

Agenda

- EDA Refresher
- Effective Visualization
 - Graphical Integrity
 - Scope
 - Displays
 - Sensible Design
- Communication
 - Motivation
 - Key Considerations

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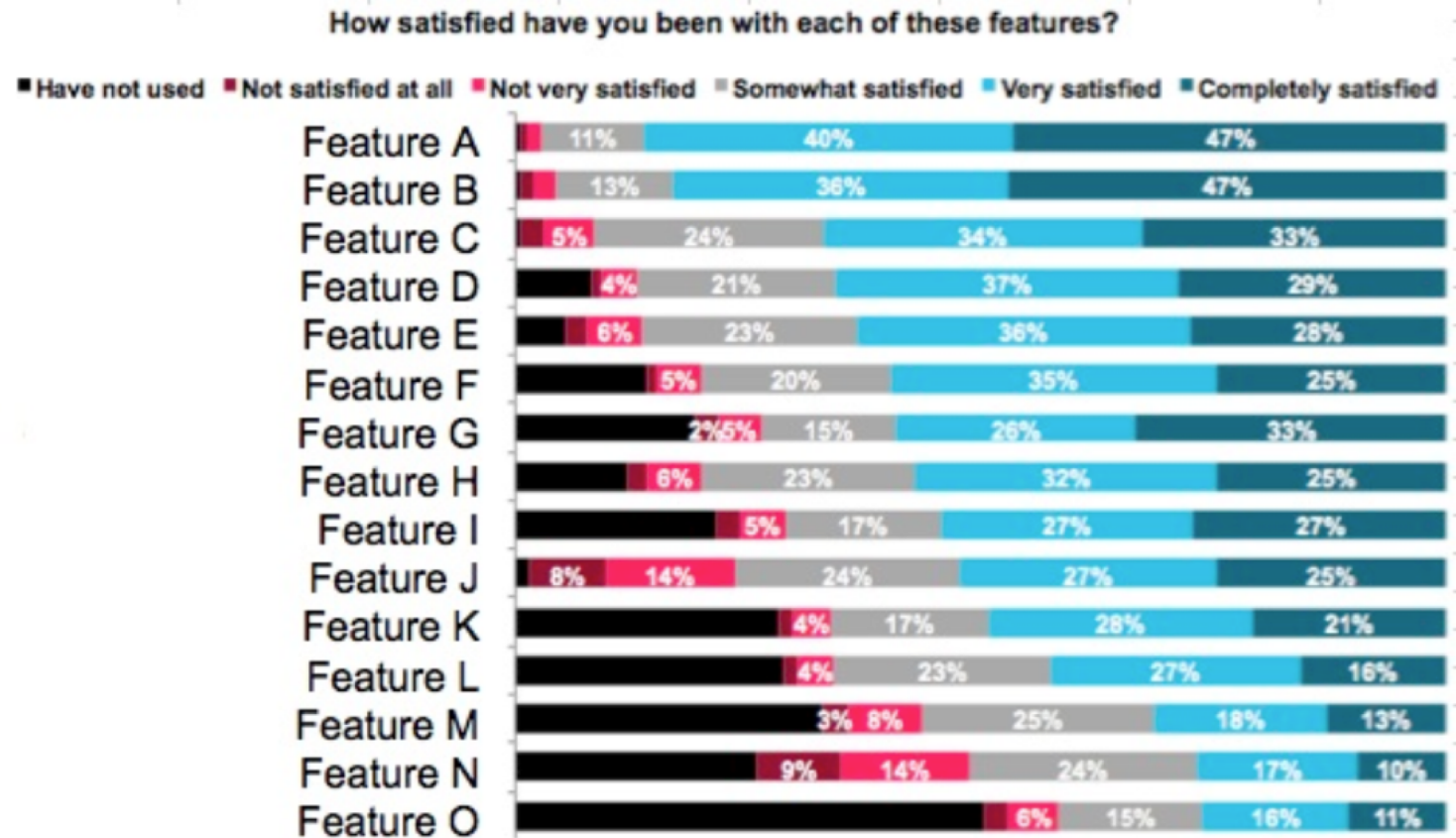
Key Considerations

- Who is your **audience**
- What questions are you answering?
- Why should the audience care?
- What are your major insights and surprises?
- What change do you want to affect?

Don't make them think!

- The audience does not want to spend cognitive energy on dissecting and decoding your intended message.
- Lead them through the **major** steps of your story.
- Point out interesting key facts and insights using **captions** and **annotations**

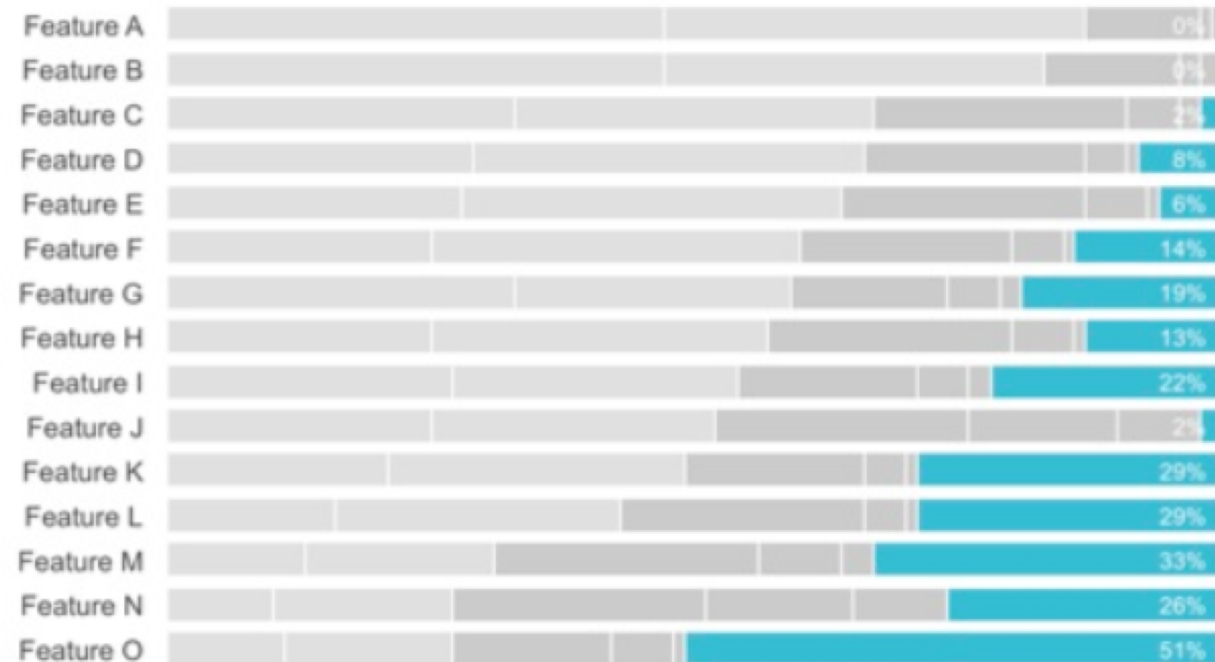
Don't Bury the Lead



User satisfaction varies greatly by feature

Product X User Satisfaction: Features

* Completely satisfied * Very satisfied * Somewhat satisfied * Not very satisfied * Not satisfied at all * Have not used

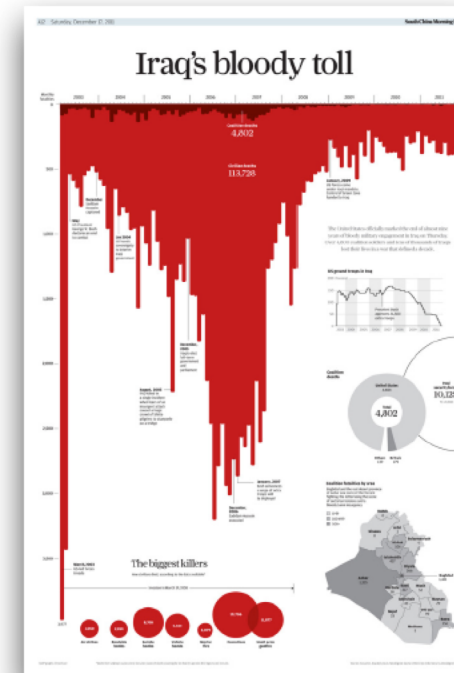
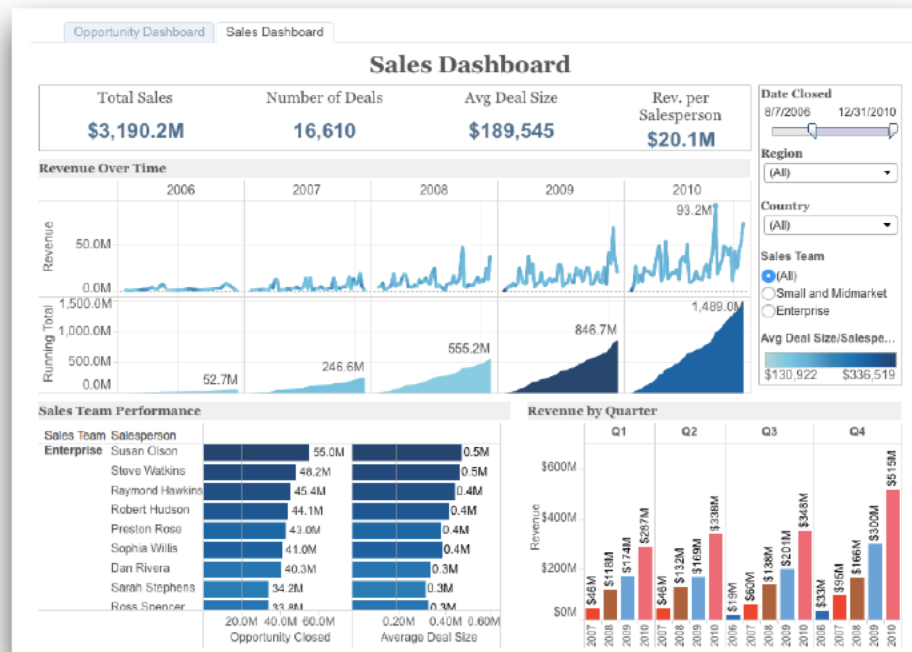


Feature O is least-used feature; what steps can we proactively take with existing users to increase use?

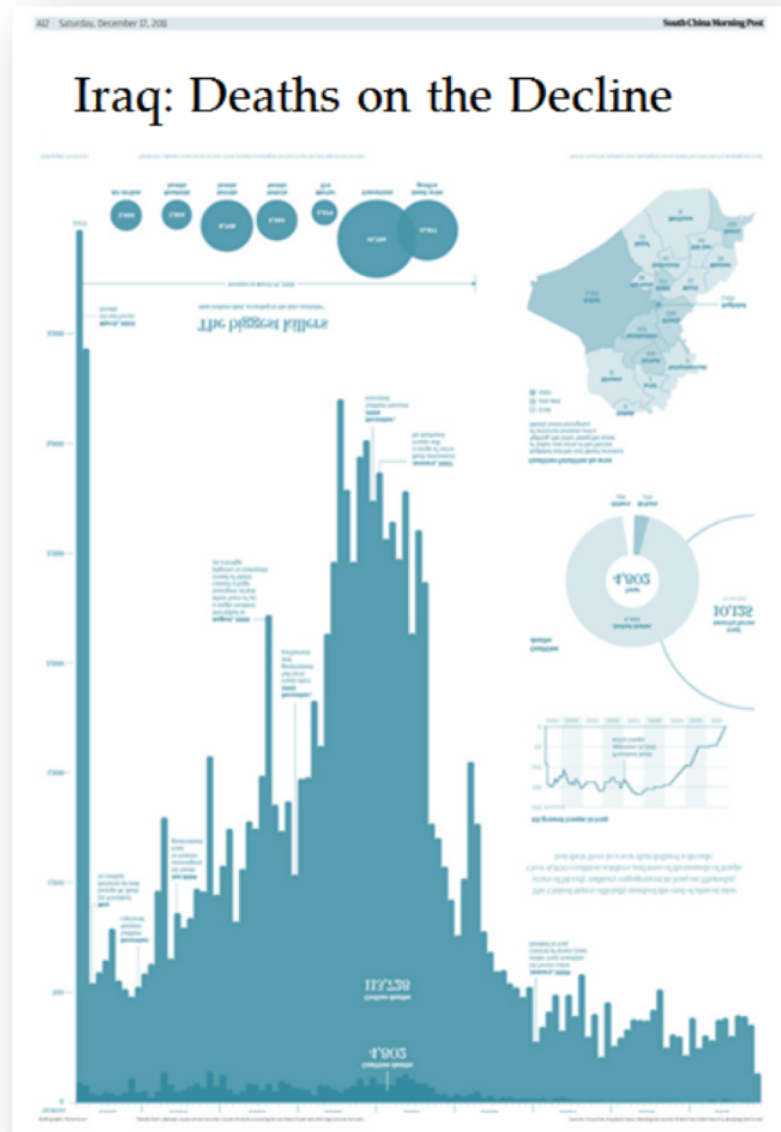
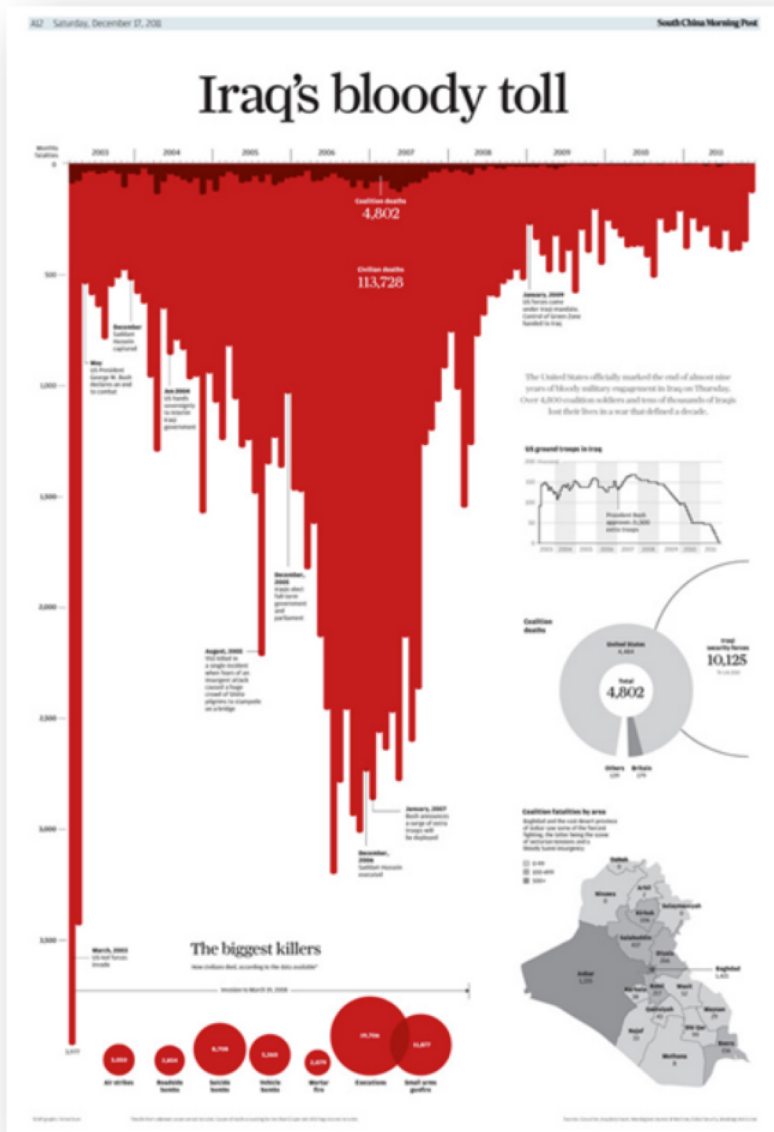
What is the message?

Exploratory
Neutral

Explanatory
Opinionated



Communication



Final Takeaways

- How you choose to display your data greatly influences how people interpret the data
- Humans are *visual, emotional* creations; make graphs that don't make others **feel** confused, insulted, etc.
- Your graphs should illicit good feelings and effectively convey your narrative

Suggested Python Packages

- Matplotlib
- Seaborn
- plotly
- ggplot

Further Good Examples

- <https://www.nytimes.com/> tends to have incredibly high-quality visualizations that convey information seamlessly
- <https://www.reddit.com/r/dataisbeautiful/>
- fivethirtyeight.com

Cases and deaths by state and county

This table is sorted by places with the most cases per 100,000 residents in the last seven days. Charts are colored to reveal when outbreaks emerged.

Cases		Deaths		Search counties	
	TOTAL CASES	PER 100,000	CASES IN LAST 7 DAYS	▼ PER 100,000	WEEKLY CASES PER CAPITA
					FEWER MORE
+ North Dakota MAP »	23,553	3,091	2,754	361	
+ South Dakota MAP »	24,418	2,760	2,853	322	
+ Wisconsin MAP »	139,941	2,403	17,769	305	
+ Montana MAP »	14,738	1,379	2,547	238	
+ Utah MAP »	77,618	2,421	6,675	208	
+ Iowa MAP »	92,584	2,934	6,394	203	
+ Nebraska MAP »	47,807	2,471	3,807	197	
Guam	3,586	2,128	331	196	
+ Arkansas MAP »	87,013	2,883	5,770	191	
+ Idaho MAP »	43,964	2,460	3,291	184	
Show all					

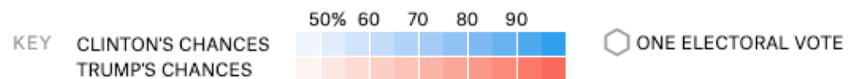
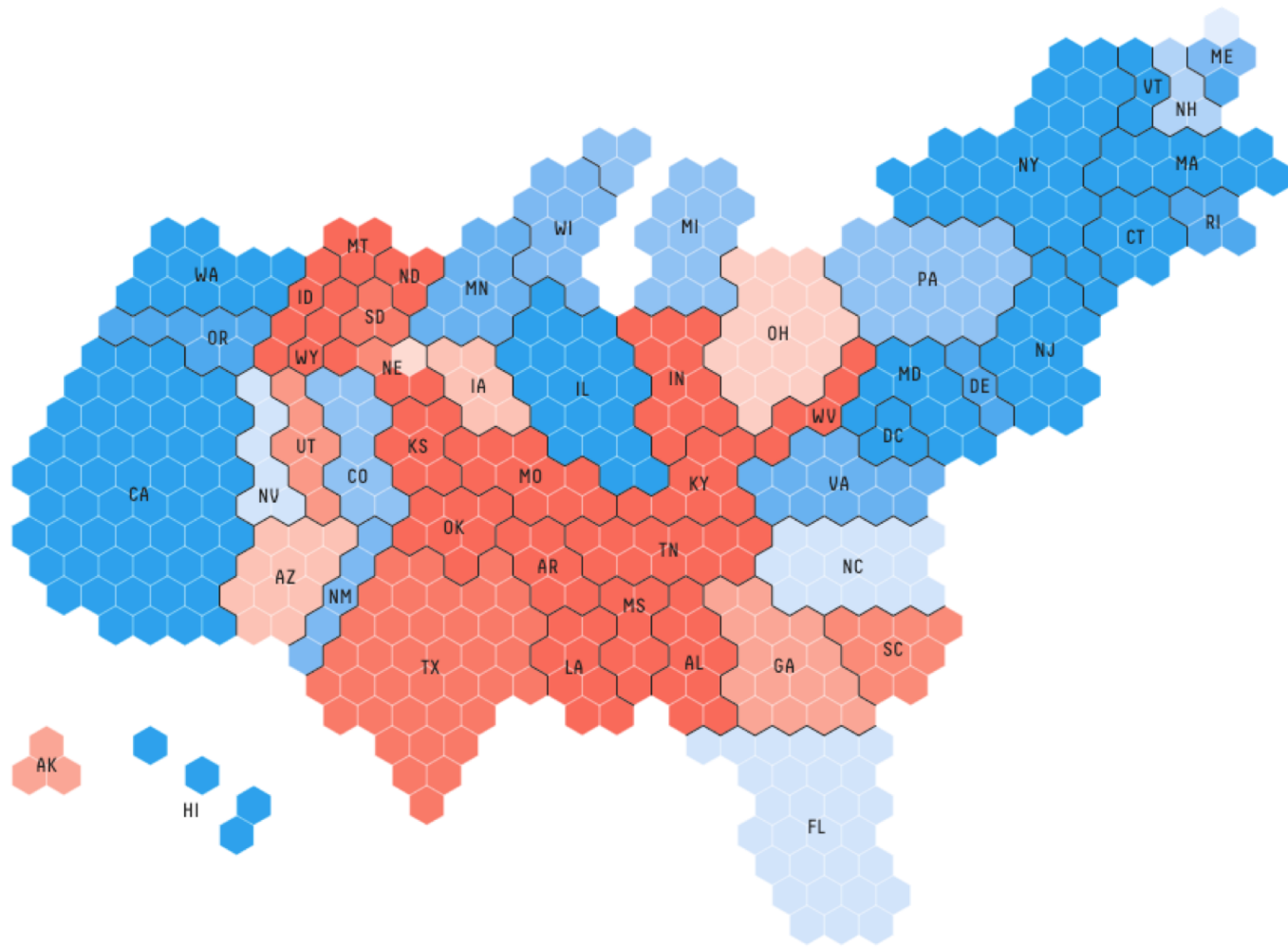
Where new cases are higher and staying high

States where new cases are higher had a daily average of at least 15 new cases per 100,000 people over the past week. Charts show daily cases per capita and are on the same scale. Tap a state to see detailed map page.



It's all about the 538 Electoral College votes

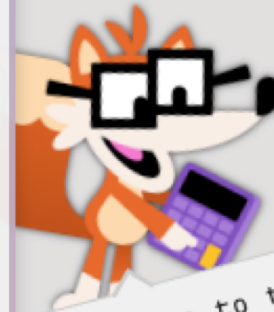
Here's a map of the country, with each state sized by its number of electoral votes and shaded by the leading candidate's chance of winning it.



<https://projects.fivethirtyeight.com/2016-election-forecast/>

Every outcome in our simulations

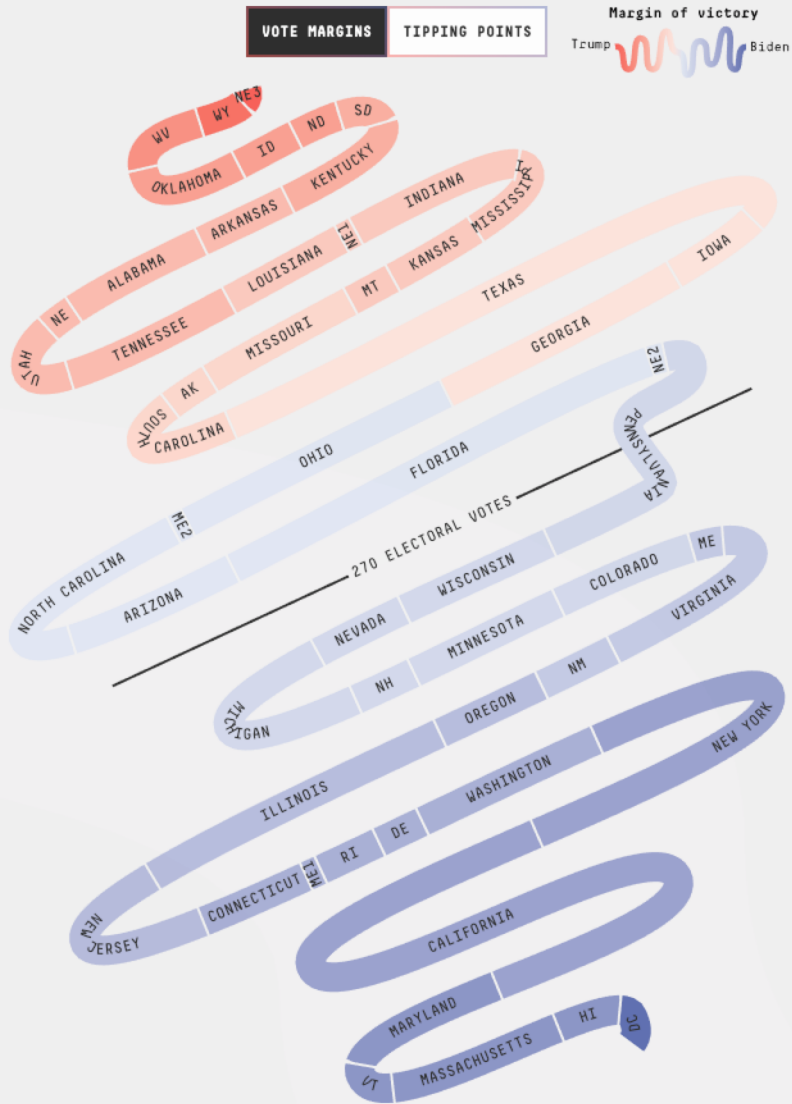
All possible Electoral College outcomes for each candidate, with higher bars showing outcomes that appeared more often in our 40,000 simulations



More bars to the right of the 270 line means more simulations where that candidate wins. Some of the bars represent really weird outcomes, but you never know!

The winding path to victory

States that are forecasted to vote for one candidate by a big margin are at the ends of the path, while tighter races are in the middle. Bigger segments mean more Electoral College votes. Trace the path from either end to see which state could put one candidate over the top.



Maine and Nebraska's congressional districts are shown separately because those states split their Electoral College votes, allotting some to the statewide winner and some to the winner of each district.

<https://projects.fivethirtyeight.com/2020-election-forecast/>

Exercise time!