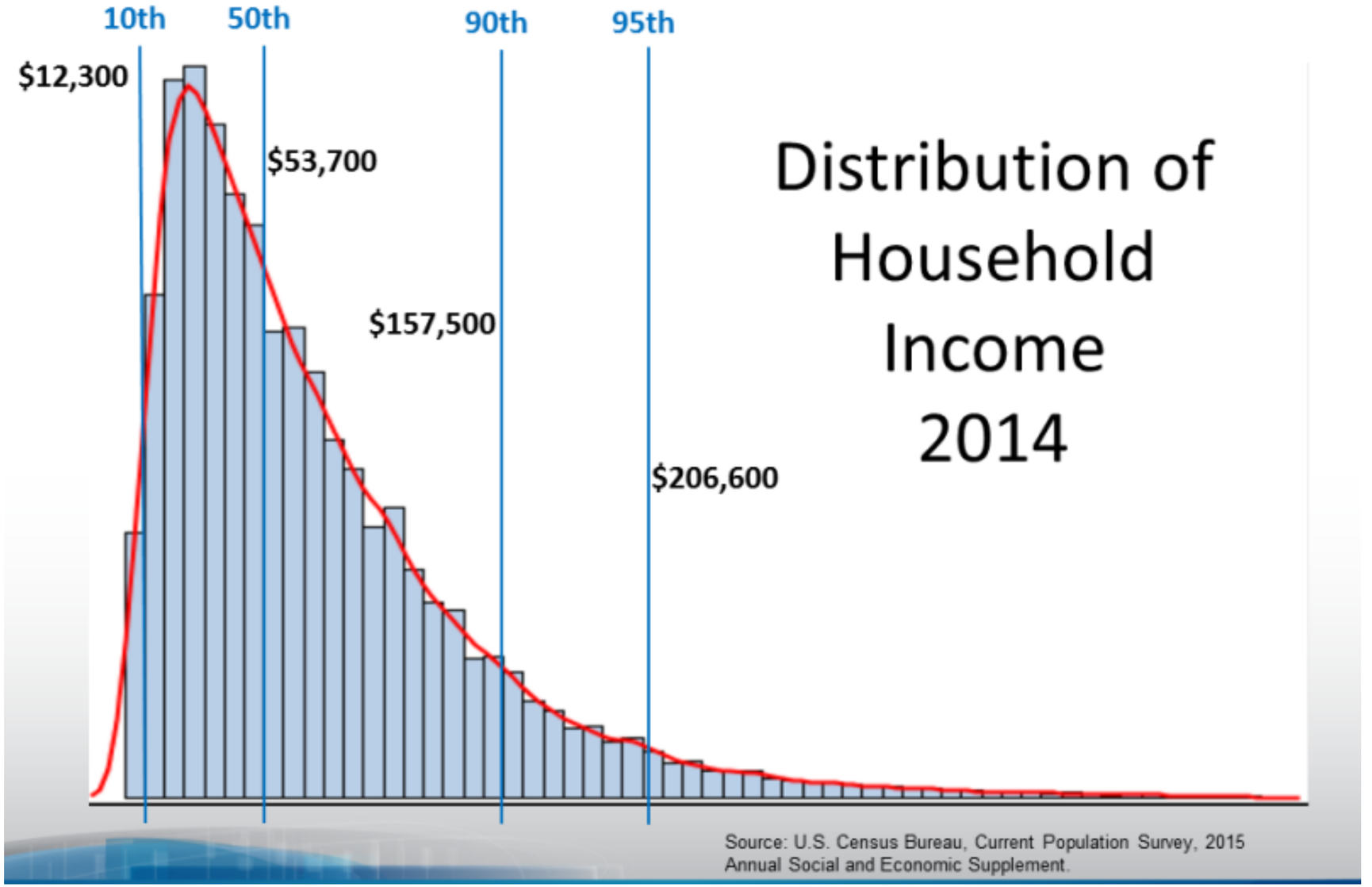
Speaker Paul Ryan
7 hrs •

$1,182 dollars. With the Tax Cuts & Jobs Act, that's how much the average American family of four will save each year on their taxes. The bottom line: tax reform will make a difference for so many families.



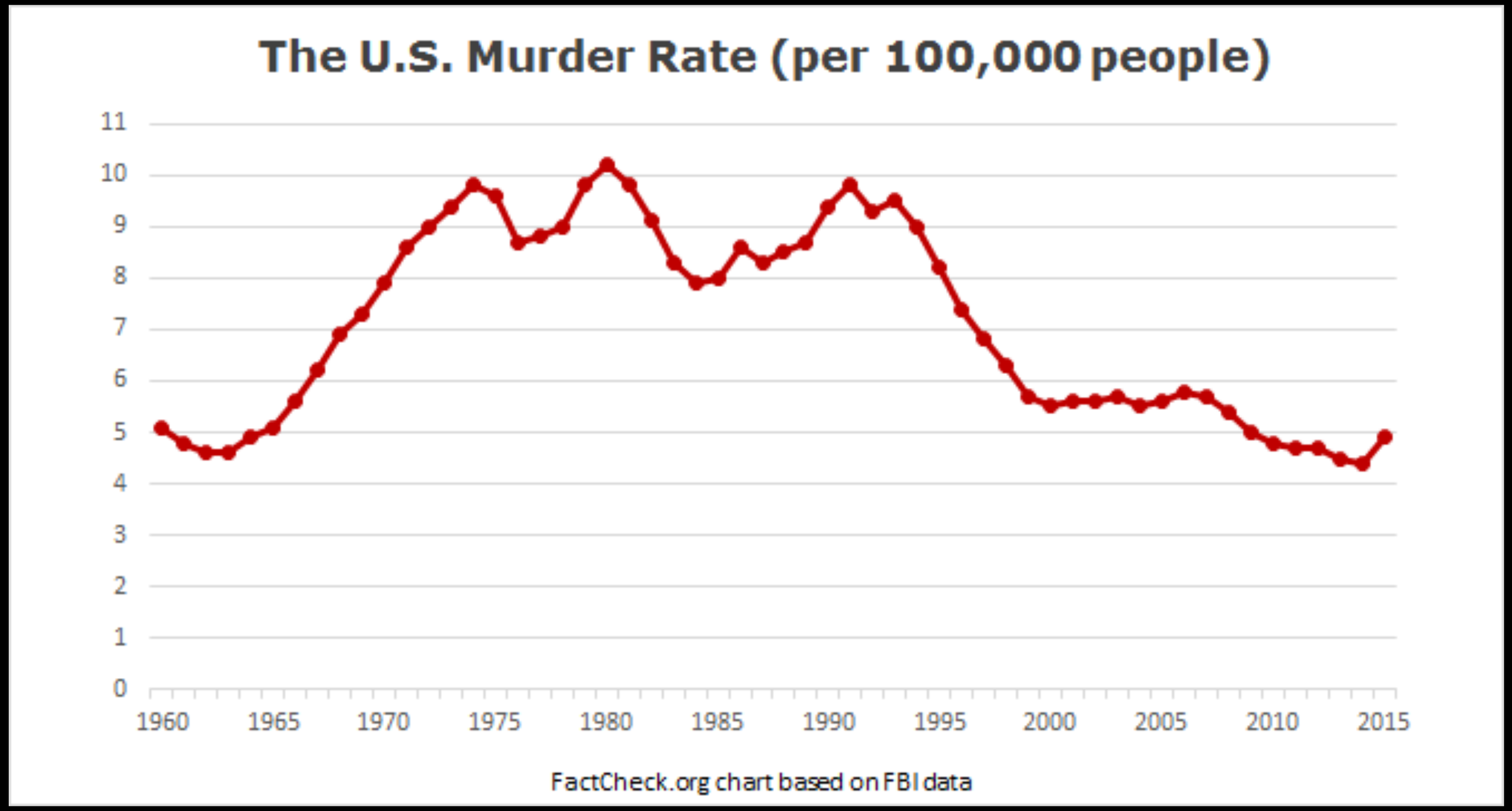
Typical Families Will See a $1,182 Tax Cut Under the Tax Cuts and Jobs Act

Showing just an AVERAGE when the underlying distribution
has a huge **range** and is highly **skewed** is **evil**.
Journalists MUST talk about the distribution in cases like this —and show it



Always remind yourself:

"A chart shows as much as it hides —so think about what might be missing"



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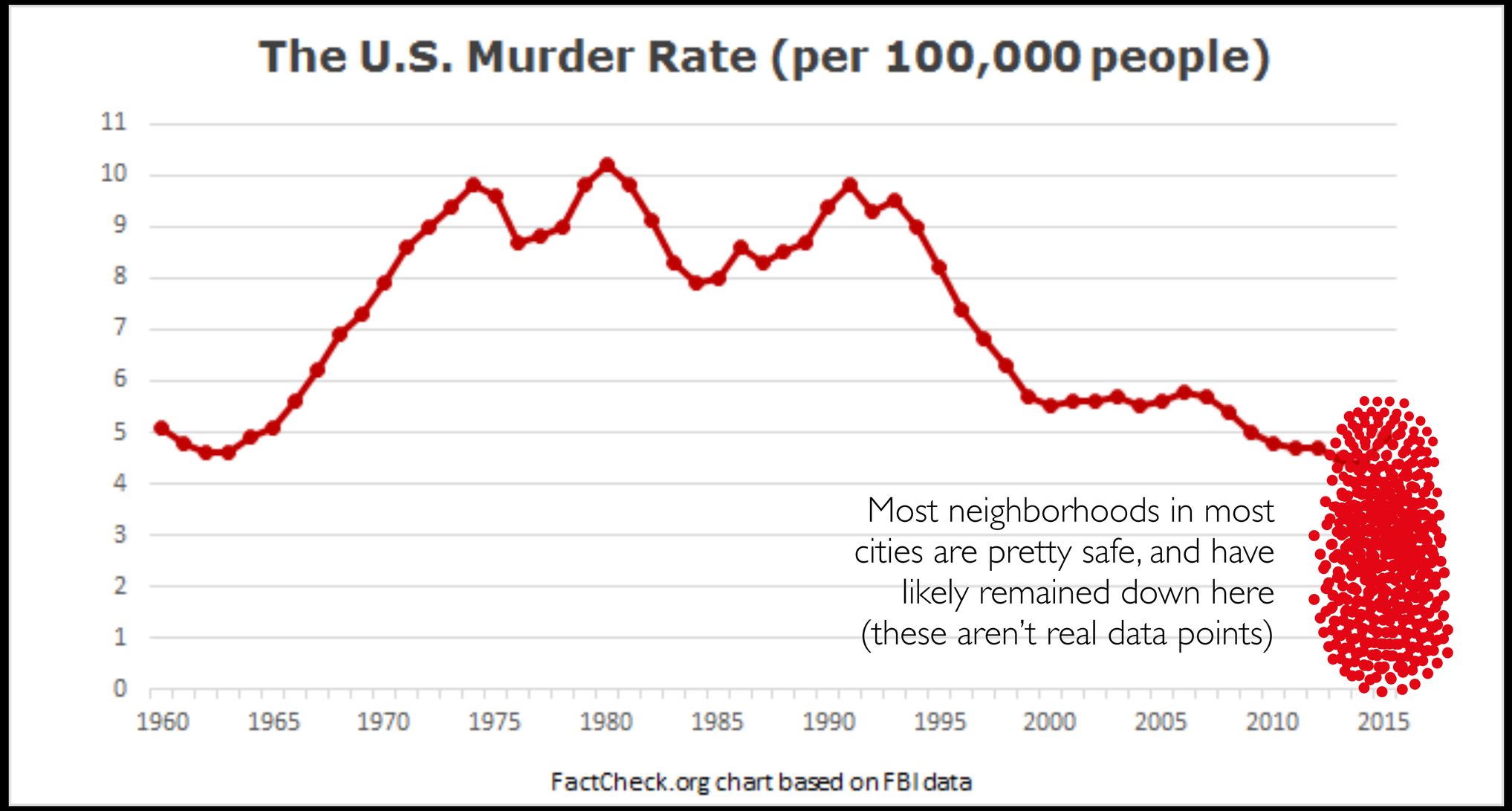

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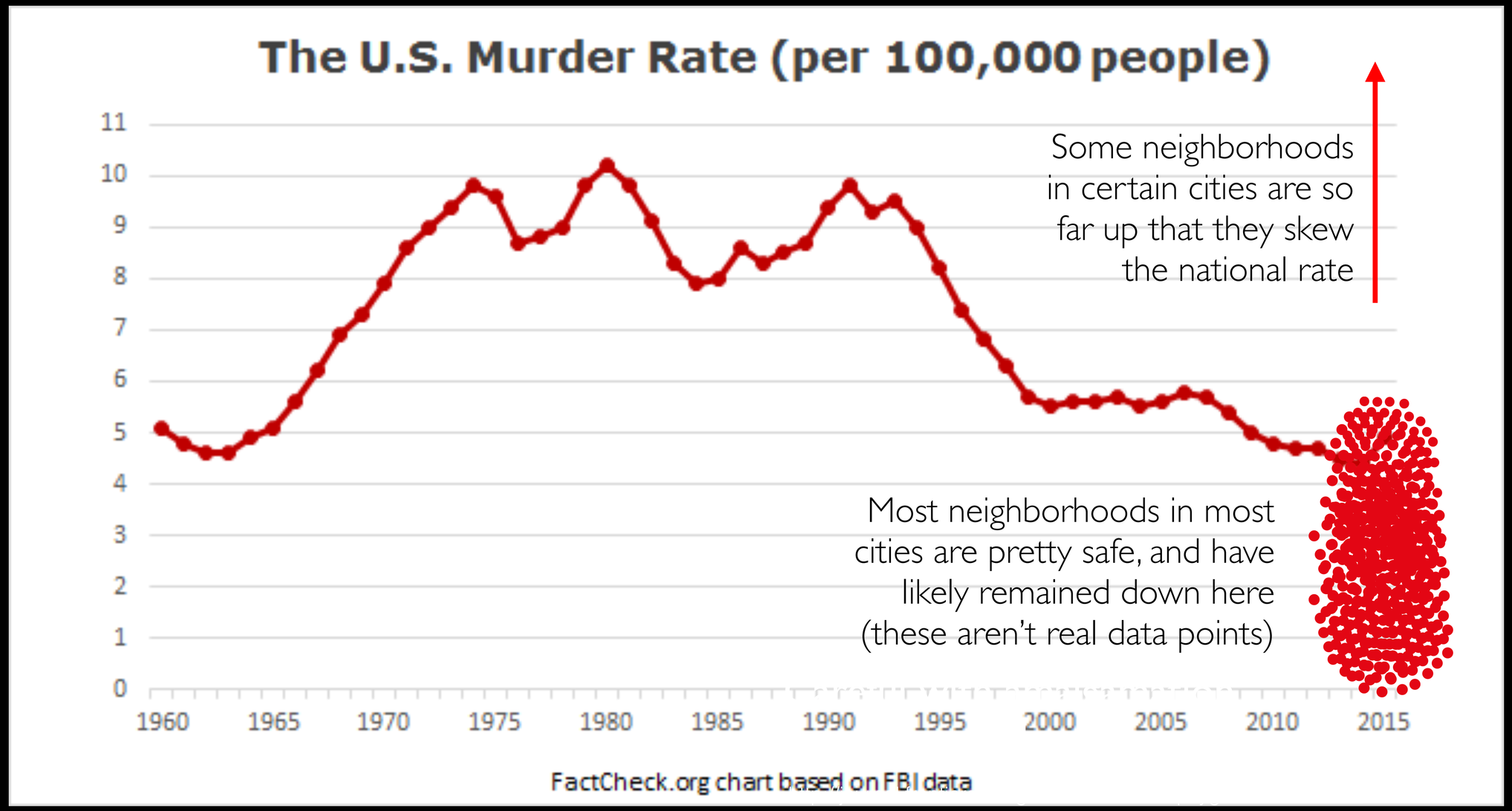

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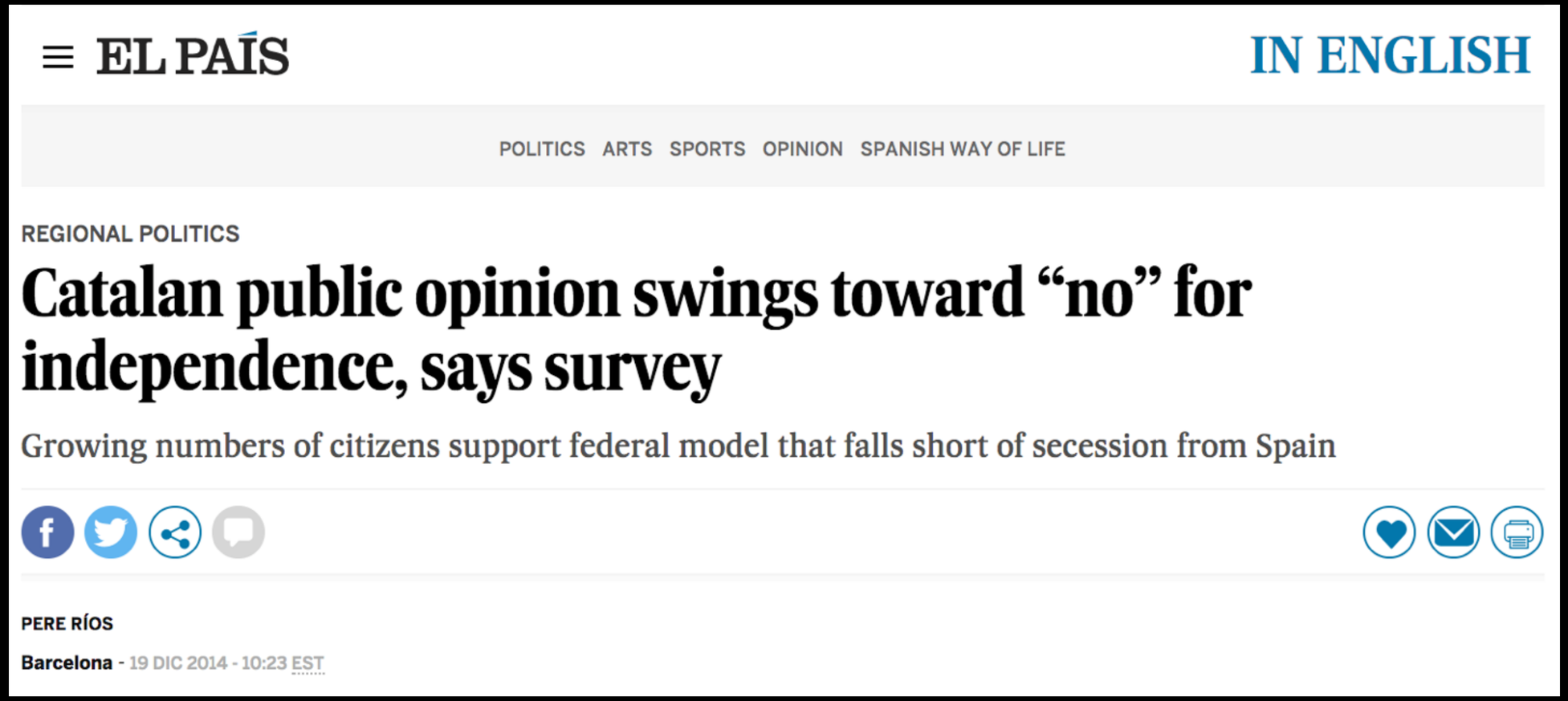
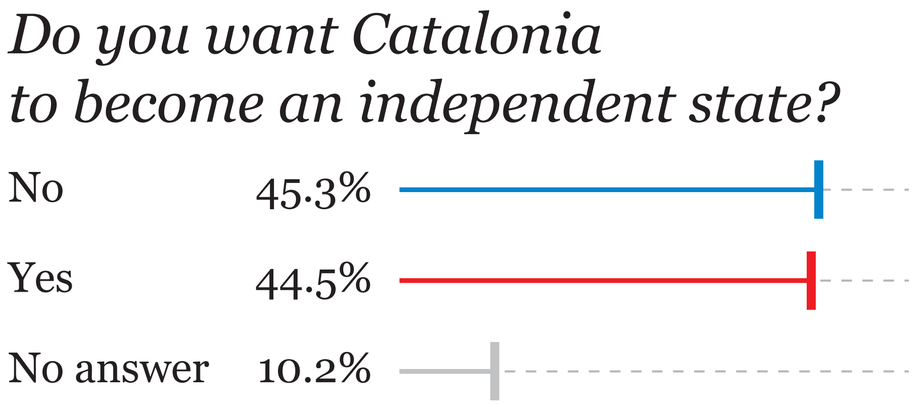


http://ccaa.elpais.com/ccaa/2014/12/19/catalunya/1418984873_128596.html

For the first time since Catalan leader Artur Mas began his ongoing independence drive in 2012, a survey shows that a majority in the region would reject secession if a referendum were held now.

The latest poll by the Catalan executive's Opinion Studies Center (CEO) shows that 45.3 percent of citizens would vote no to the question: "Would you like Catalonia to become an independent state?" compared with 44.5 percent who would support the move.

http://www.thefunctionalart.com/2014/12/adventures-in-margin-of-error.html



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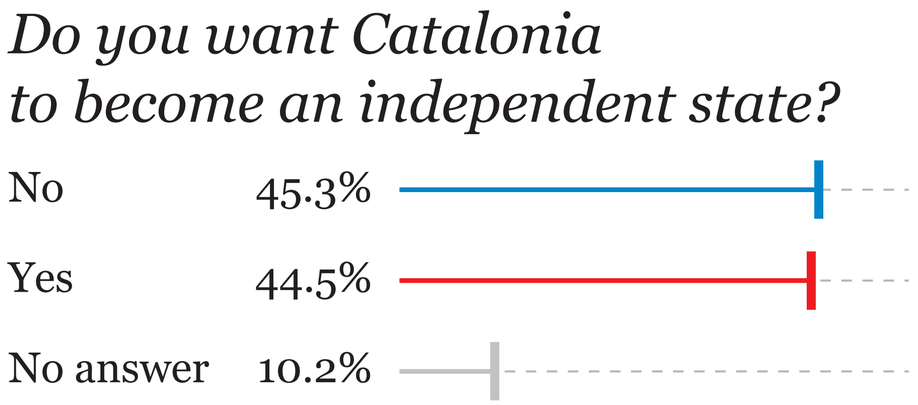

"The margin of error of the poll is 2.95, a relevant fact considering the tight difference between the YES and the NO to the independence of Catalonia"

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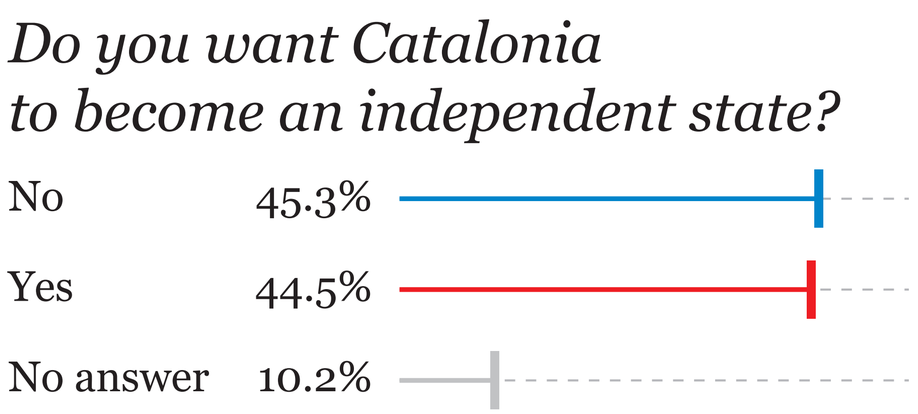
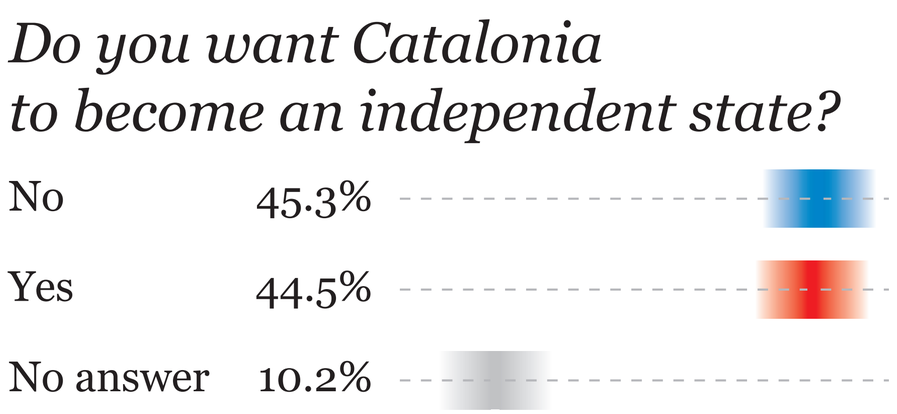
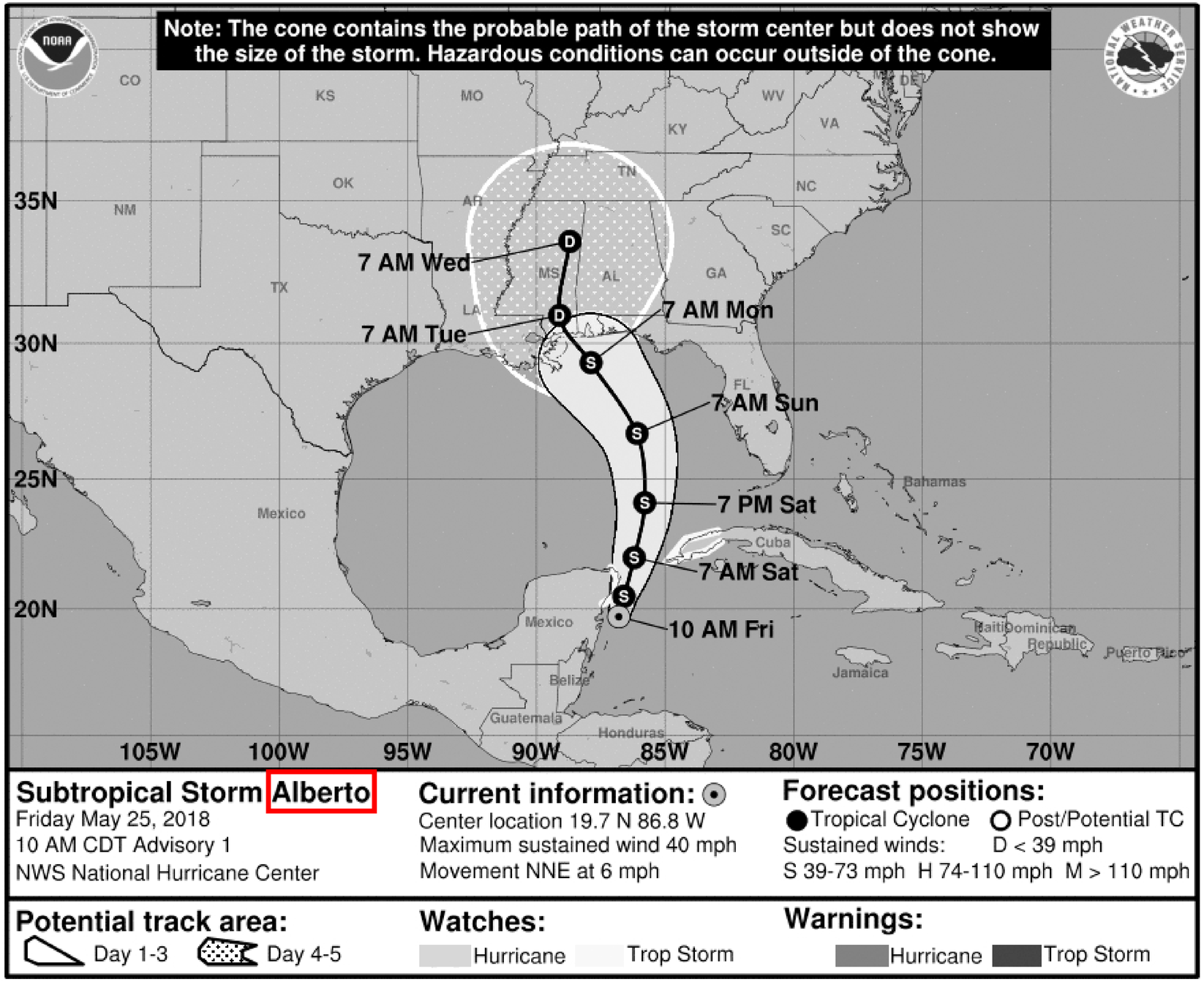




"The margin of error of the poll is 2.95, a relevant fact considering the tight difference between the YES and the NO to the independence of Catalonia"


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.
7 AM Wed
7 AM Tue
7 AM Mon
7 AM Sun
7 PM Sat
7 AM Sat
10 AM Fri
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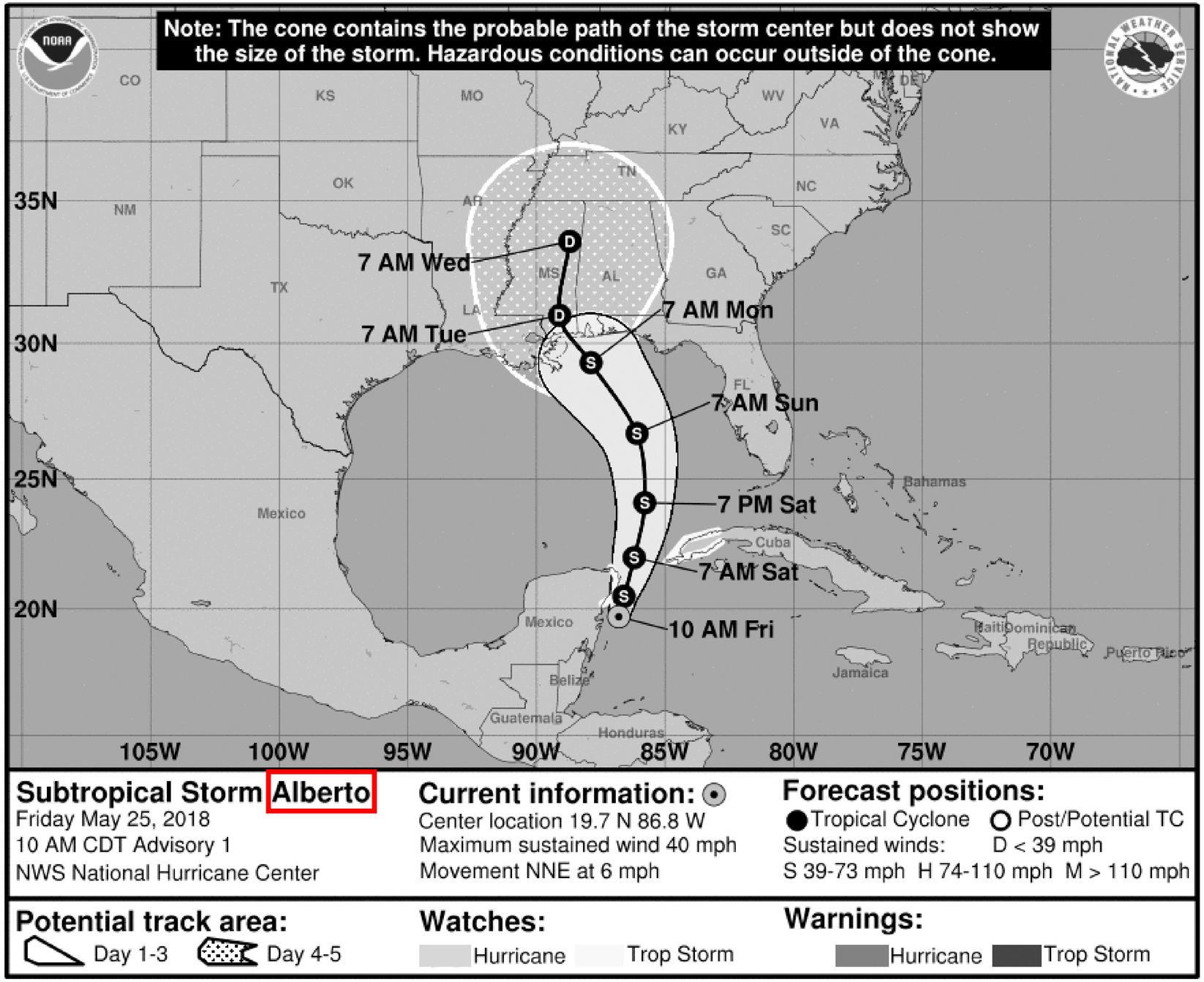
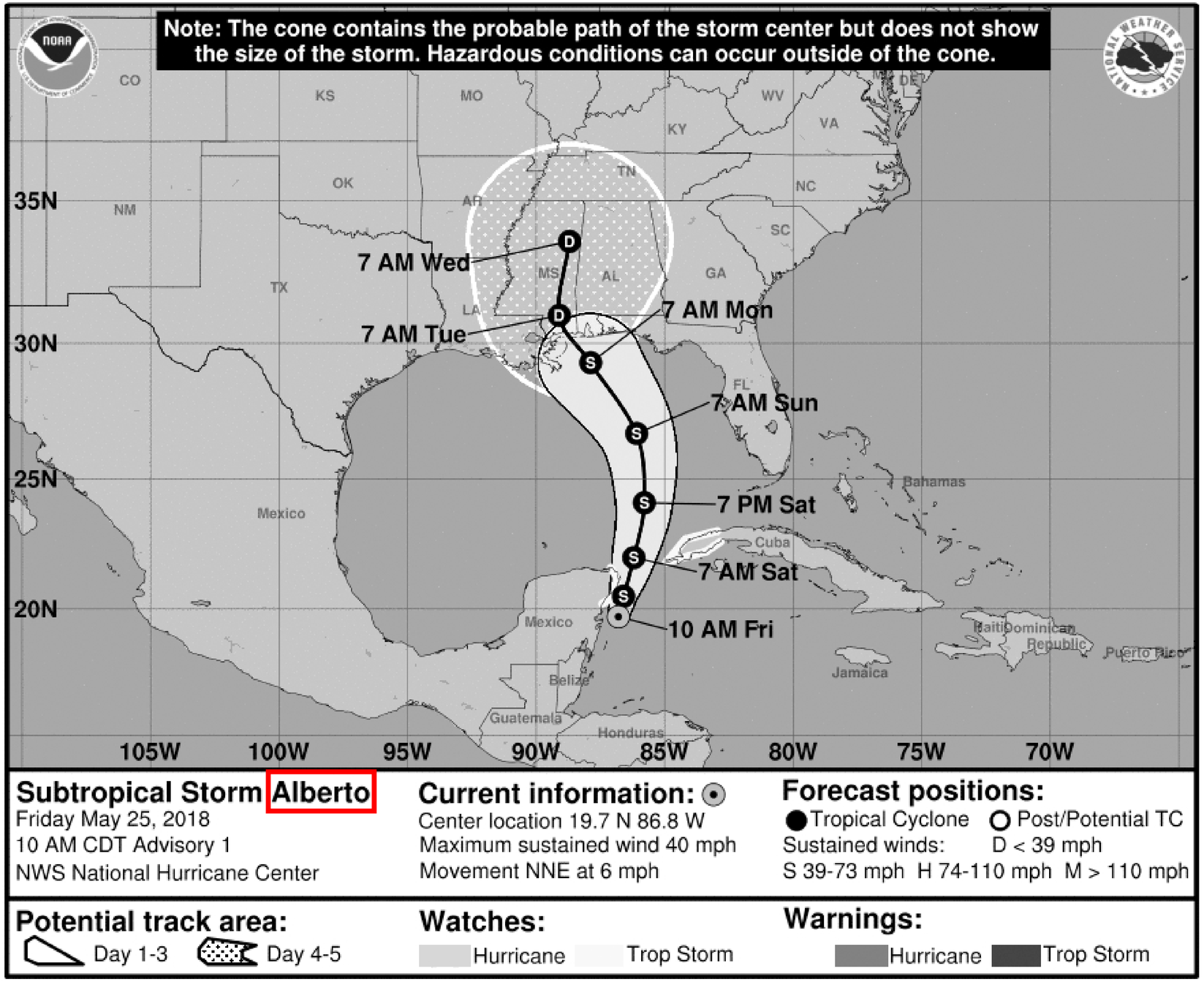
MS
AL
GA
LA
FL
Bahamas
Mexico
Cuba
Haiti
Dominican Republic
Puerto Rico
Jamaica
Belize
Guatemala
Honduras
Subtropical Storm Alberto
Friday May 25, 2018
10 AM CDT Advisory 1
NWS National Hurricane Center
Current information:
Center location 19.7 N 86.8 W
Maximum sustained wind 40 mph
Movement NNE at 6 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

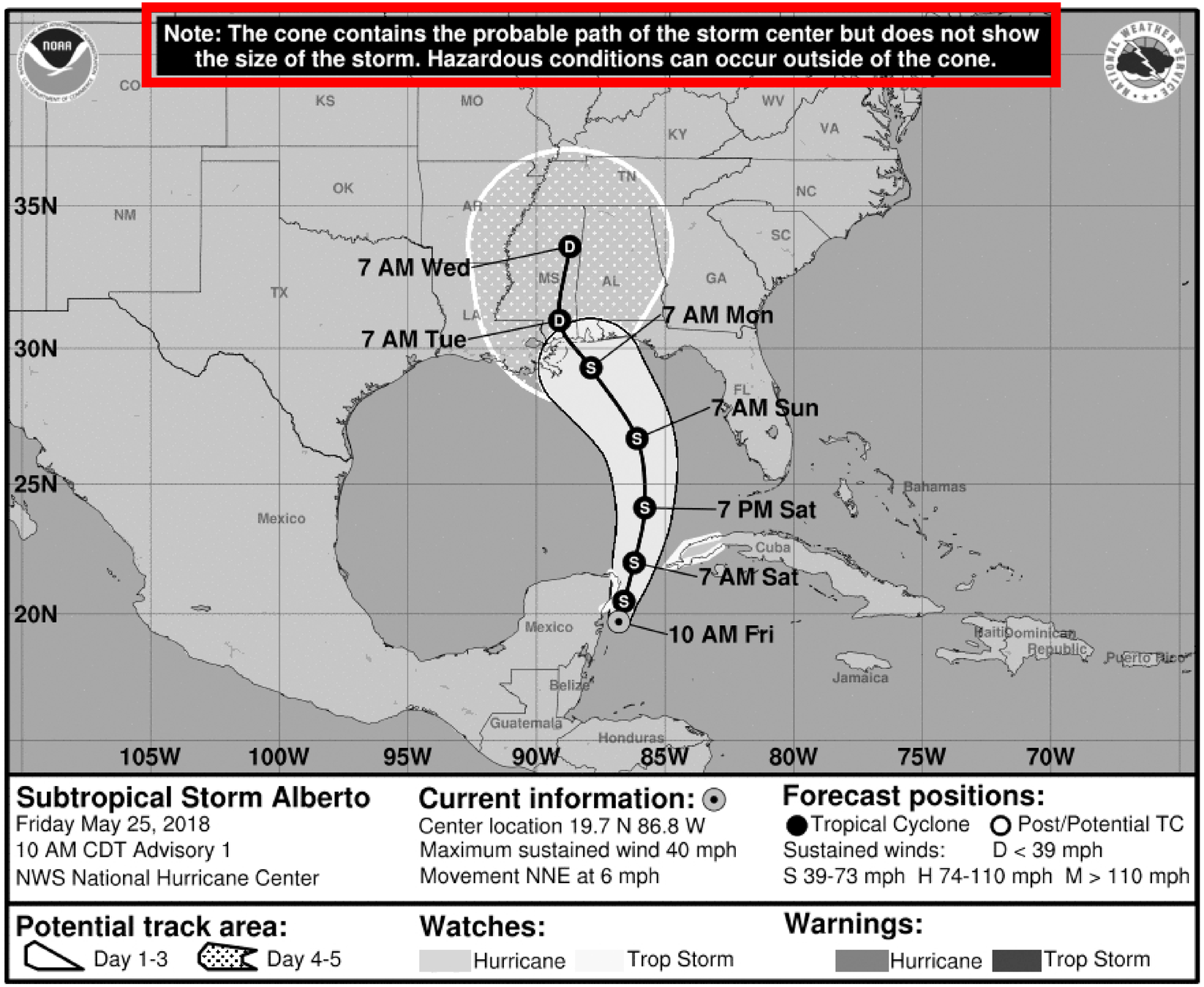


"Alberto Meandering Over the Northwestern Caribbean Sea."



"Alberto Meandering Over the Northwestern Caribbean Sea."

"Alberto is not very well organized this morning."


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.
NOAA
NATIONAL WEATHER SERVICE
CO
KS
MO
WV
KY
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30N
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7 AM Wed
7 AM Tue
7 AM Mon
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7 PM Sat
7 AM Sat
10 AM Fri
Bahamas
Mexico
Cuba
Haiti
Dominican Republic
Puerto Rico
Jamaica
Belize
Guatemala
Honduras
105W
100W
95W
90W
85W
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75W
70W
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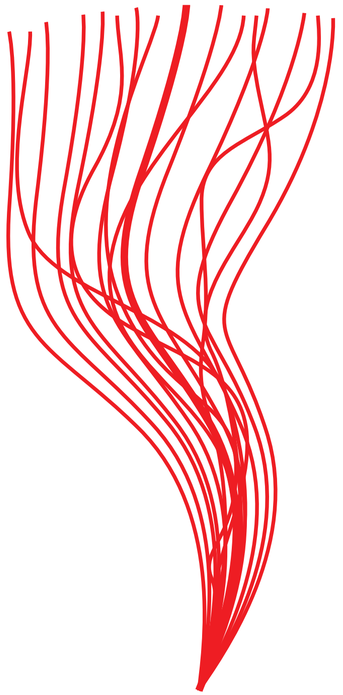
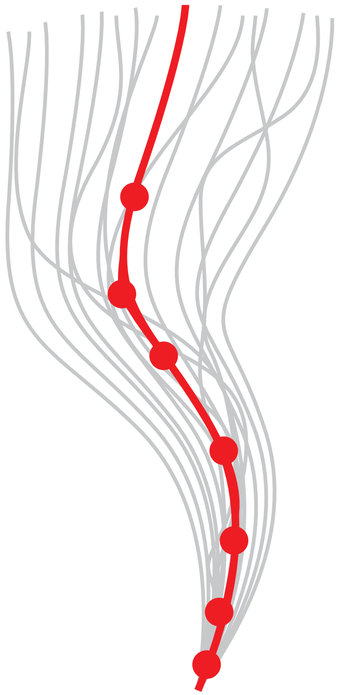
Day 1-3
Day 4-5
Watches:
Hurricane
Trop Storm
Warnings:
Hurricane
Trop Storm

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.
SKY WATCH
TROPICAL TRACKER
SUBTROPICAL STORM ALBERTO
Winds: 40 mph
Gusts: 46 mph
Pressure: 1005 mb
North @ 0 mph
08 AM Wed 25 mph
08 AM Tue 35 mph
08 AM Mon 65 mph
08 AM Sun 60 mph
08 PM Sat 50 mph
08 AM Sat 45 mph
Boise
Salt Lake City
Denver
Kansas City
Cincinnati
Washington
Asheville
Raleigh
Memphis
Atlanta
Charleston
Albuquerque
Phoenix
L.A.
Houston
Tallahassee
Orlando
Miami
Brownsville
35N
30N
25N
20N
Day 1-3
Day 4-5
Hurricane
Trop Storm
Hurricane
Trop Storm



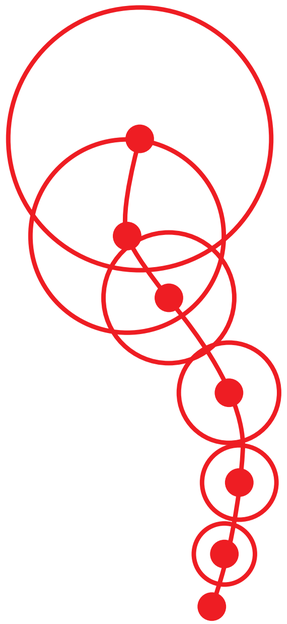
1

Begin with many forecasts



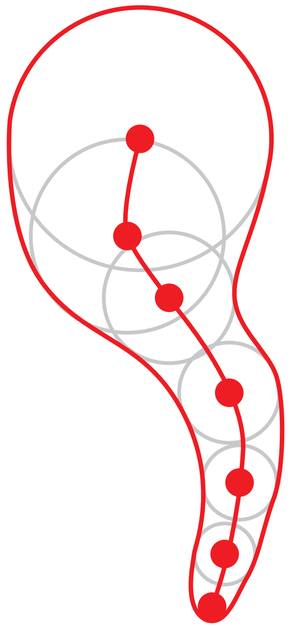
2

Choose the forecast you think is most likely



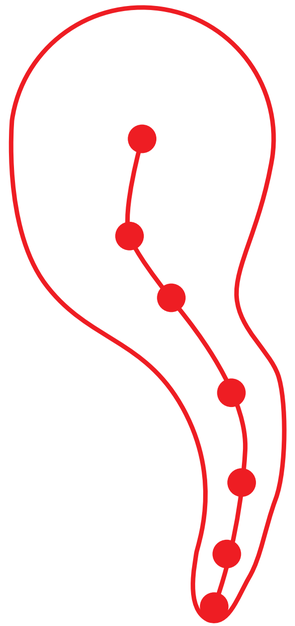
3

Surround the point estimates with circles representing their uncertanty.



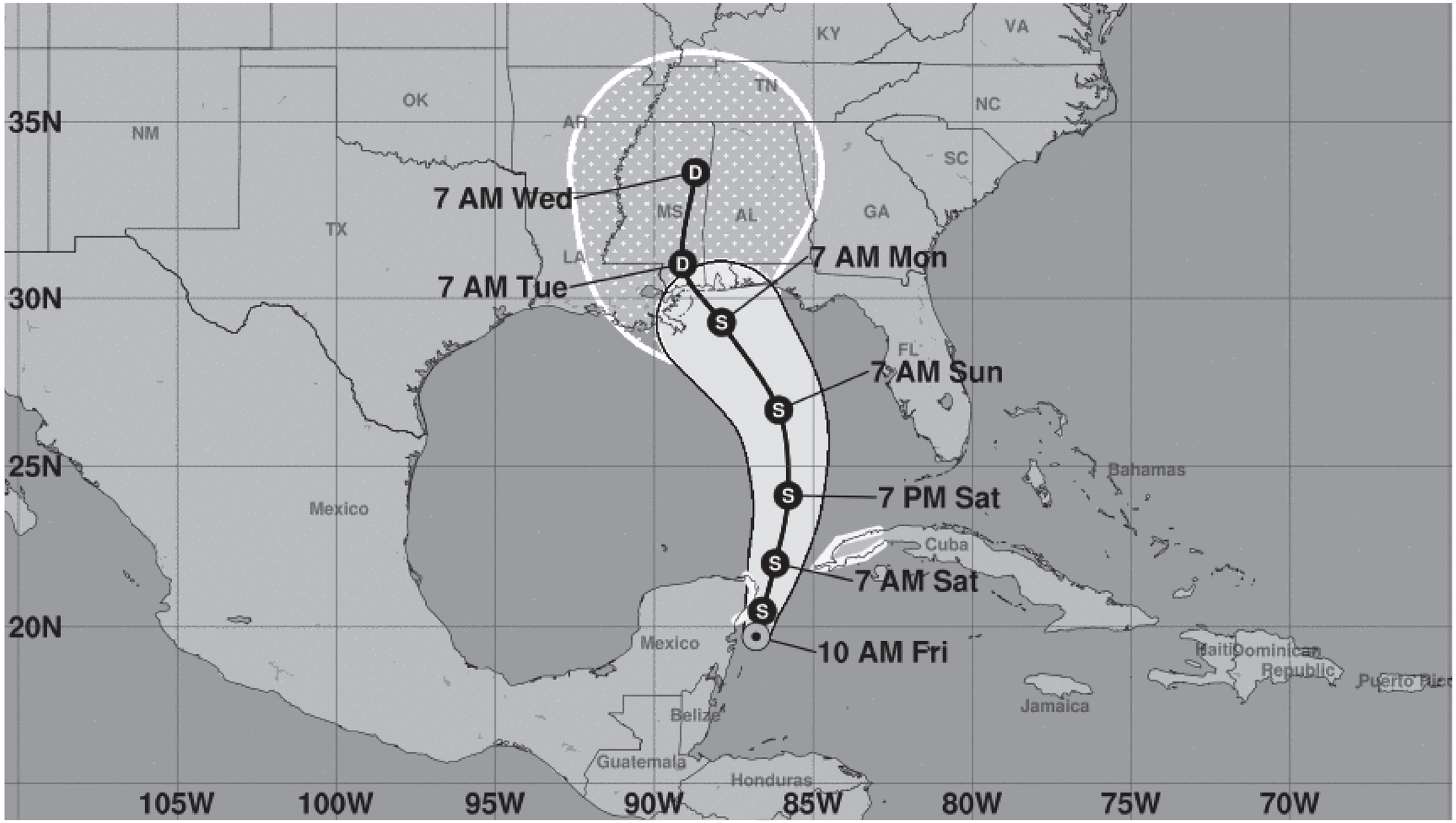
4

Trace a curve that connects the circles.



5

The cone of uncertainty, ready to be published.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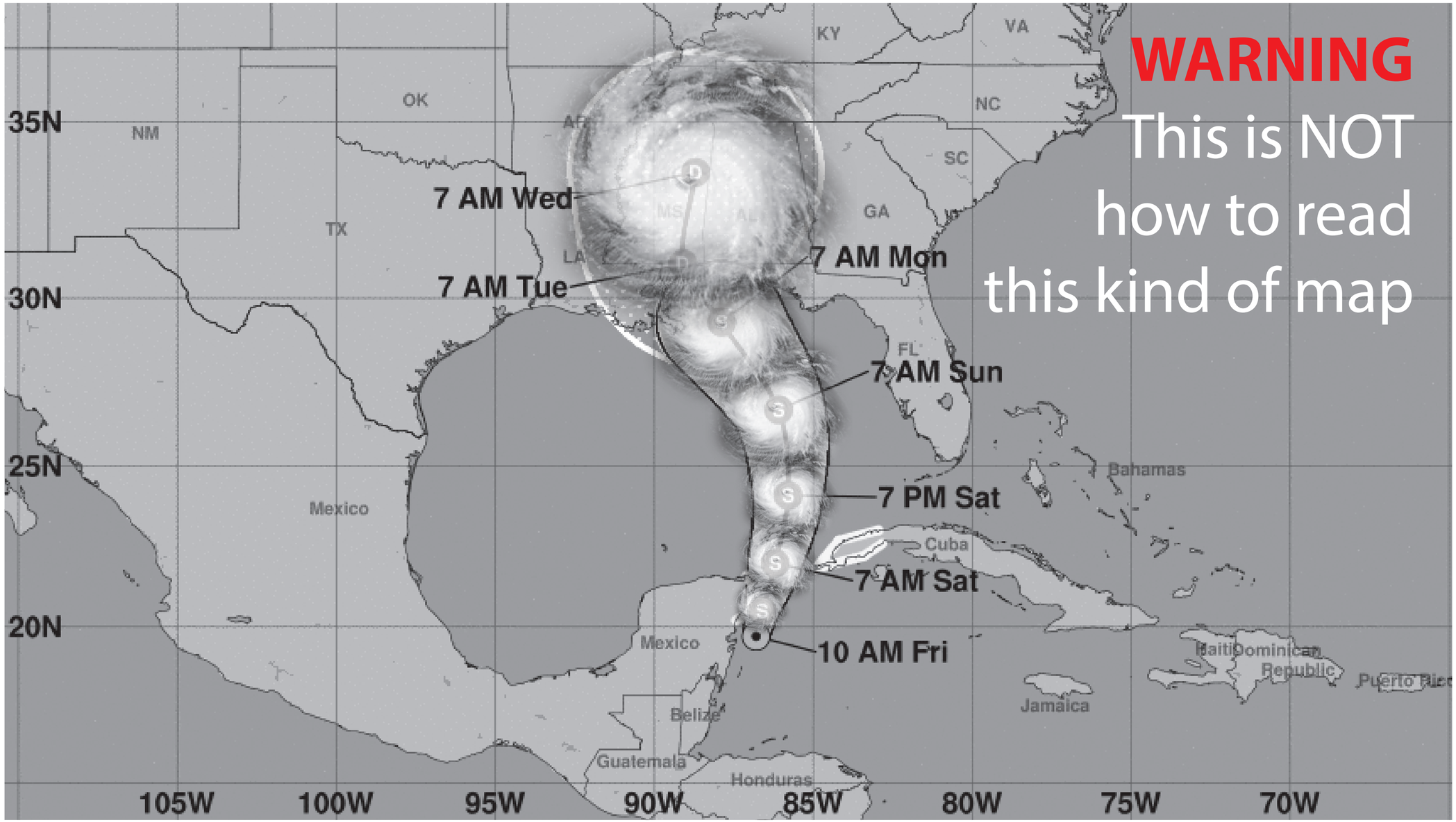
Guatemala
Honduras


WARNING
This is NOT
how to read
this kind of map
7 AM Wed
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10 AM Fri
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Guatemala
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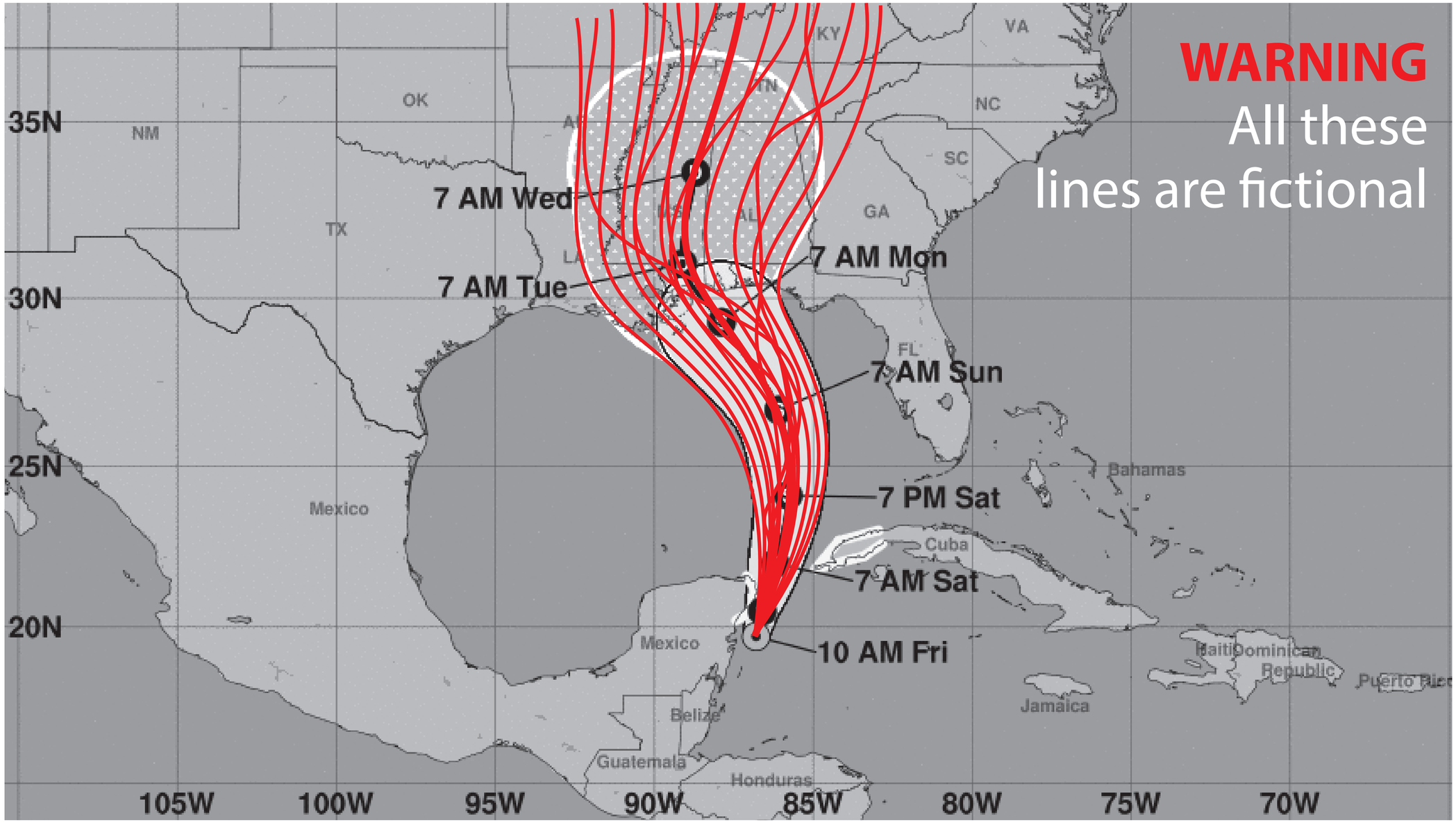
WARNING
All these lines are fictional
7 AM Wed
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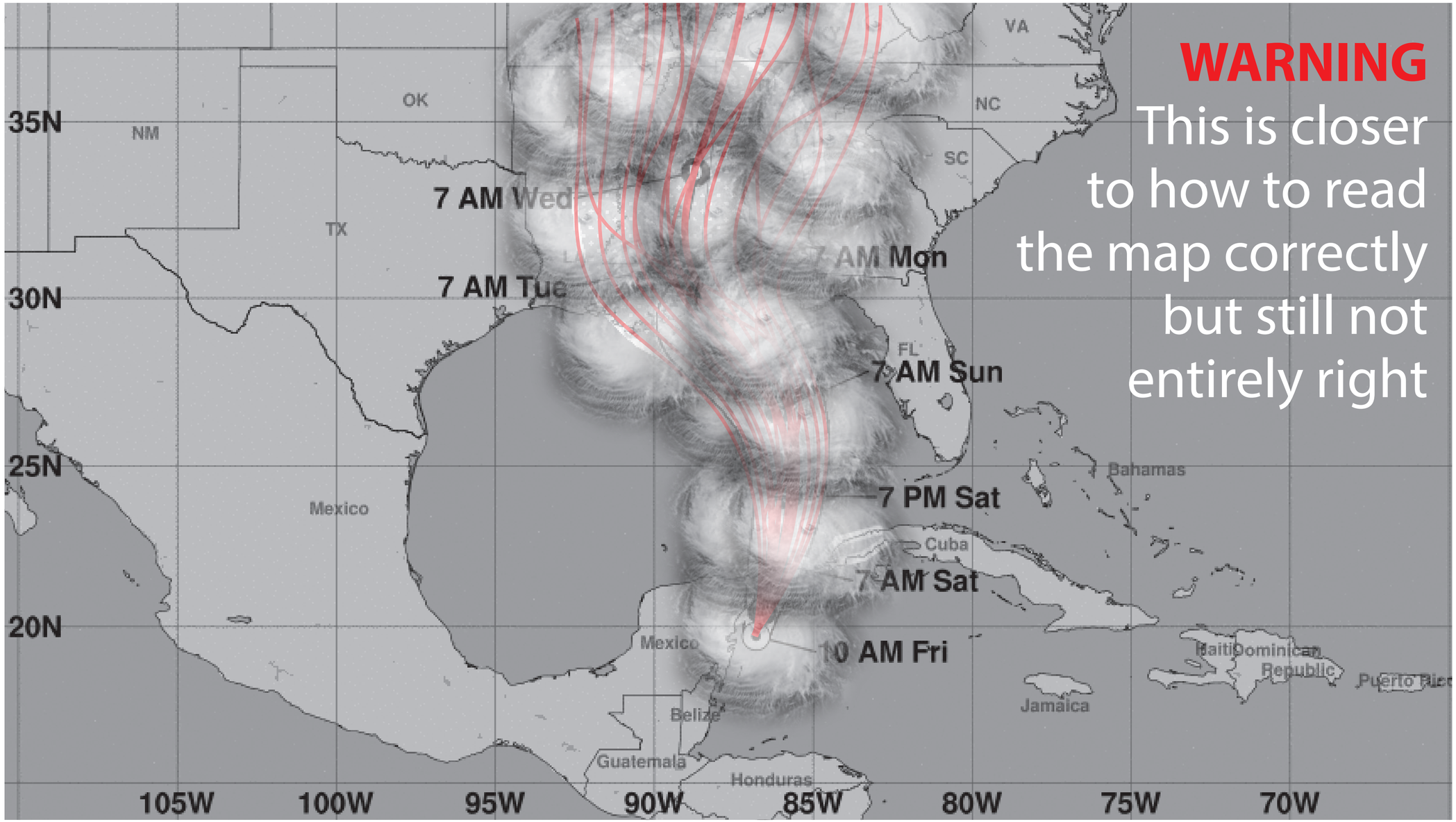
Guatemala
Honduras


WARNING
This is closer to how to read the map correctly but still not entirely right
35N
30N
25N
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105W
100W
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90W
85W
80W
75W
70W
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VA
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Cuba
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Dominican Republic
Puerto Rico
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Honduras
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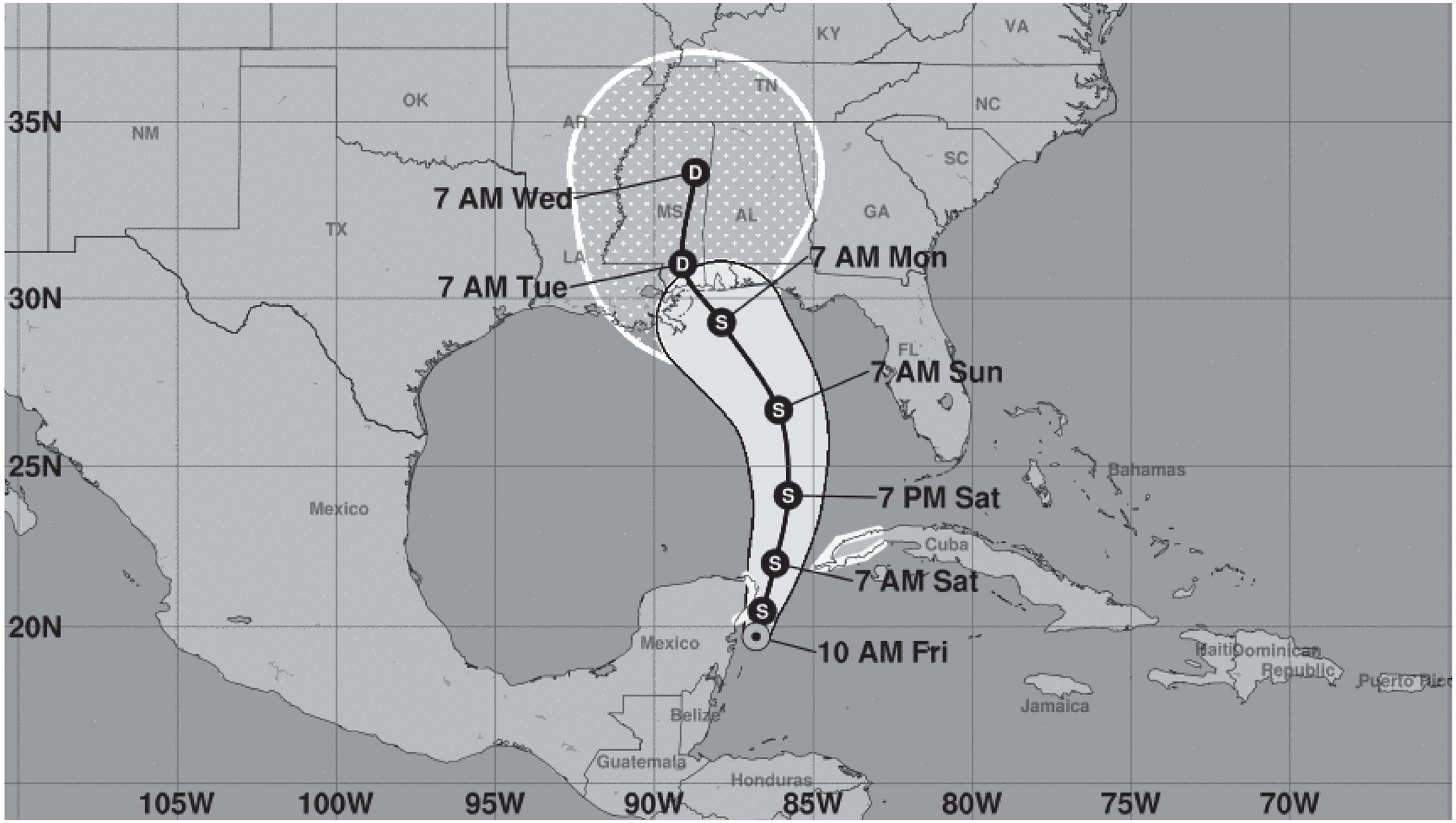
7 PM Sat
7 AM Sat
10 AM Fri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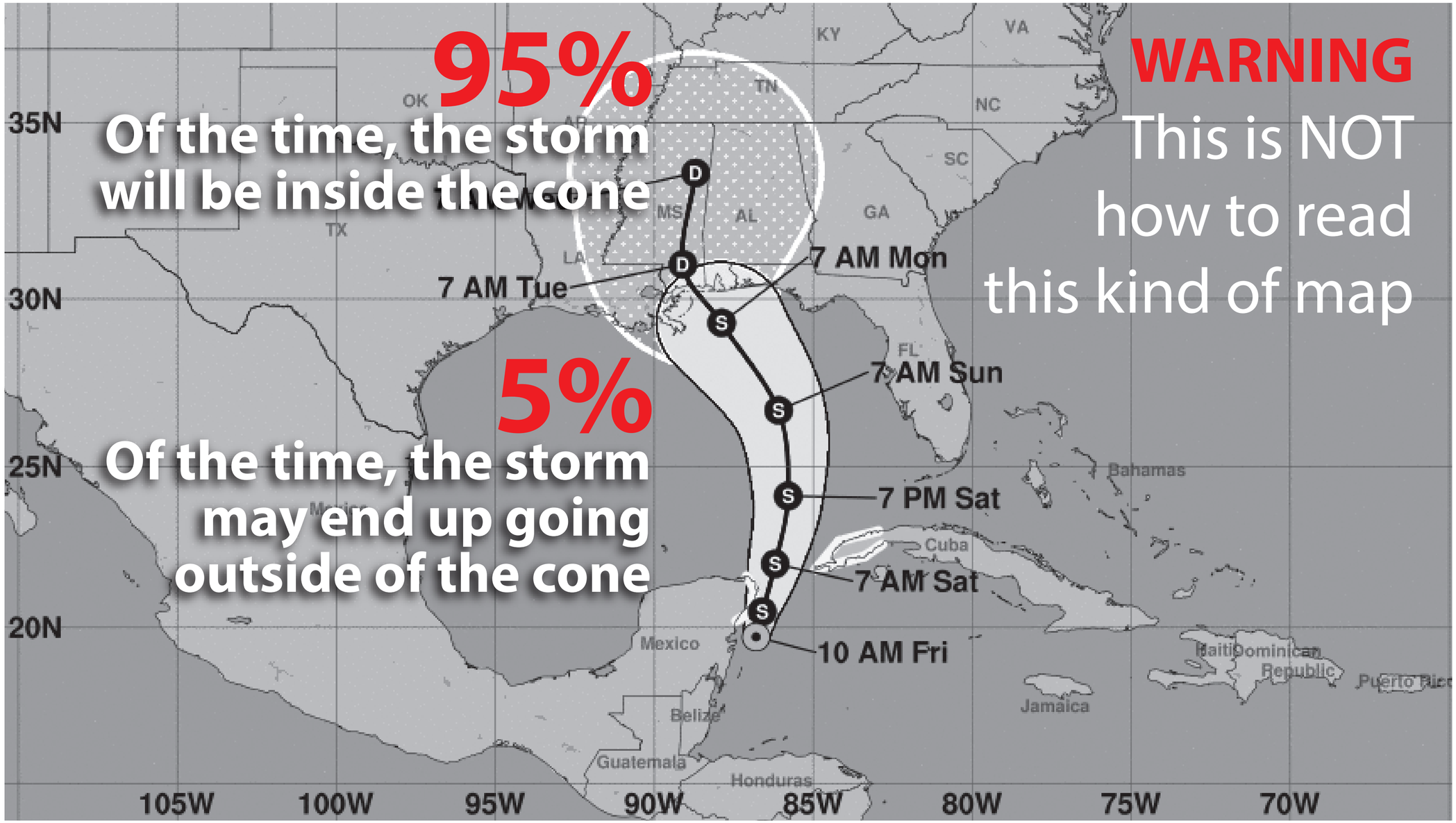
95%
Of the time, the storm will be inside the cone
5%
Of the time, the storm may end up going outside of the cone
WARNING
This is NOT how to read this kind of map
7 AM Tue
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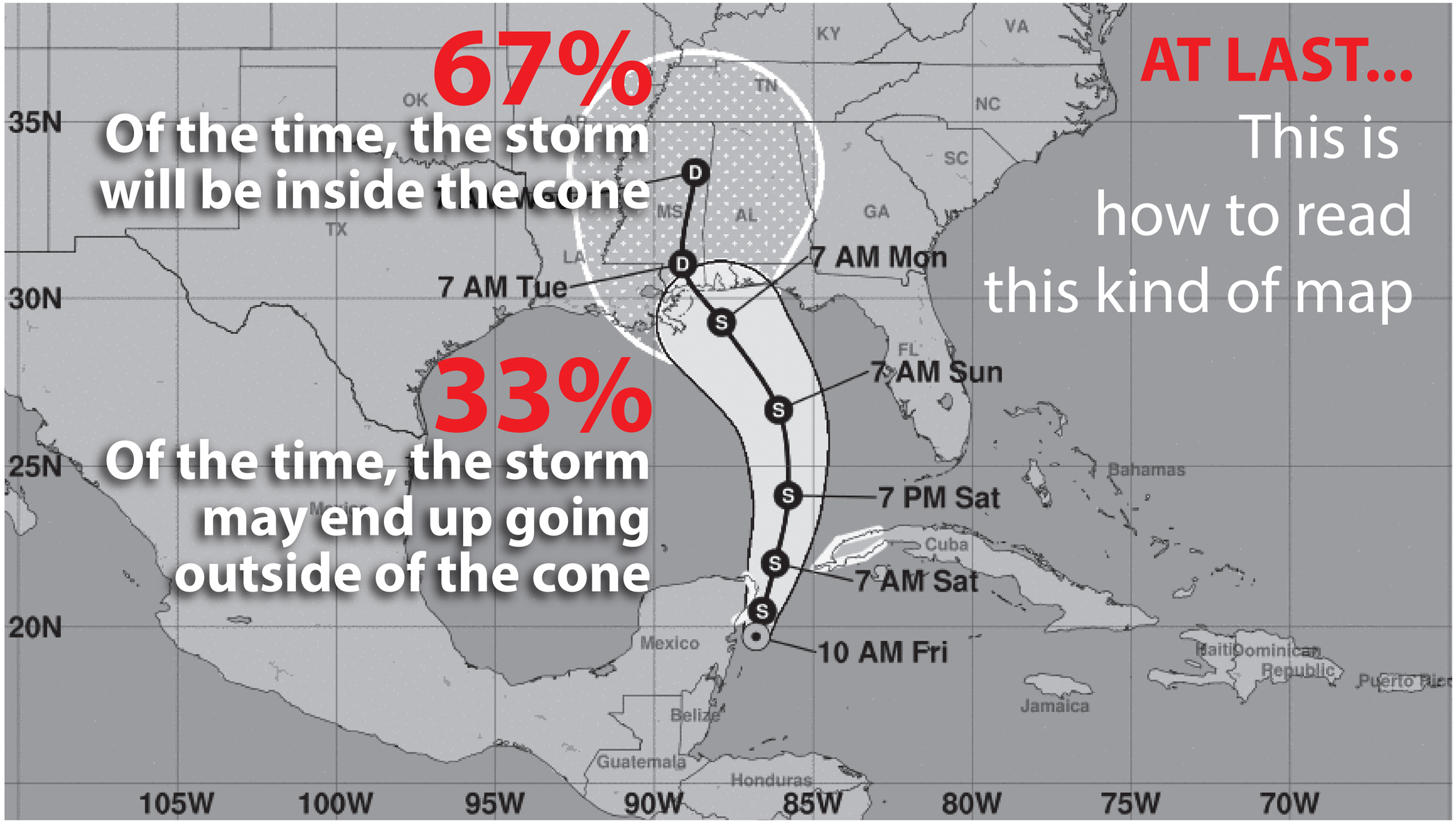
67%
Of the time, the storm will be inside the cone
33%
Of the time, the storm may end up going outside of the cone
AT LAST...
This is how to read this kind of map
7 AM Tue
7 AM Mon
7 AM Sun
7 PM Sat
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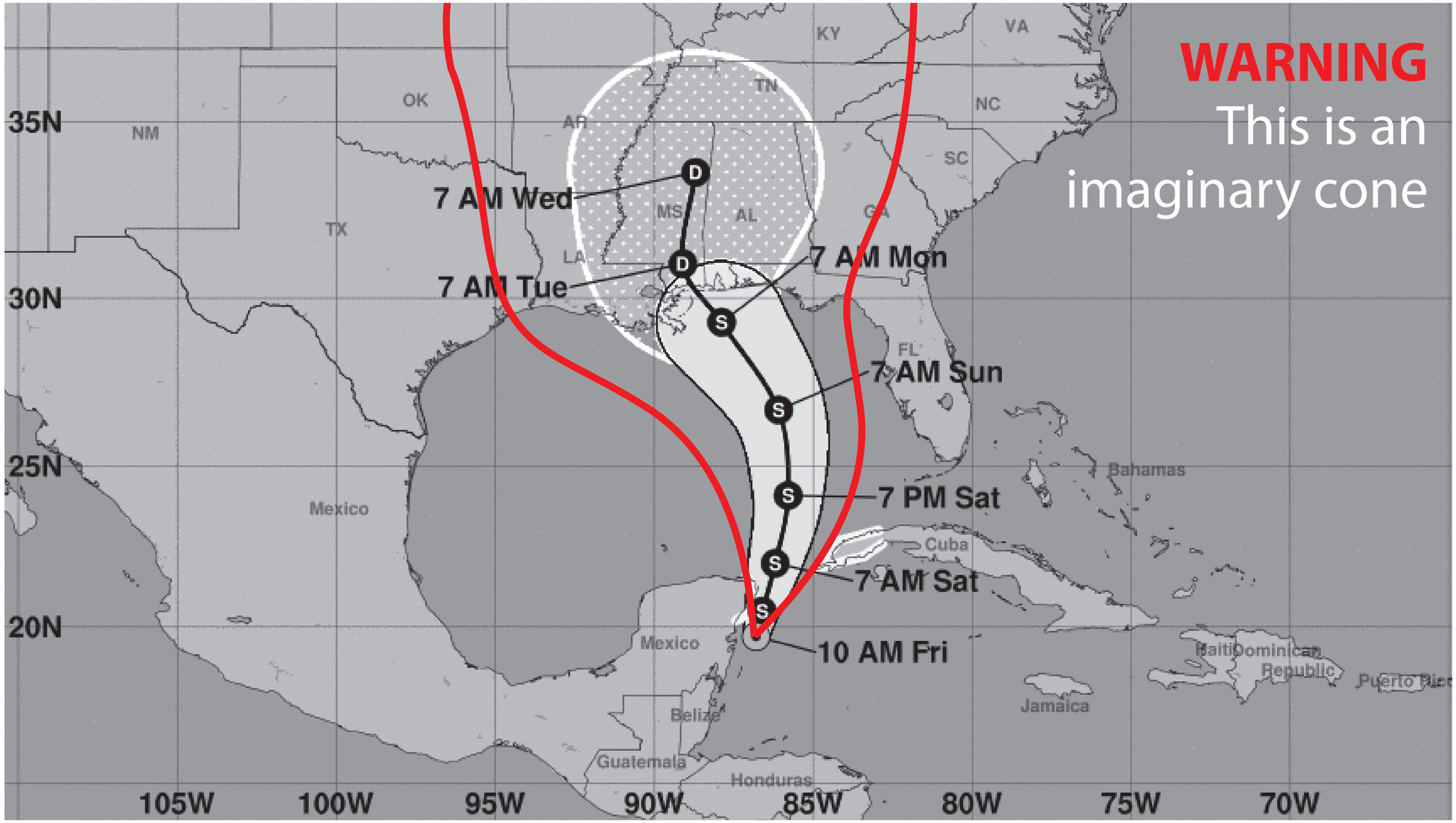
WARNING
This is an imaginary cone
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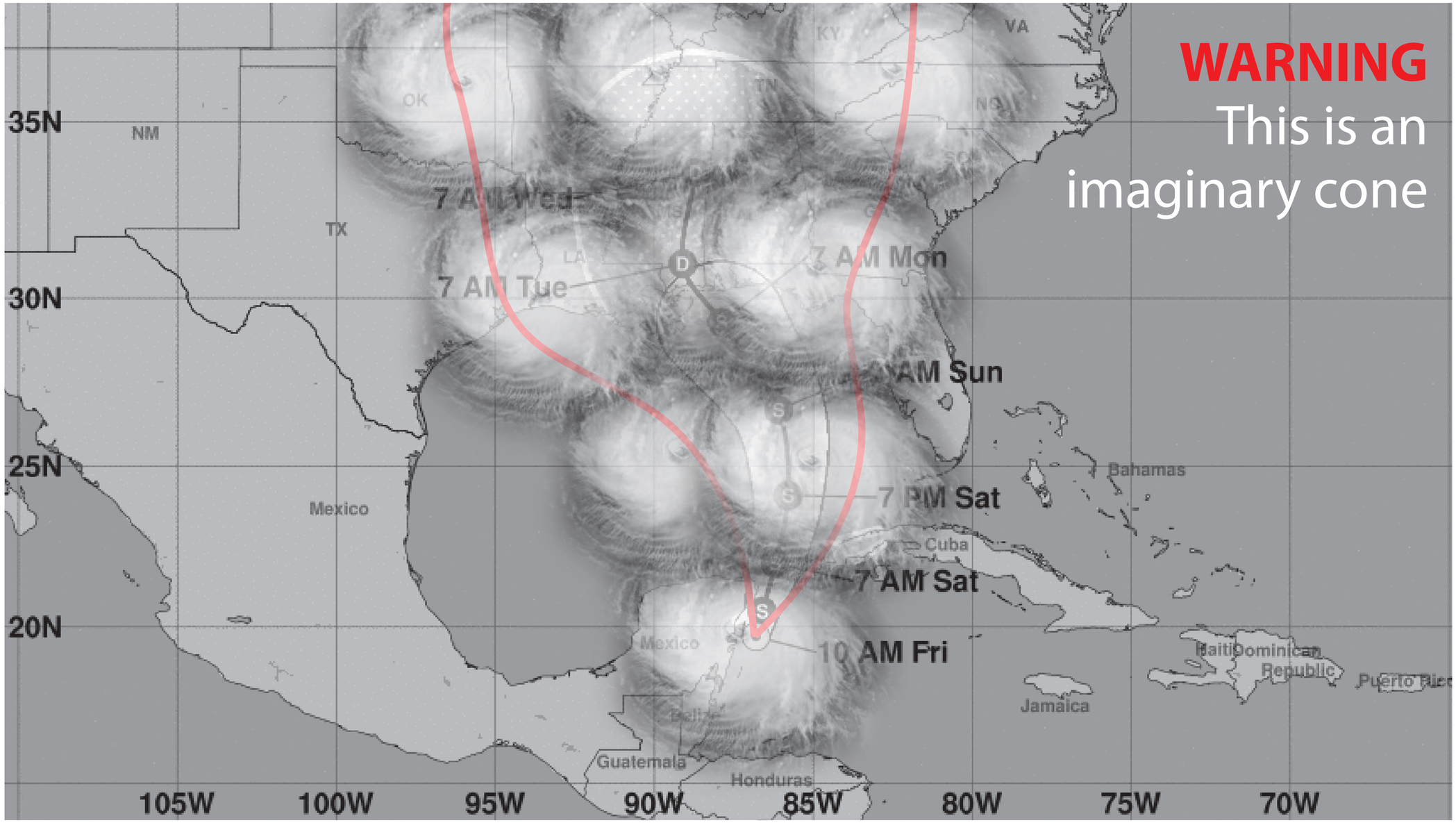
WARNING
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Jamaica
Haiti
Dominican Republic
Puerto Rico
Guatemala
Honduras

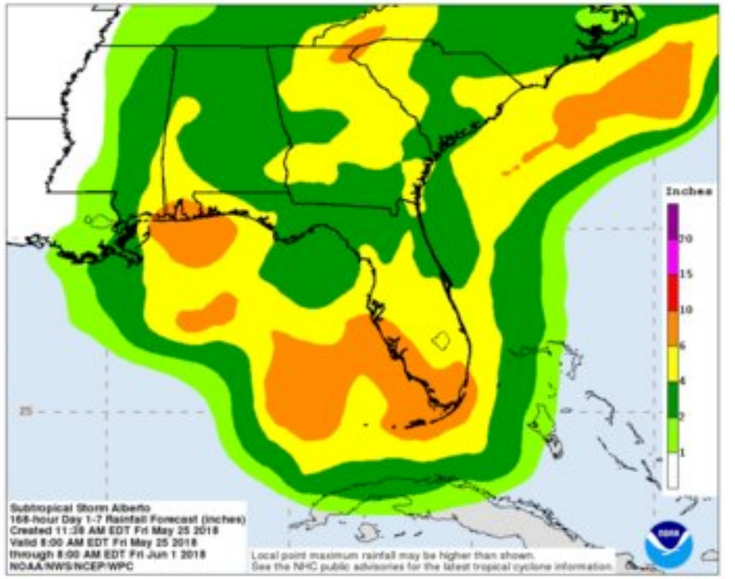
Key Messages for Subtropical Storm Alberto

Advisory 1: 10:00 AM CDT Fri May 25, 2018

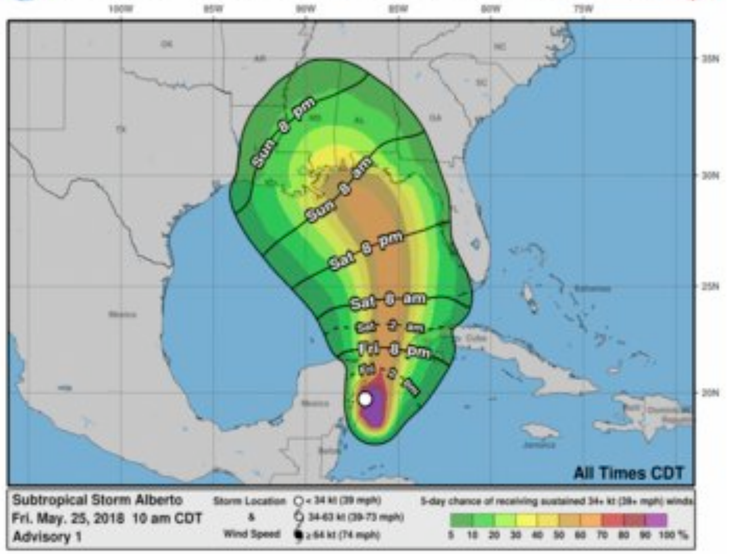
1. Regardless of its exact track and intensity, Alberto is expected to produce heavy rainfall and flash flooding over the northeastern Yucatan Peninsula of Mexico, western Cuba, southern Florida and the Florida Keys. Rainfall and flooding potential will increase across the central Gulf Coast region and the southeastern United States later this weekend and early next week when Alberto is expected to slow down after it moves inland.

2. Alberto could bring tropical storm conditions and storm surge to portions of the central and eastern Gulf Coast later this weekend and early next week, although it is too soon to specify the exact location and magnitude of these impacts. Residents in these areas should monitor the progress of Alberto, as tropical storm and storm surge watches may be required later today or tonight.

3. Dangerous surf and rip current conditions are affecting portions of the Yucatan Peninsula and western Cuba and will likely spread along the eastern and central U.S. Gulf Coast later this weekend.



Earliest Reasonable Arrival Time of Tropical-Storm-Force Winds



What to pay attention to

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2. Is the data represented accurately?
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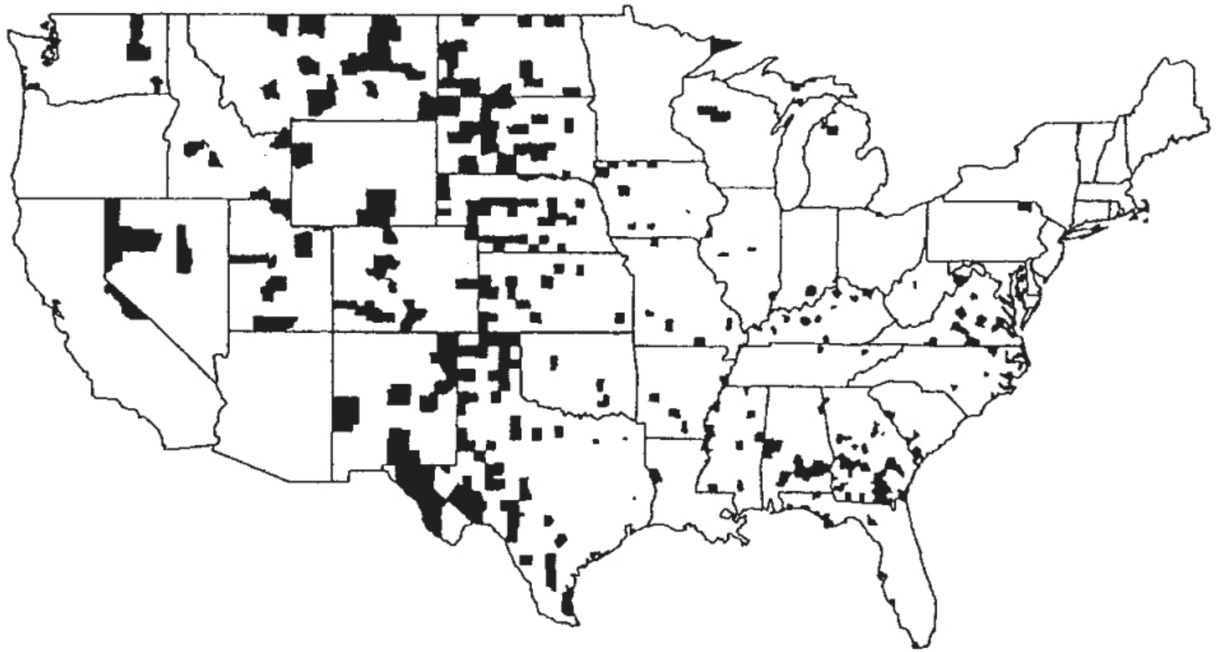
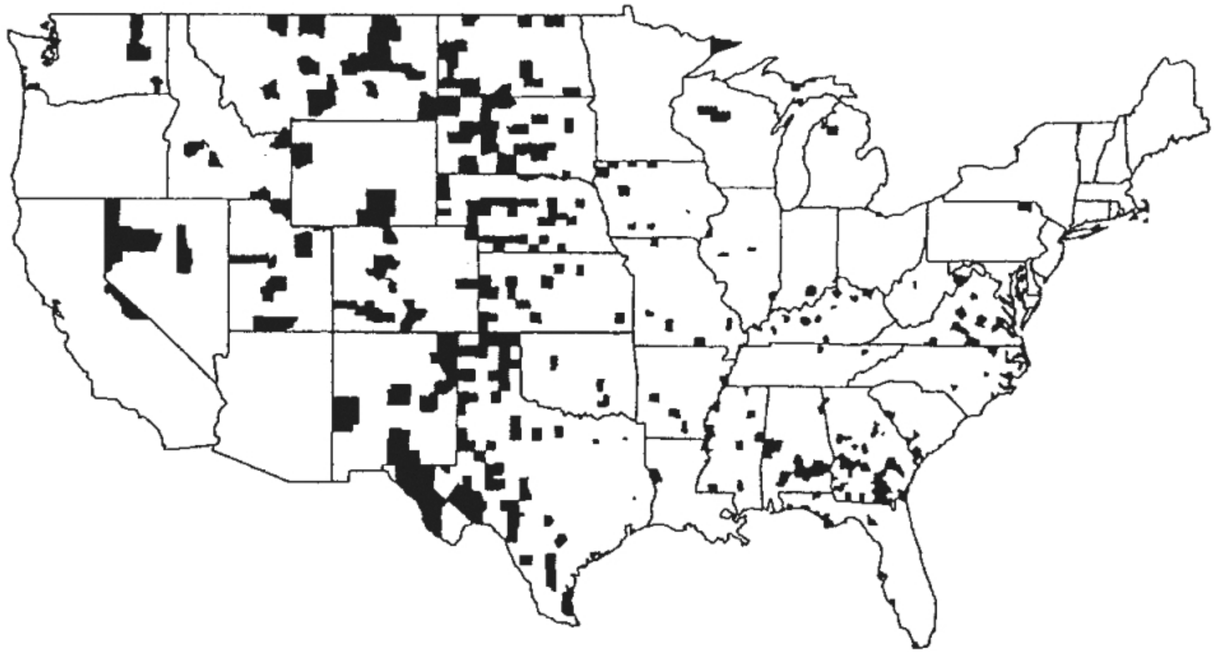
Charts lie

mainly because we love to lie to ourselves



Counties with the LOWEST kidney cancer death rates (1980-1989)

From *Teaching Statistics: A Bag of Tricks*
Andrew Gelman, Deborah Nolan



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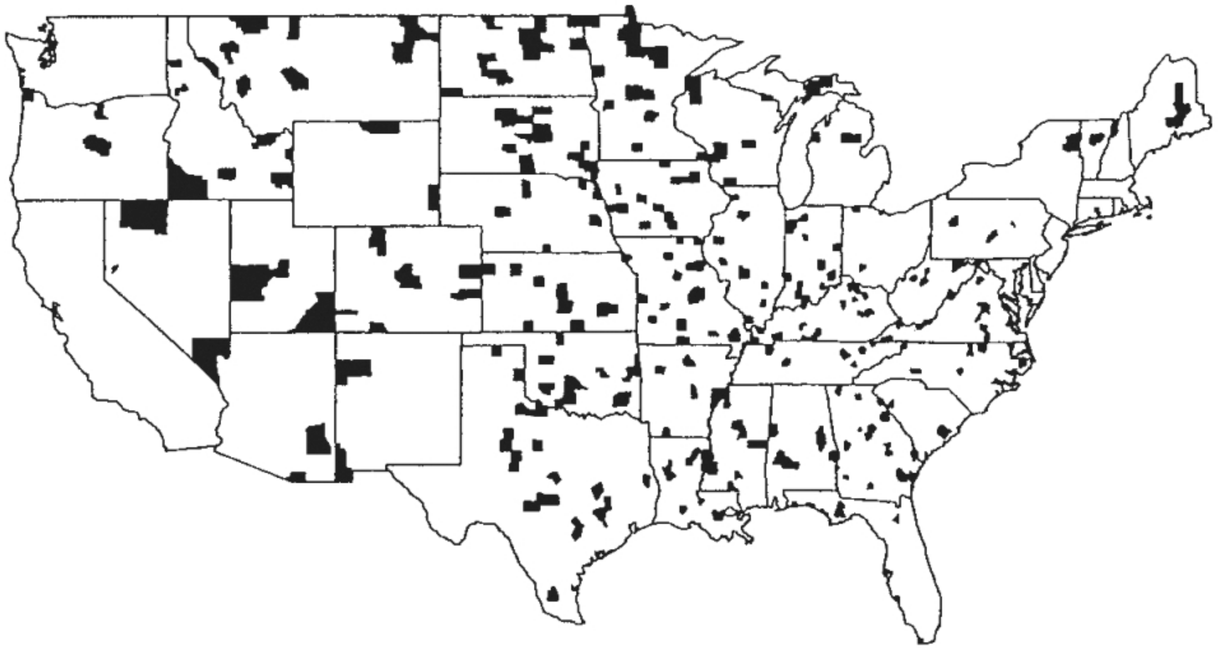

Counties with the HIGHEST kidney cancer death rates (1980-1989)

From *Teaching Statistics: A Bag of Tricks*
Andrew Gelman, Deborah Nolan

Larry Husten, Contributor

I'm a medical journalist covering cardiology news.

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Chocolate And Nobel Prizes Linked In Study

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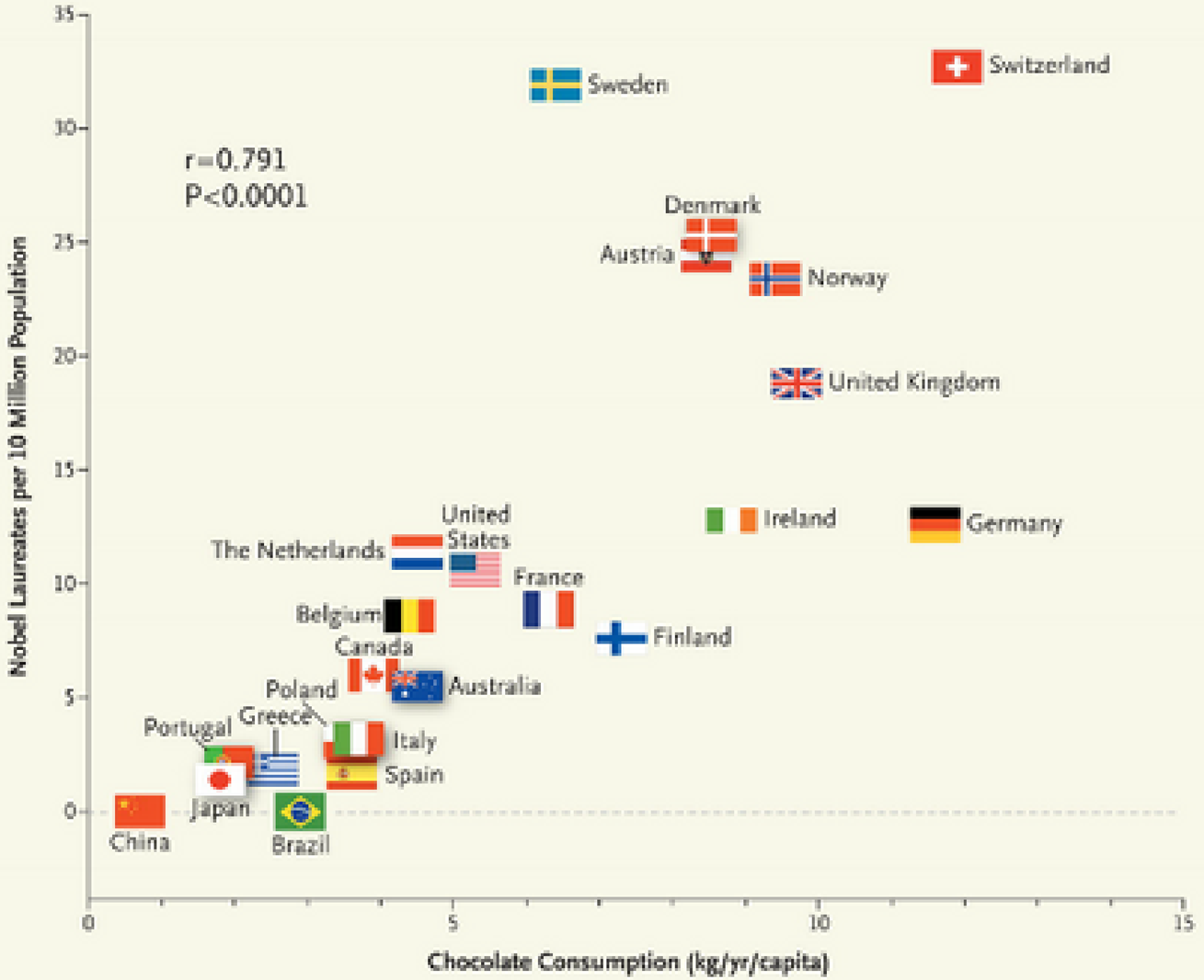
THE CADILLAC ATS
2013 NORTH AMERICAN CAR OF THE YEAR

AP / *October 11, 2012, 9:59 AM*

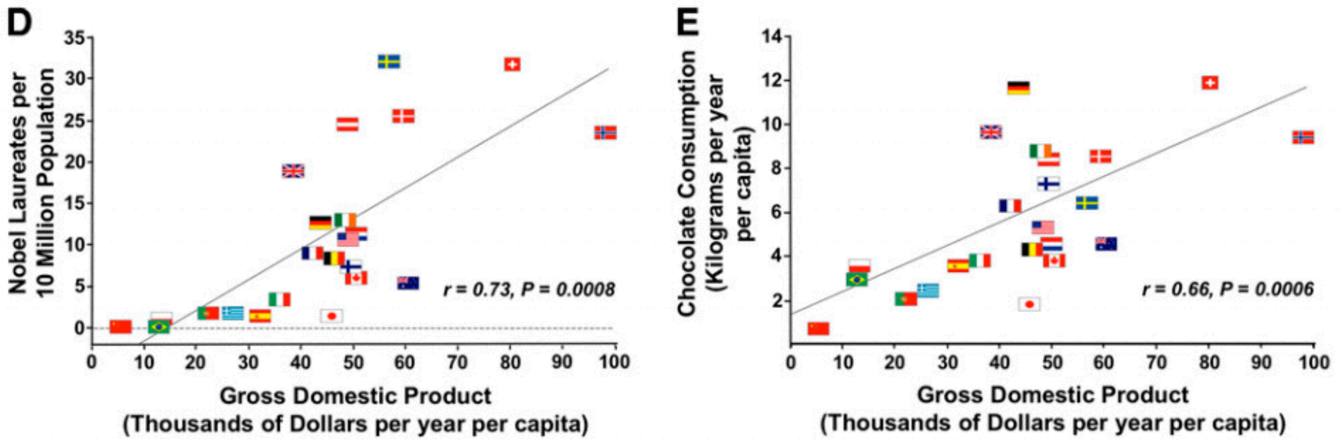
Eating chocolate may help you win Nobel Prize



New England Journal of Medicine

From: The Journal of Nutrition:

"Does Chocolate Consumption Really Boost Nobel Award Chances?
The Peril of Over-Interpreting Correlations in Health Studies"



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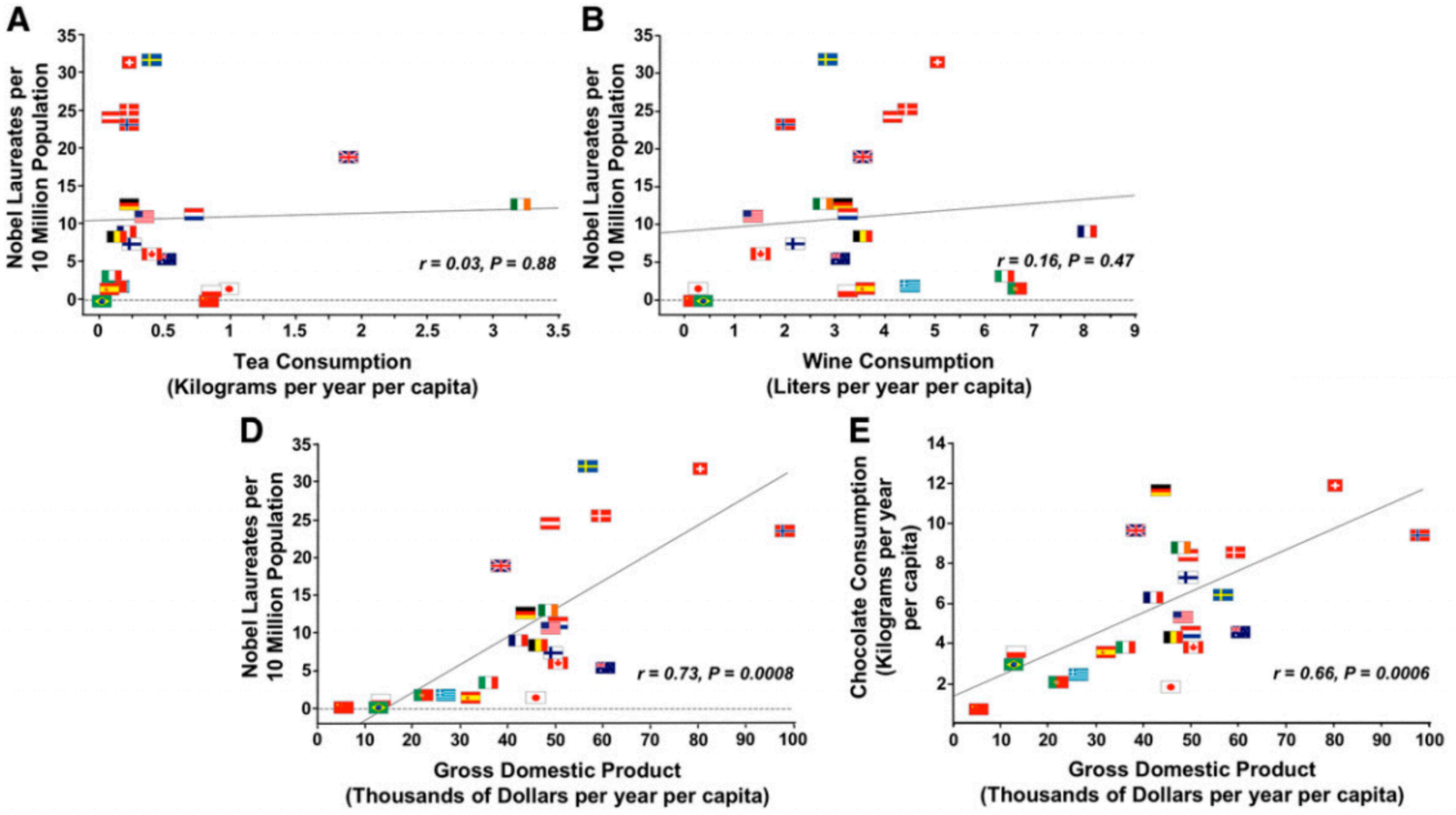

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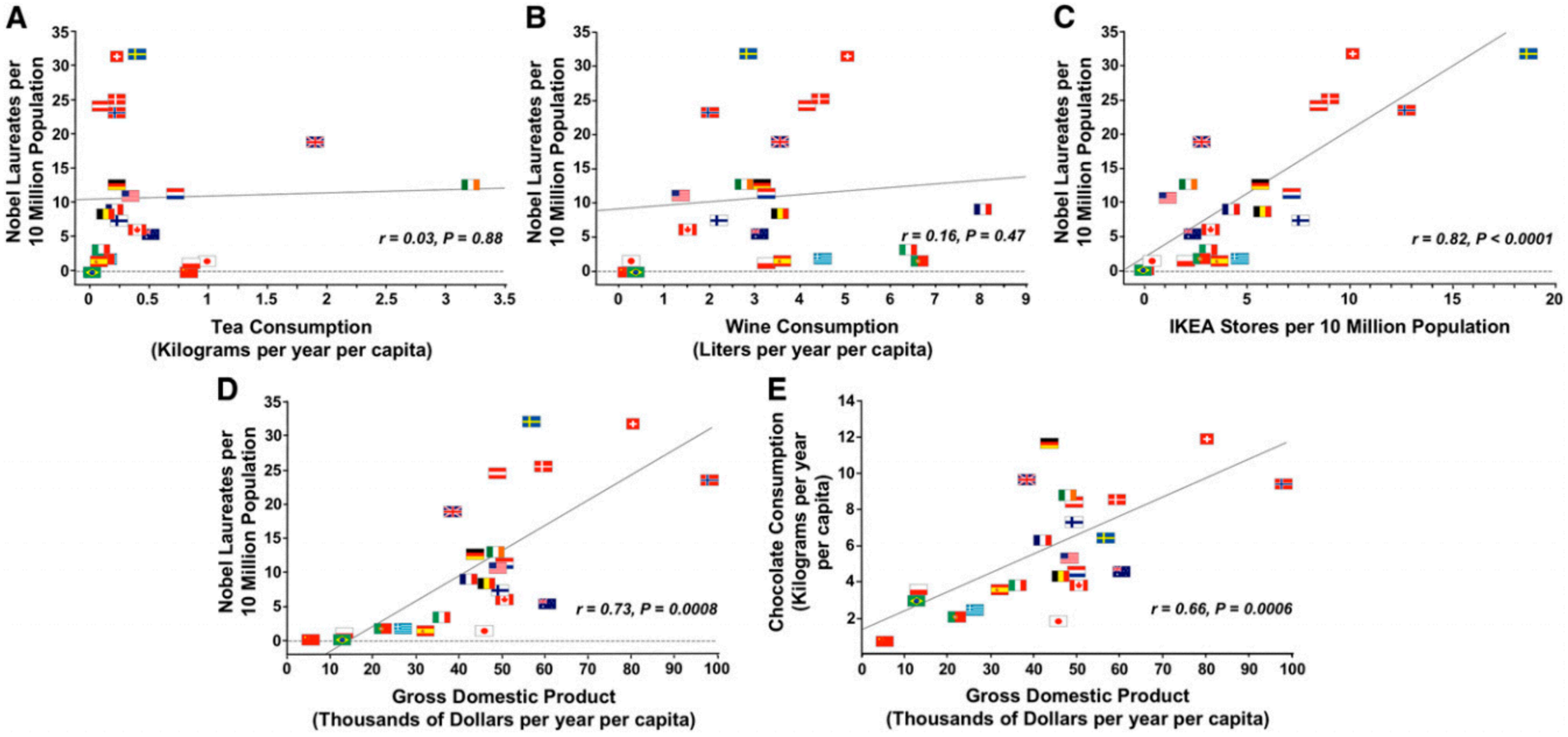

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THE ETHICAL DIMENSION

Let's all embrace charts as designers

—or simply as readers

THE ETHICAL DIMENSION

Let's all embrace charts as designers —or simply as readers

…but let's use them wisely, and to inform others, not to mislead them.

THANK YOU!

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