



Northwestern  
University

# Recap Week 9





“The purpose of visualization  
is **insight**, not pictures”

- Ben Shneiderman

# #1 TO SEE



1	4	5	7	8	3	8	3	2
6	3	2	6	1	5	3	8	3
4	6	7	8	8	8	7	5	7
6	8	3	4	5	5	6	8	9
2	1	4	9	6	4	2	5	6

# #1 TO SEE



1	4	5	7	8	3	8	3	2
6	3	2	6	1	5	3	8	3
4	6	7	8	8	8	7	5	7
6	8	3	4	5	5	6	8	9
2	1	4	9	6	4	2	5	6

# #2 TO REMEMBER



Row Labels	Count of Partner Institution
Kenya	21
Ghana	15
Liberia	13
Rwanda	9
Nepal	8
Ethiopia	8
Uganda	7
Tanzania	5
Indonesia	4
Ethiopia	2
Colombia	2
Namibia	2
India	2
Guyana	2
Sierra Leone	2
Bhutan	2
Kyrgyzstan	1
Tanzania	1
Serbia	1

# #2 TO REMEMBER



DIVERSITY OF IMPACT: In 2018 and 2019, AWB worked on **32 projects** across **16 countries**.  
Each project and each country has its own unique story.

Hover over each country to [learn more](#). 

Size =   
# of projects by country



© 2021 Mapbox © OpenStreetMap

# #3 TO PERSUADE



## The Persuasive Power of Data Visualization

Anshul Vikram Pandey, Anjali Manivannan,  
Oded Nov, Margaret Satterthwaite, and Enrico Bertini, *Member, IEEE*

Table 4. Persuasion likelihood of participants (*who answered all the attention check questions correctly*) in the NWP category.

### Corporate Income Tax

Treatment	Total	(+) change	No change	(-) change
Charts	54	36/54 (66.67%)	18/54 (33.33%)	0/54 (0%)
Tables	45	20/45 (44.44%)	22/45 (48.88%)	3/45 (6.66%)

### Incarceration

Treatment	Total	(+) change	No change	(-) change
Charts	50	36/50 (72%)	13/50 (26%)	1/50 (2%)
Tables	56	27/56 (48.21%)	26/56 (46.43%)	3/56 (5.36%)

### Video Games

Treatment	Total	(+) change	No change	(-) change
Charts	55	35/55 (63.63%)	19/55 (34.54%)	1/55 (1.81%)
Tables	63	23/63 (36.51%)	38/63 (60.32%)	2/63 (3.17%)



# DATA VIZ HISTORY





# PRE-HISTORY

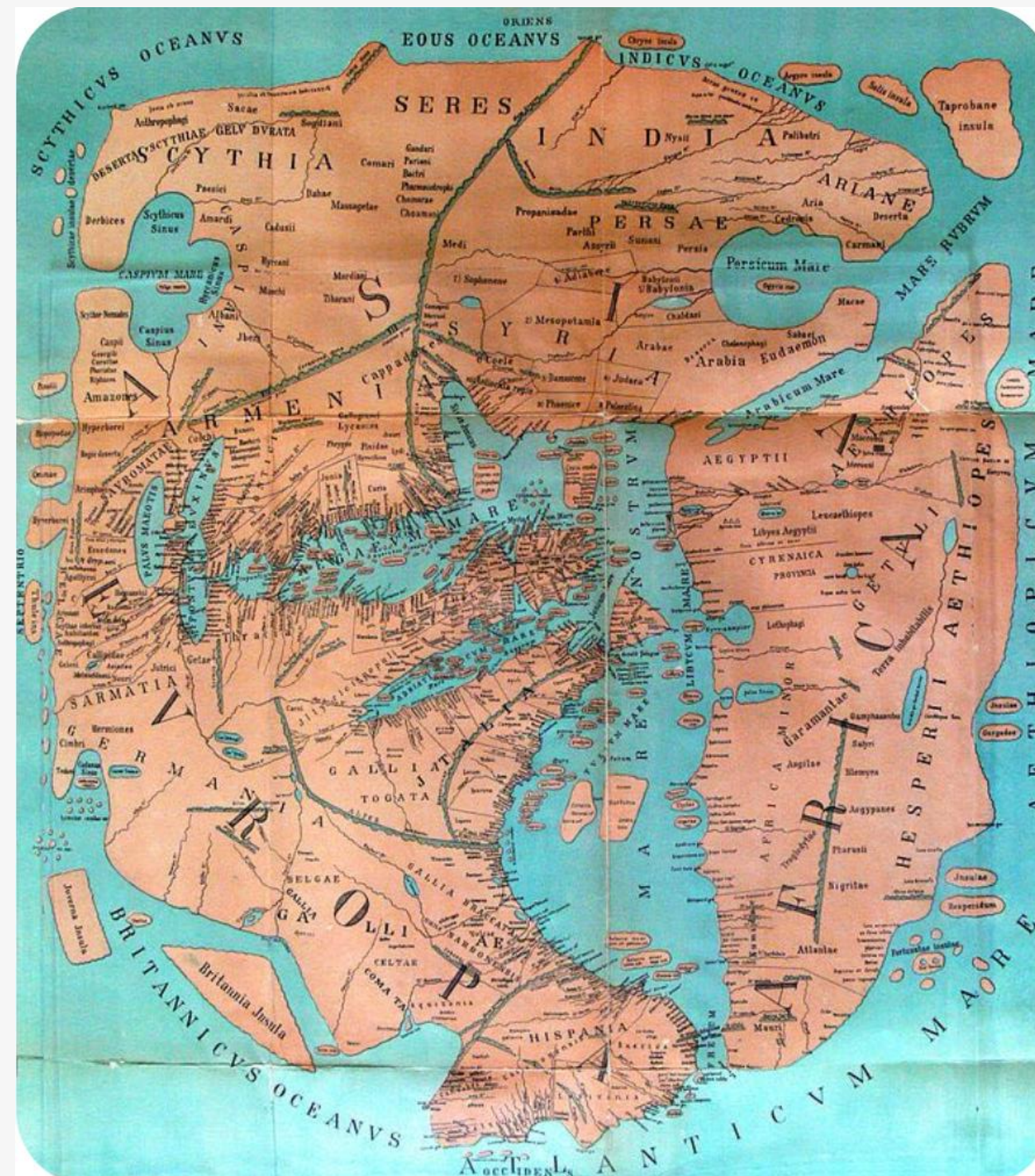


- Babylonians, Egyptians, Greeks and Chinese
- Clay, papyrus

*Babylonian world map (600 BC)*



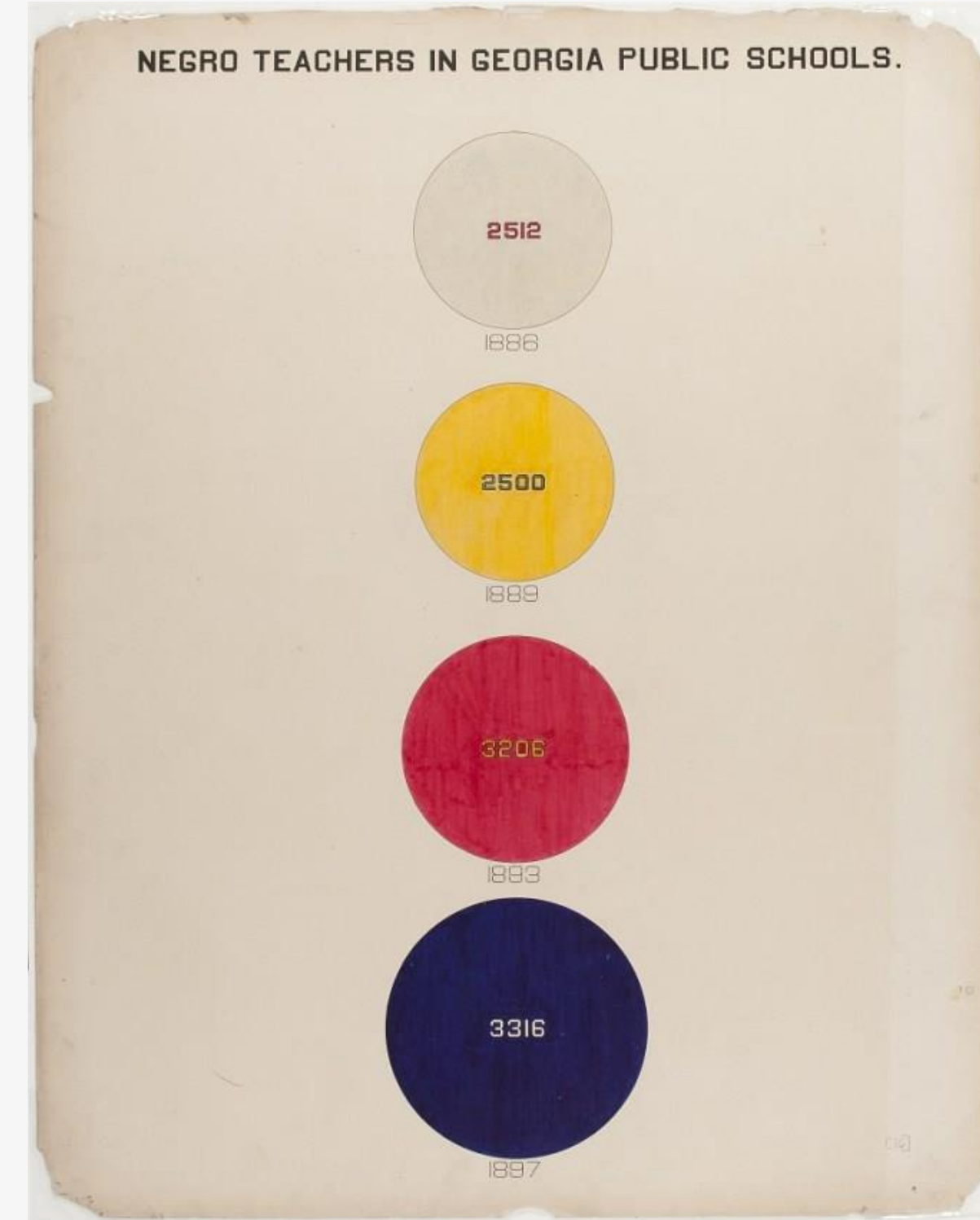
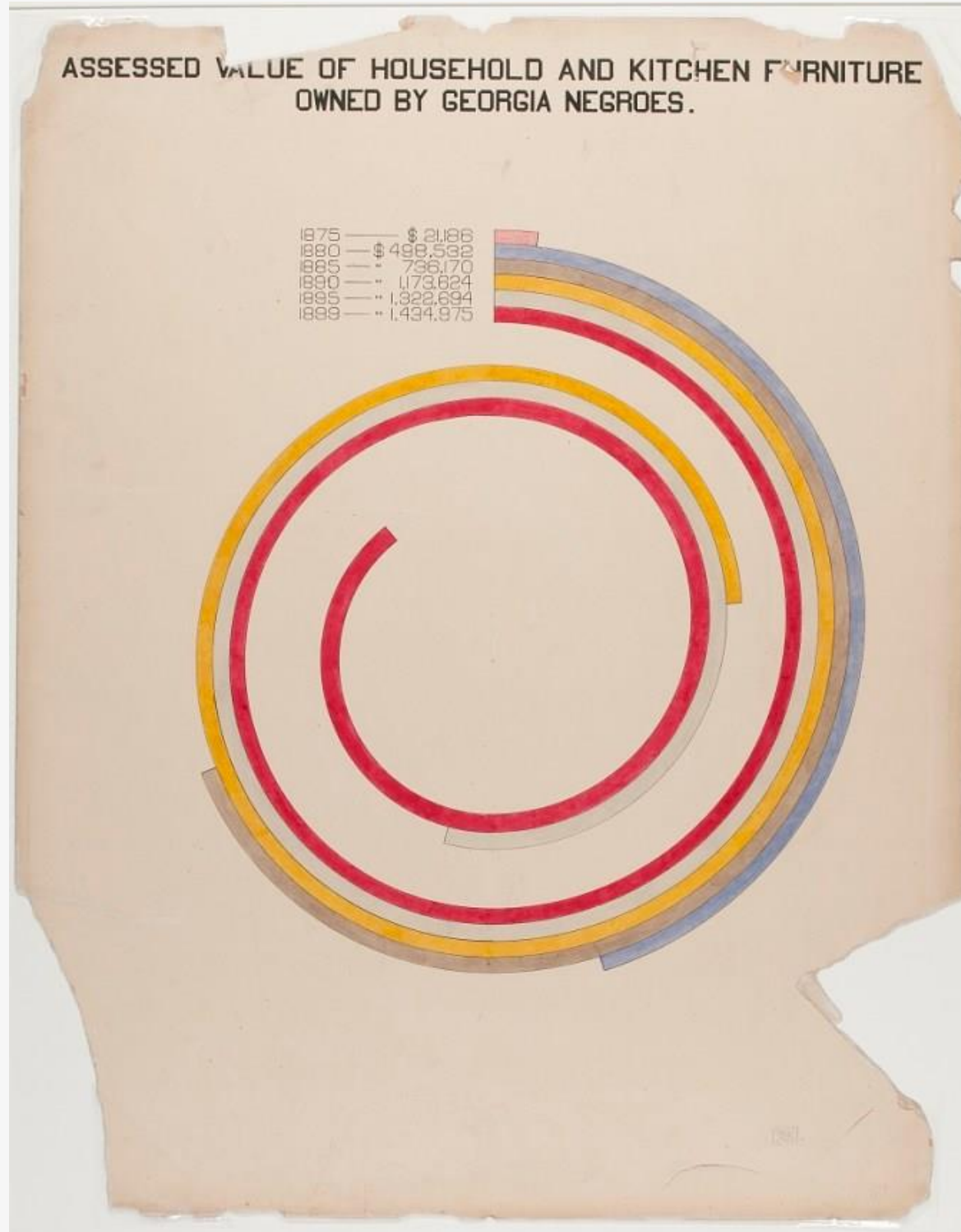
# MAPS (1-2 AD)



1st century AD Rome



# W. E. B. DU BOIS (1868-1963)

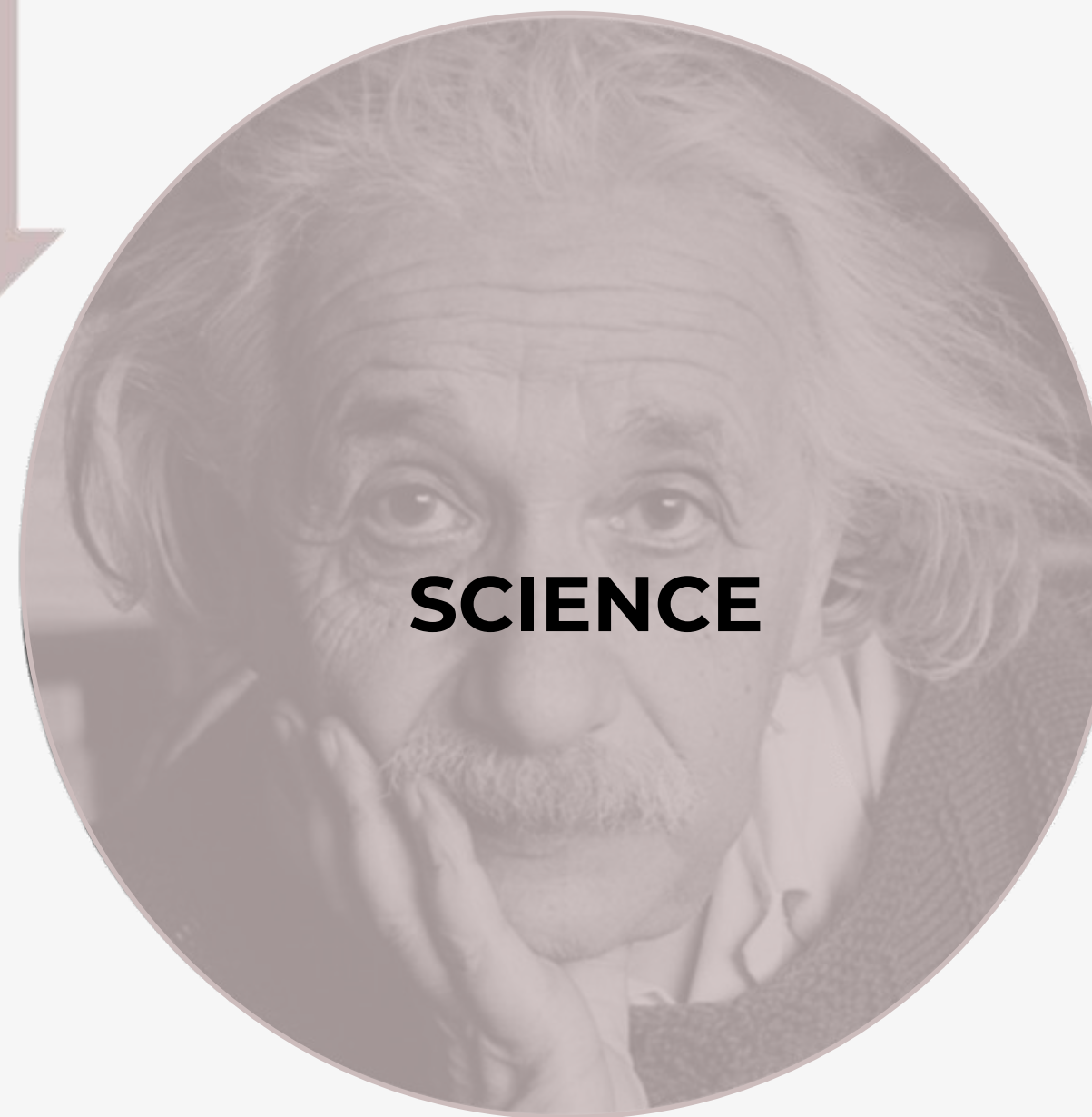




# Picture Yourself Somewhere Here

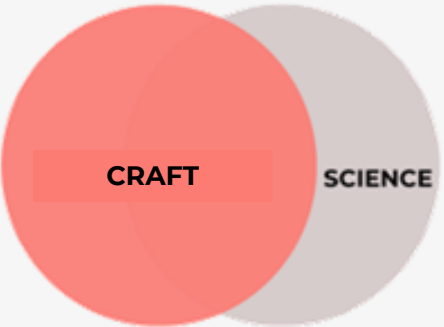


**CRAFT**



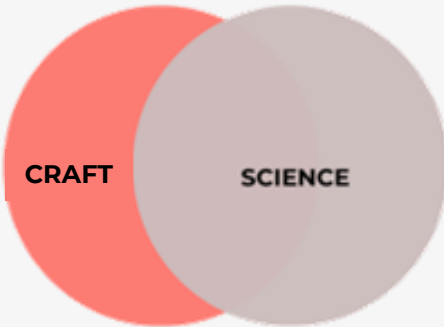
**SCIENCE**

JOURNALISM



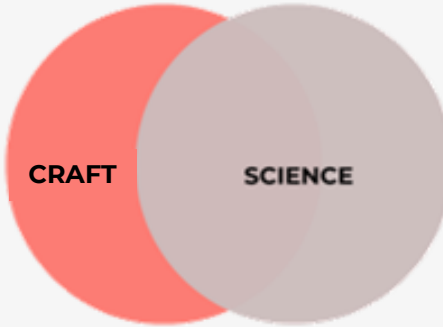
**BEAUTY**  
**UNDERSTANDING**  
IMPLICATION

BUSINESS DASHBOARDS  
(EXPLORATORY)



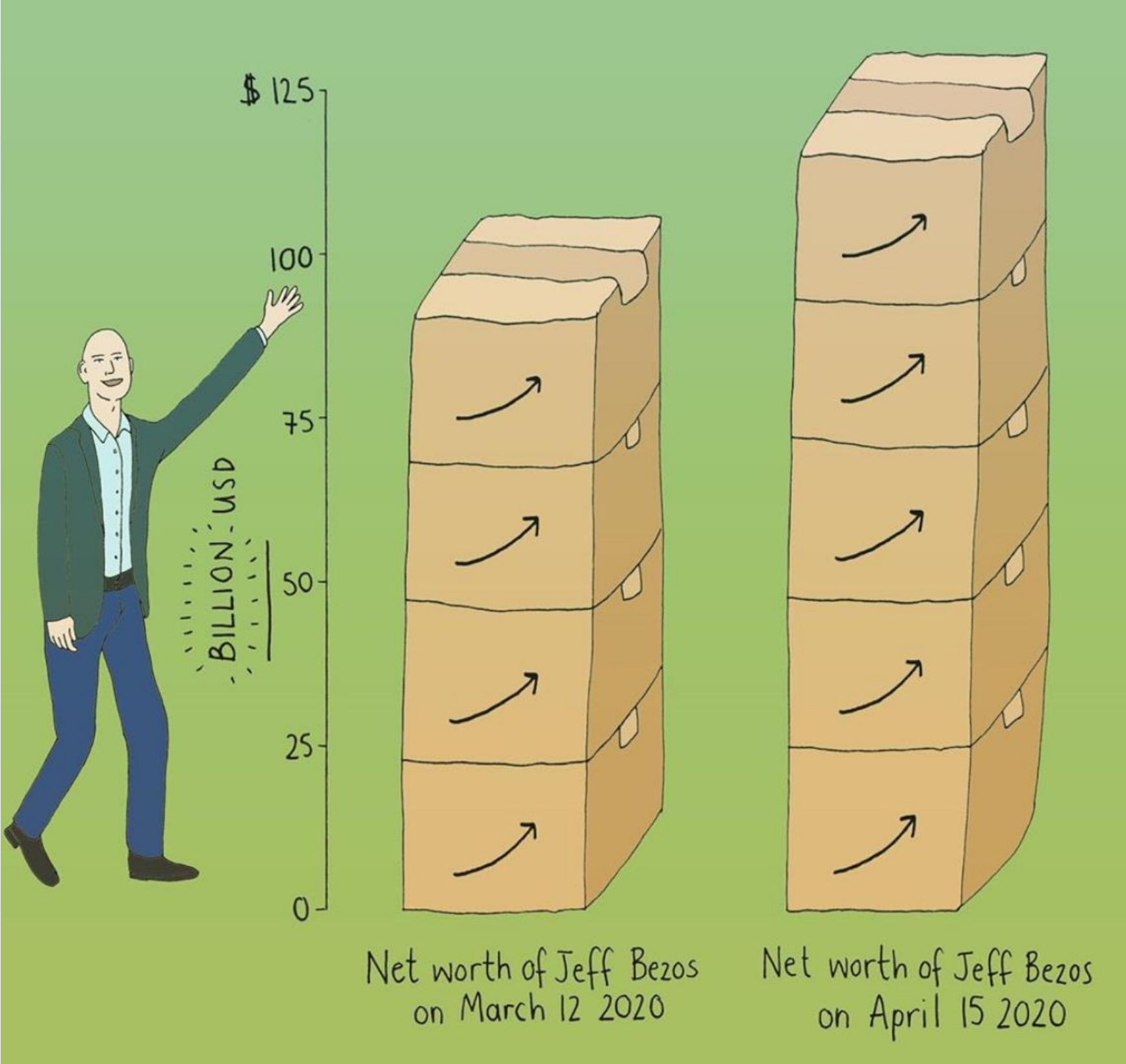
**UNDERSTANDING**  
IMPLICATION  
**BEAUTY**

BUSINESS DATA VISUALIZATION  
(EXPLANATORY)

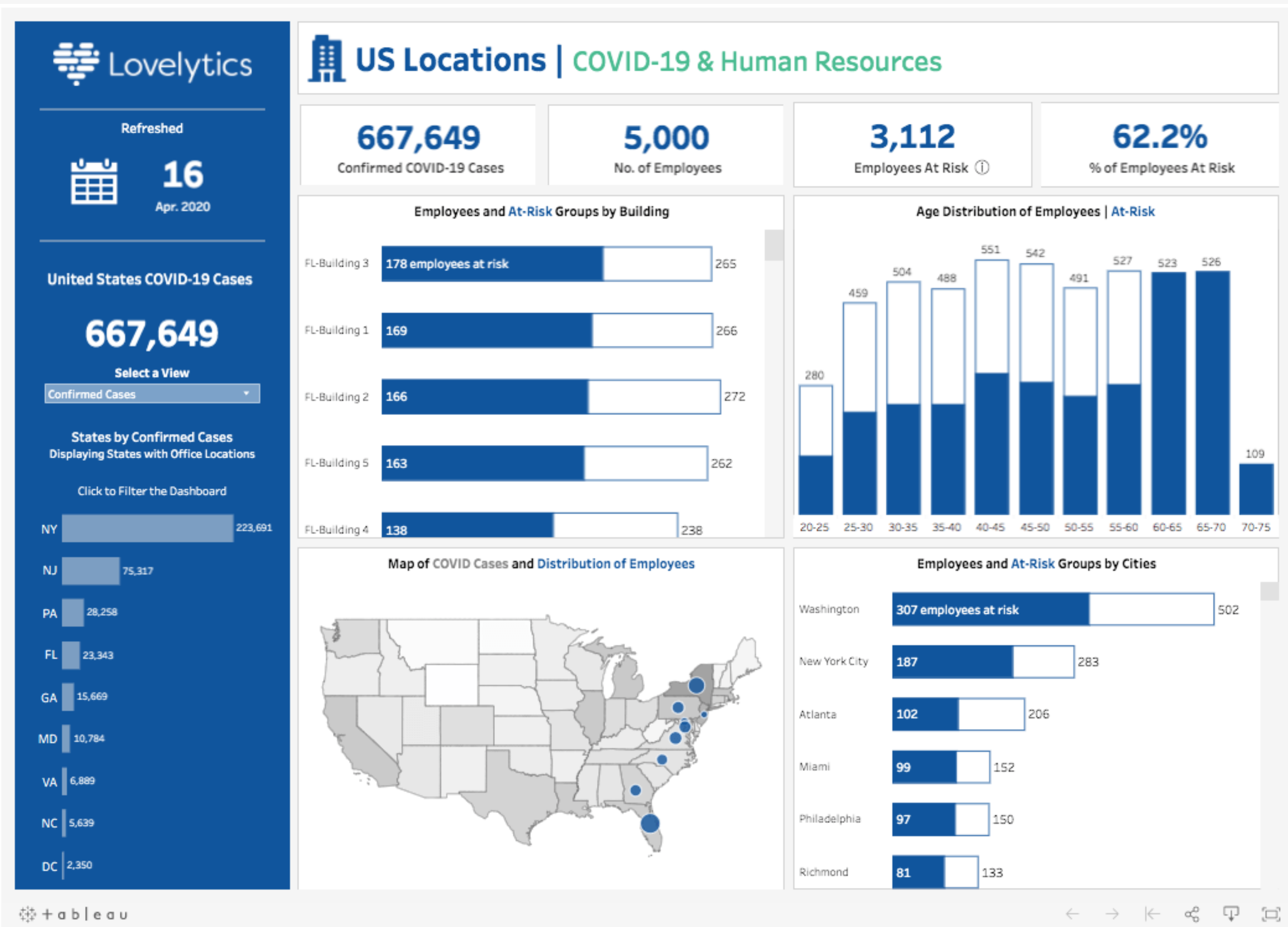


**IMPLICATION**  
**UNDERSTANDING**  
**BEAUTY**





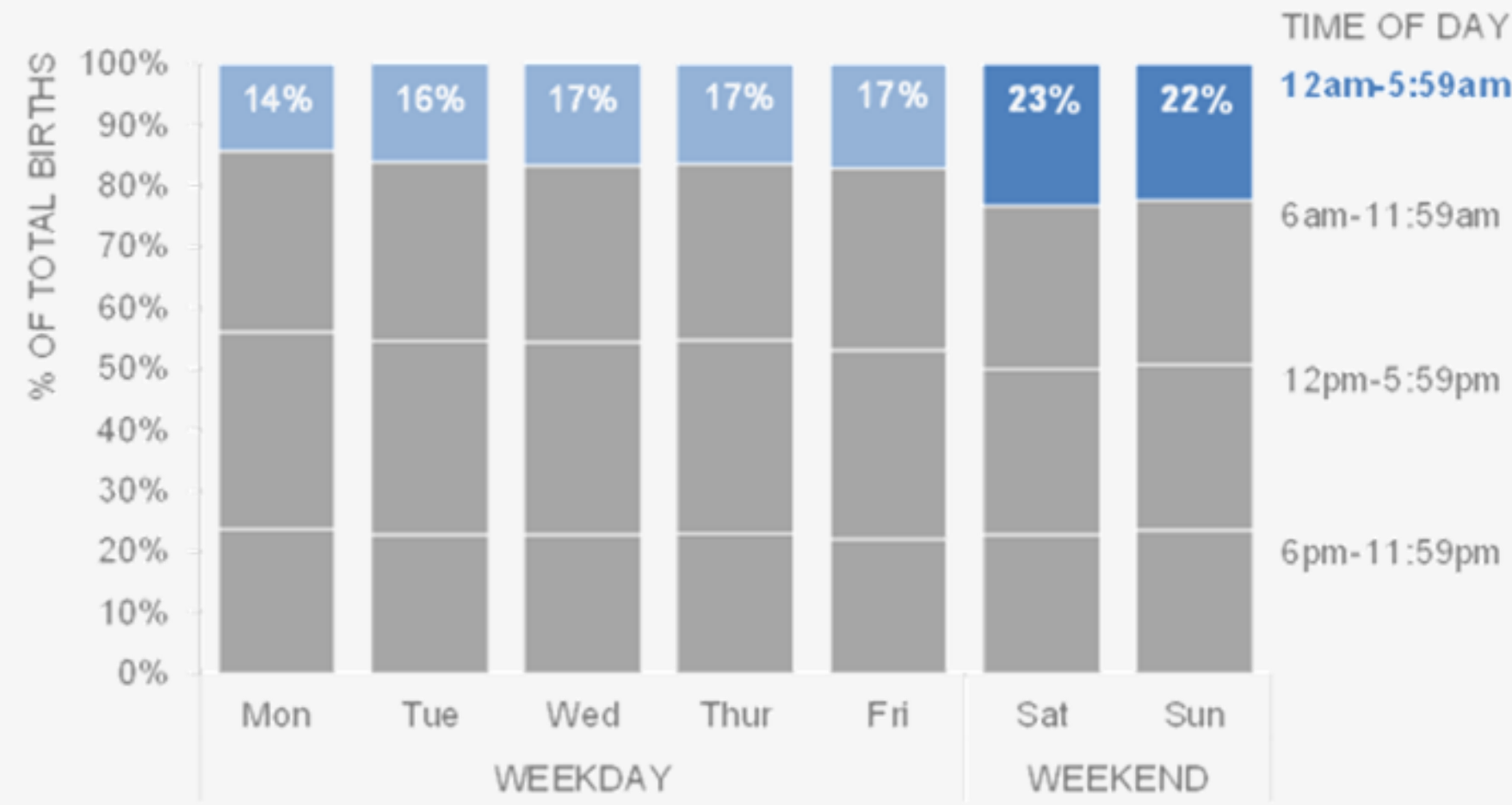
Author: Mona Chalabi





# When babies are born

Weekend deliveries are more likely to be in early morning, compared to weekdays

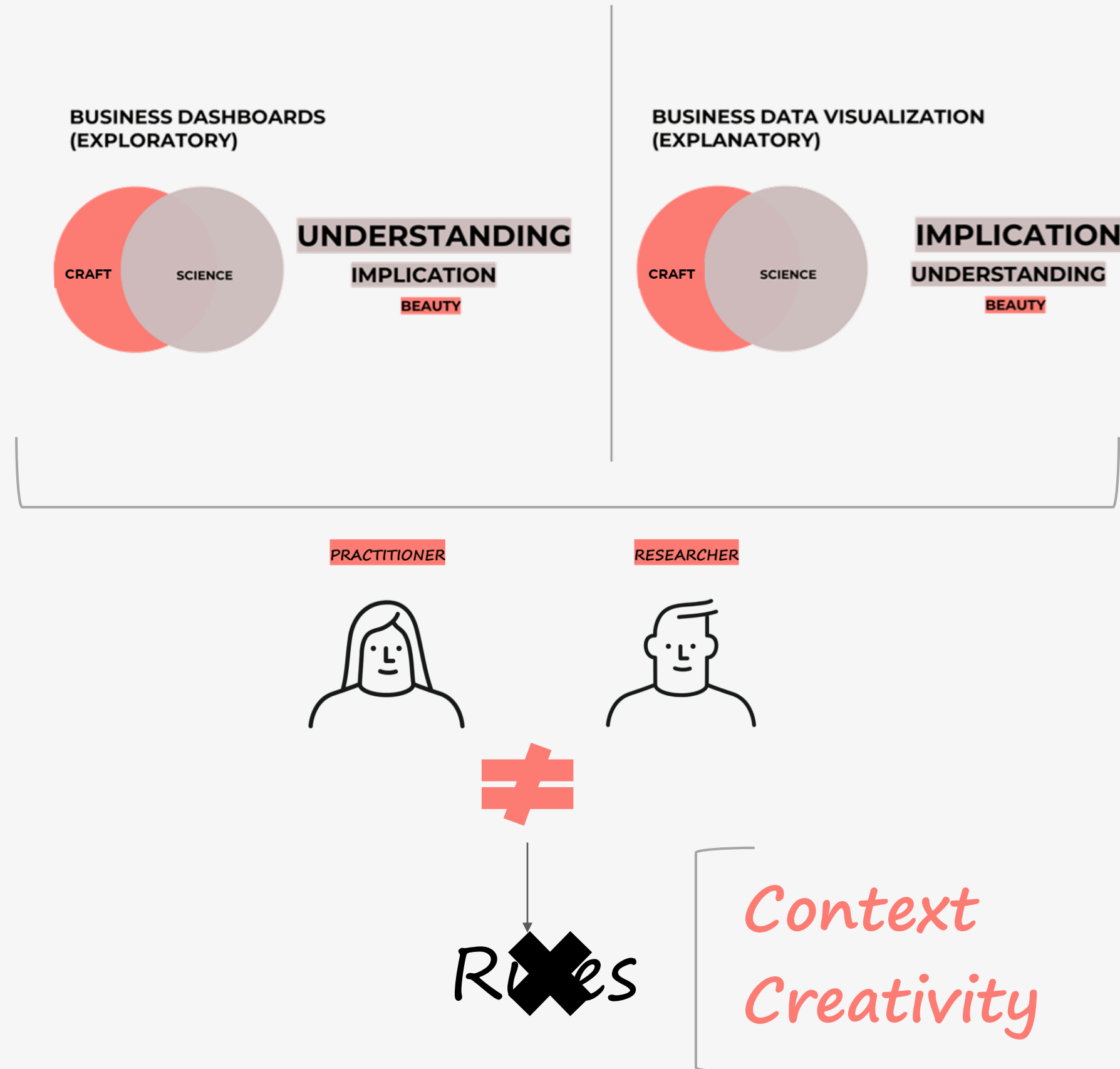


Data source: CDC (National Vital Statistics Reports, Vol. 67, No. 1, January 31, 2018)

Source: [www.storytellingwithdata.com](http://www.storytellingwithdata.com)



# Rules in Data Visualization





Iconic  
memory

Working  
memory

Long-term  
memory

## PREATTENTIVE PROCESSING

- Very Fast
- Attributes can be used to capture attention



Iconic  
memory

Working  
memory

Long-term  
memory

ATTENTIVE  
PROCESSING

- Temporary
- Limited capacity (3-4 chunks of info)



BEFORE

Personal Care Aide Jobs Almost Triple in a Decade

The graph below shows the seven jobs that experienced growth of over 100% in the last 10 years.

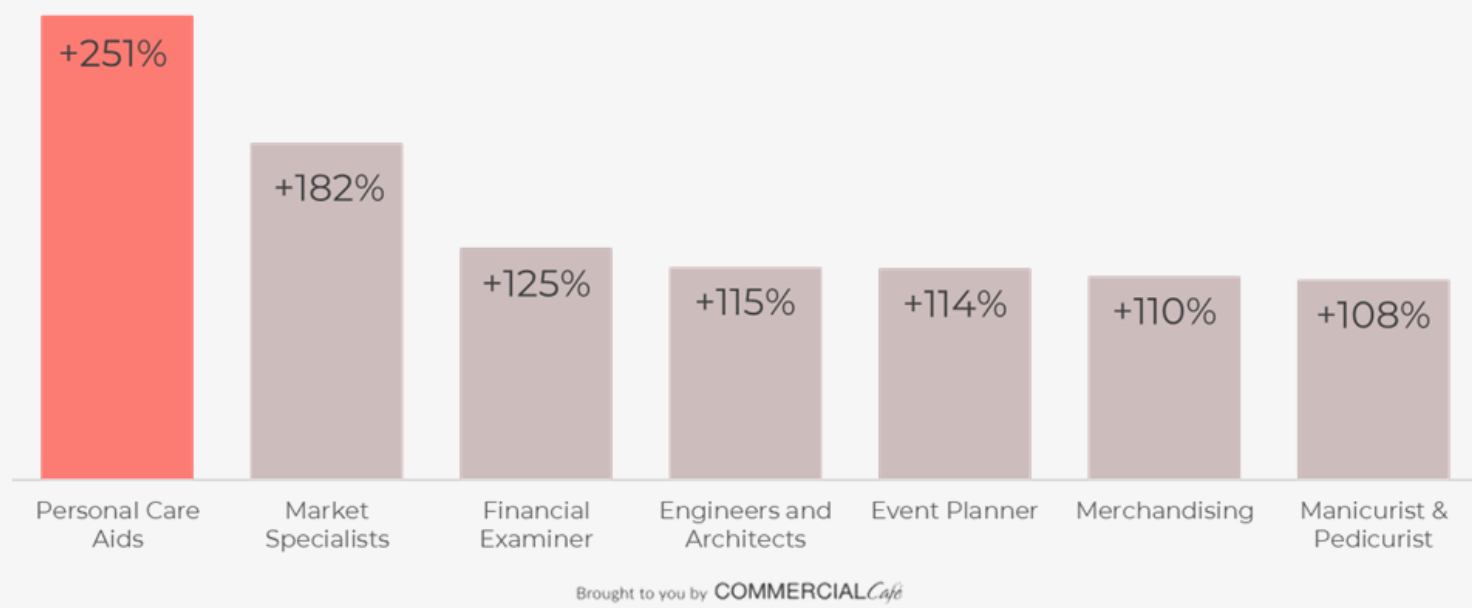


Personal Care Aide jobs rose 251% in the last 10 years, reaching over 2.2 million jobs. As the US population ages and the Baby Boomer generation retires, more jobs in healthcare will continue to be needed.

AFTER

Personal Care Aide Jobs Almost Tripled in the Last Decade

Top seven jobs that experiences growth over 100% in the last 10 years

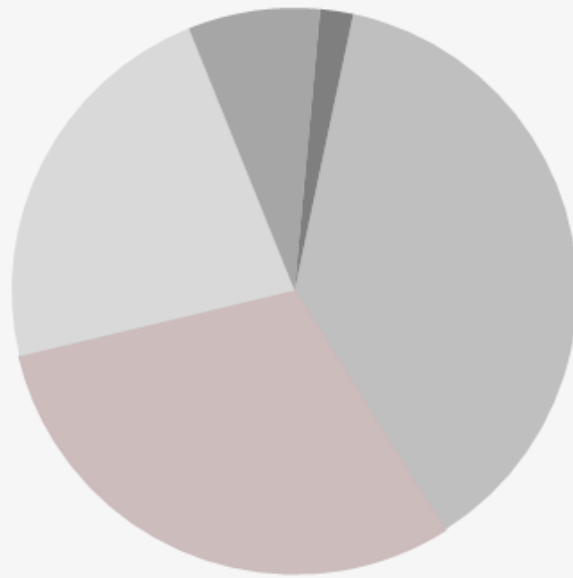


Personal Care Aide jobs rose 251% in the last 10 years, reaching over 2.2 million jobs. As the US population ages and the Baby Boomer generation retires, more jobs in healthcare will continue to be needed.

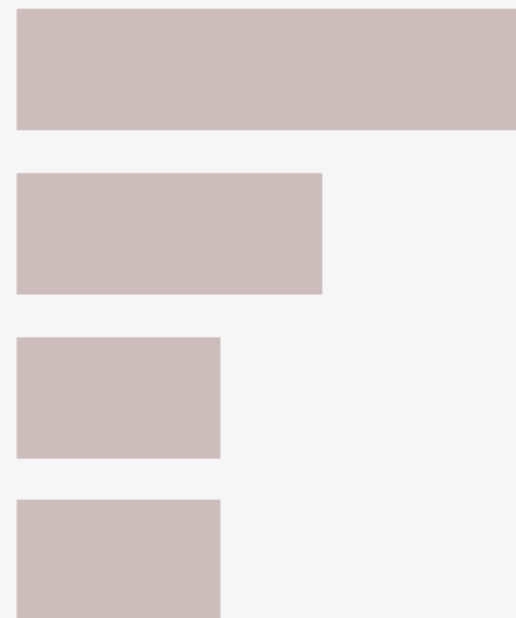
# LONG-TERM MEMORY



pie chart



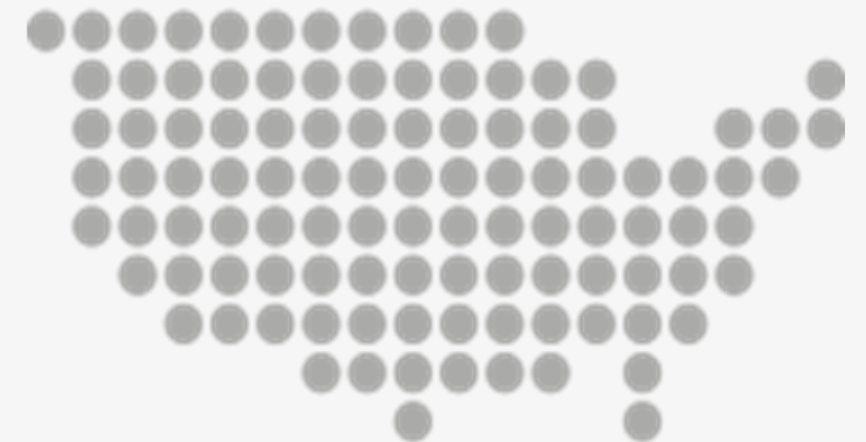
bar chart

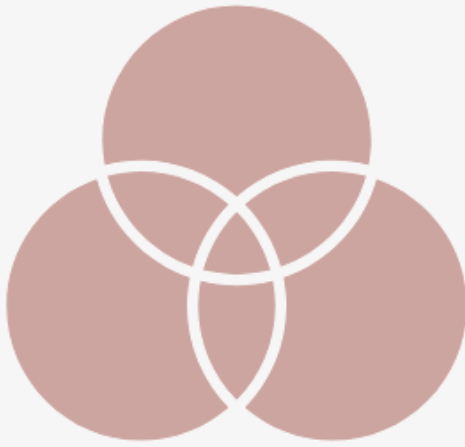


line chart

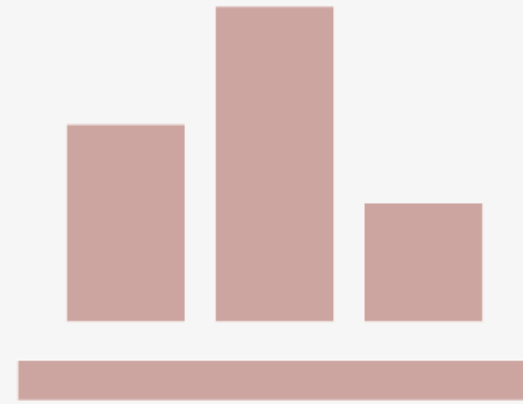


map

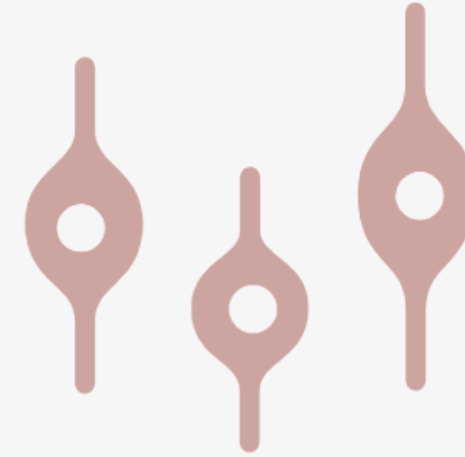




RELATIONSHIP



COMPARING CATEGORIES



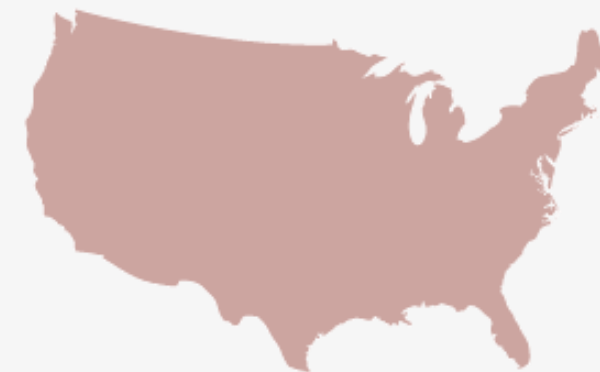
DISTRIBUTION



TIME

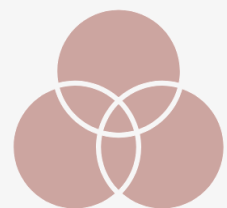


PART-TO-WHOLE



GEOSPATIAL





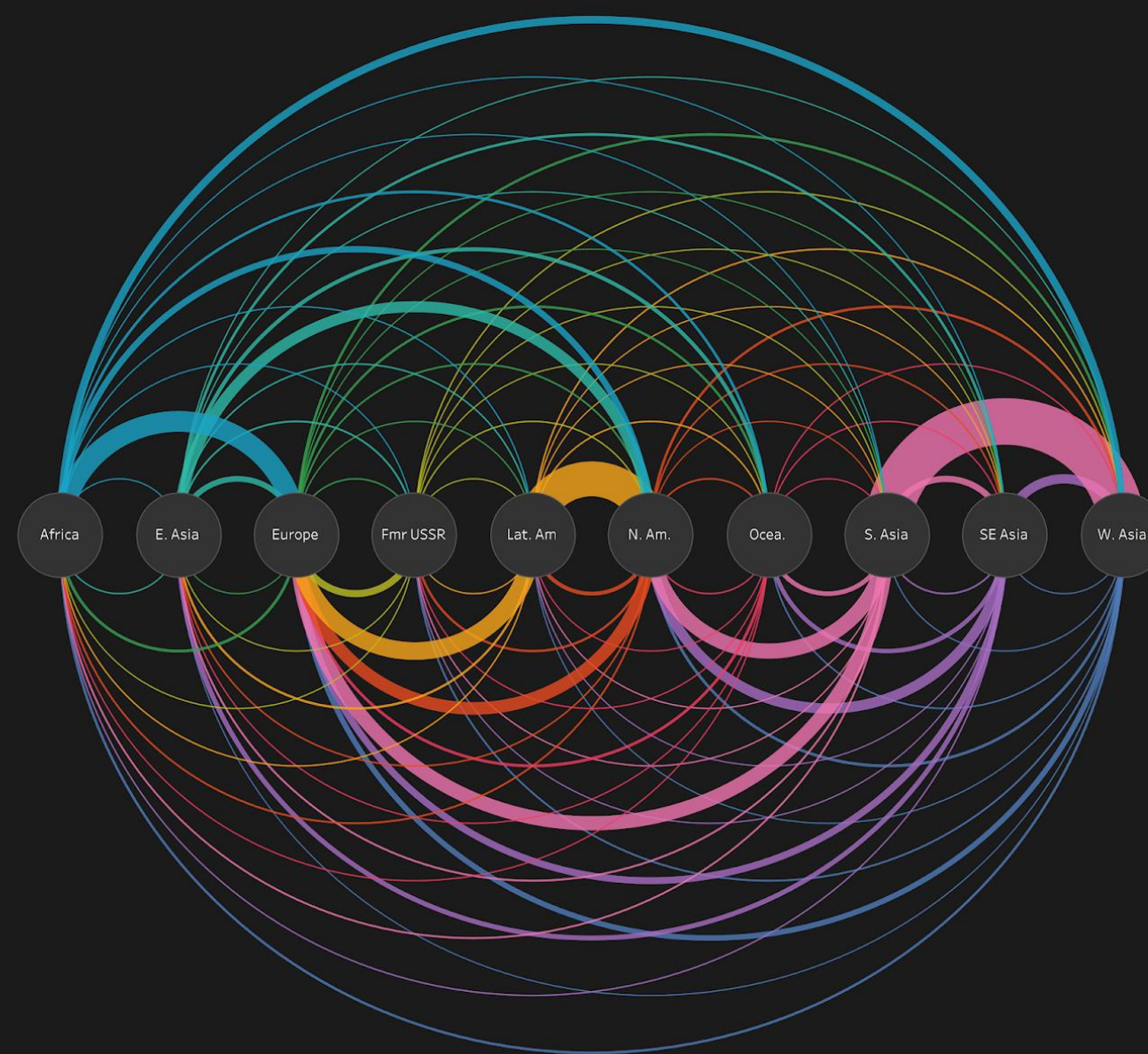
RELATIONSHIP



# Arc Sankey

## GLOBAL MIGRATION

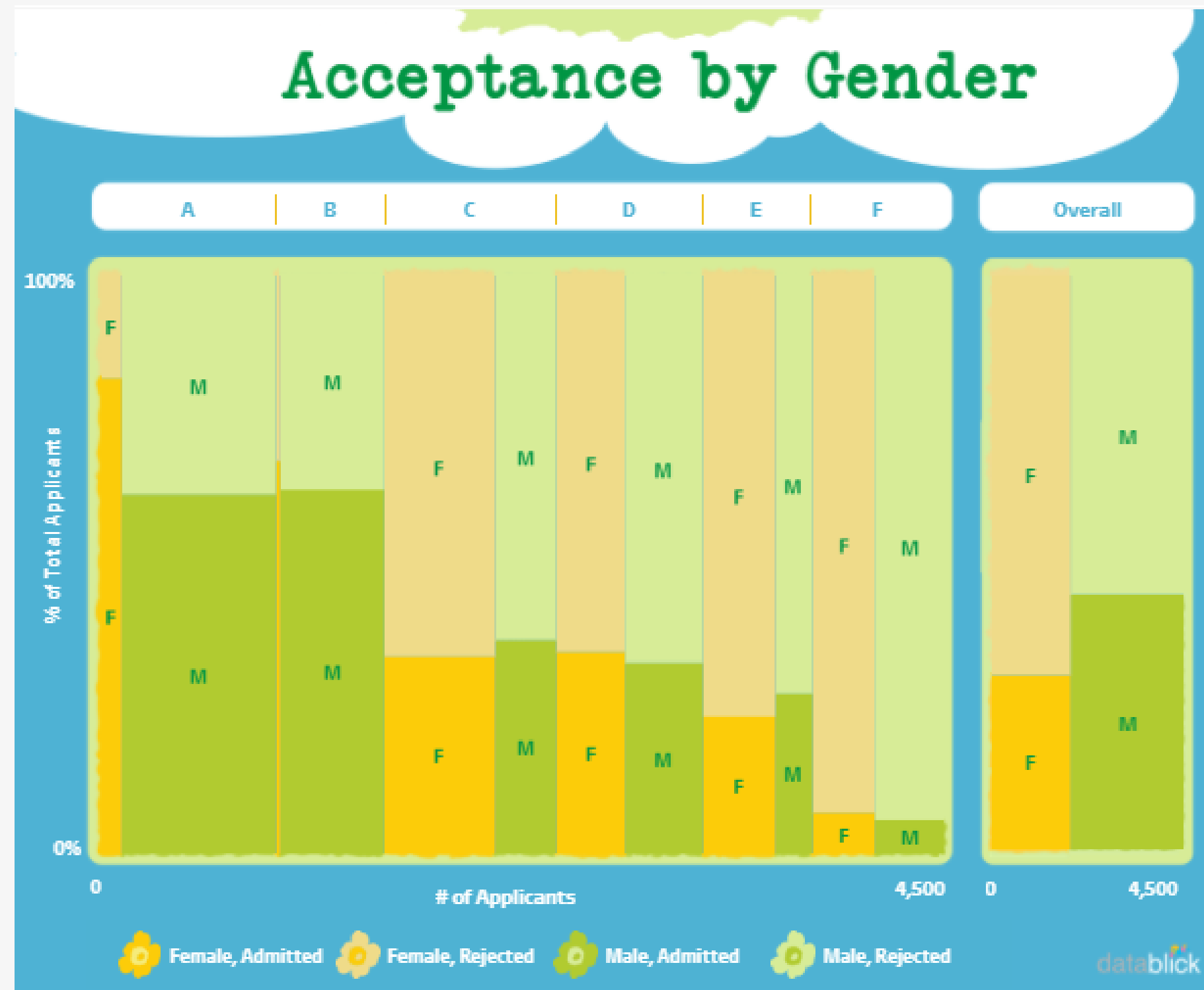
2005-2010



Data: Guy J. Abel and Nikola Sander (2014). Quantifying Global International Migration Flows. Science, 343 (6178)

Source: <https://www.flerlagetwins.com/2019/10/arc-sankey.html>

# Marimekko







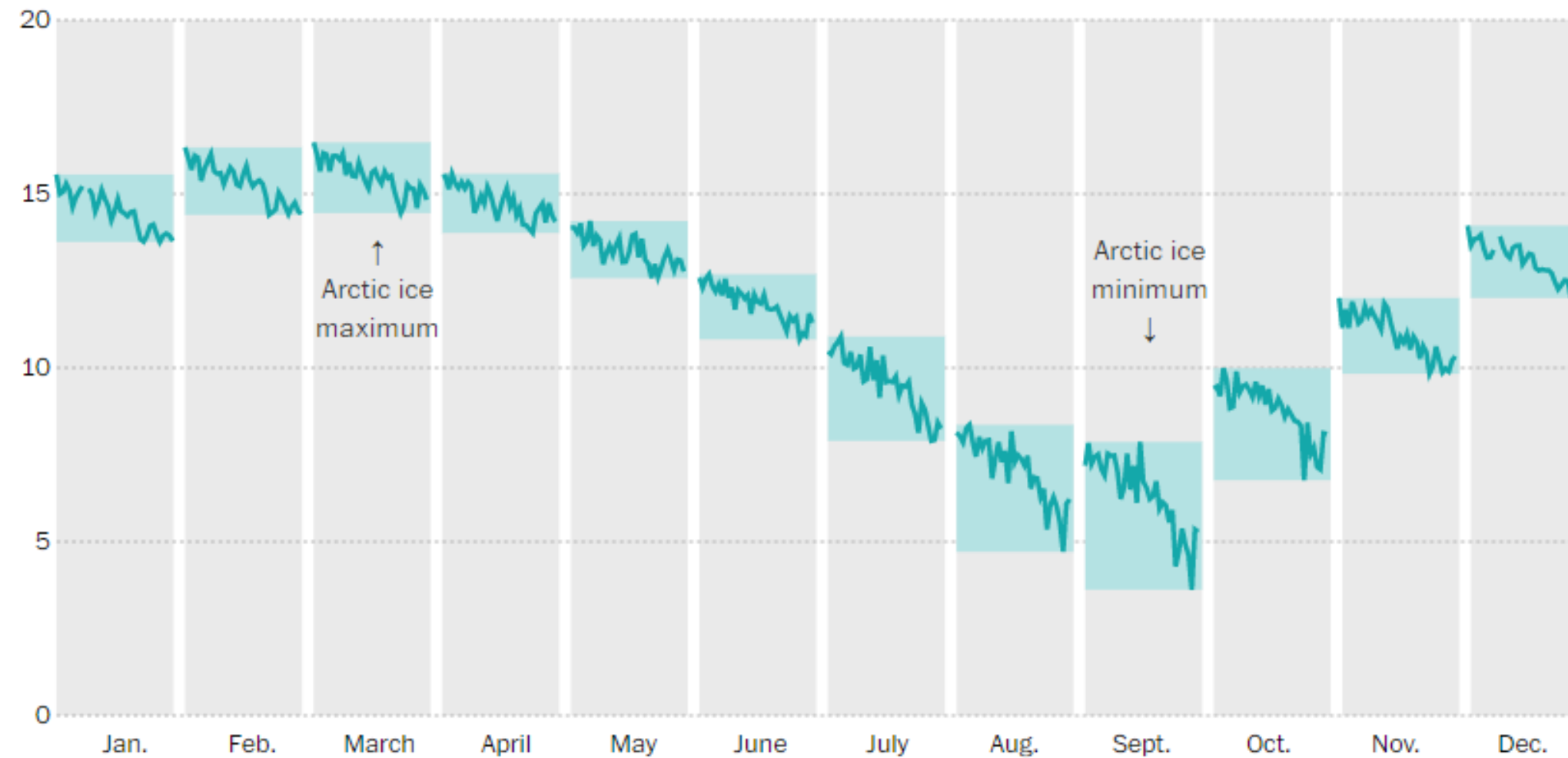
TIME



# Cycle Graph

## Monthly levels of ice extent, 1979 to 2015, in millions of square kilometers

Arctic sea-ice extent has experienced an unmistakable downward trend in every single month since 1979.



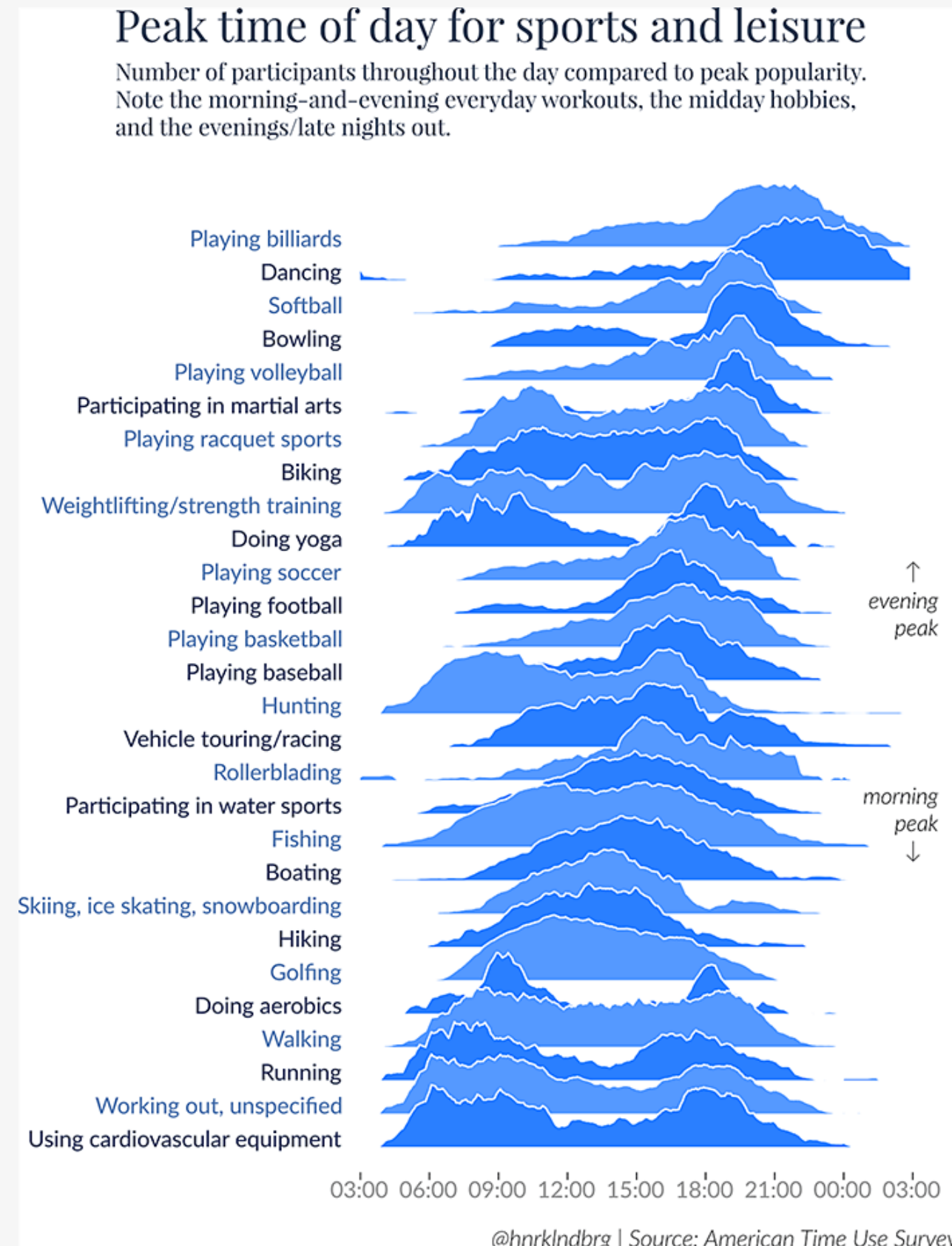
Source: <https://www.washingtonpost.com/graphics/national/arctic-ice-2015/>



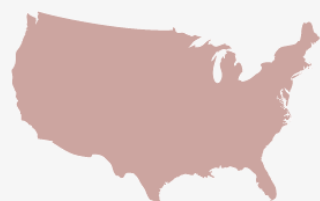
TIME



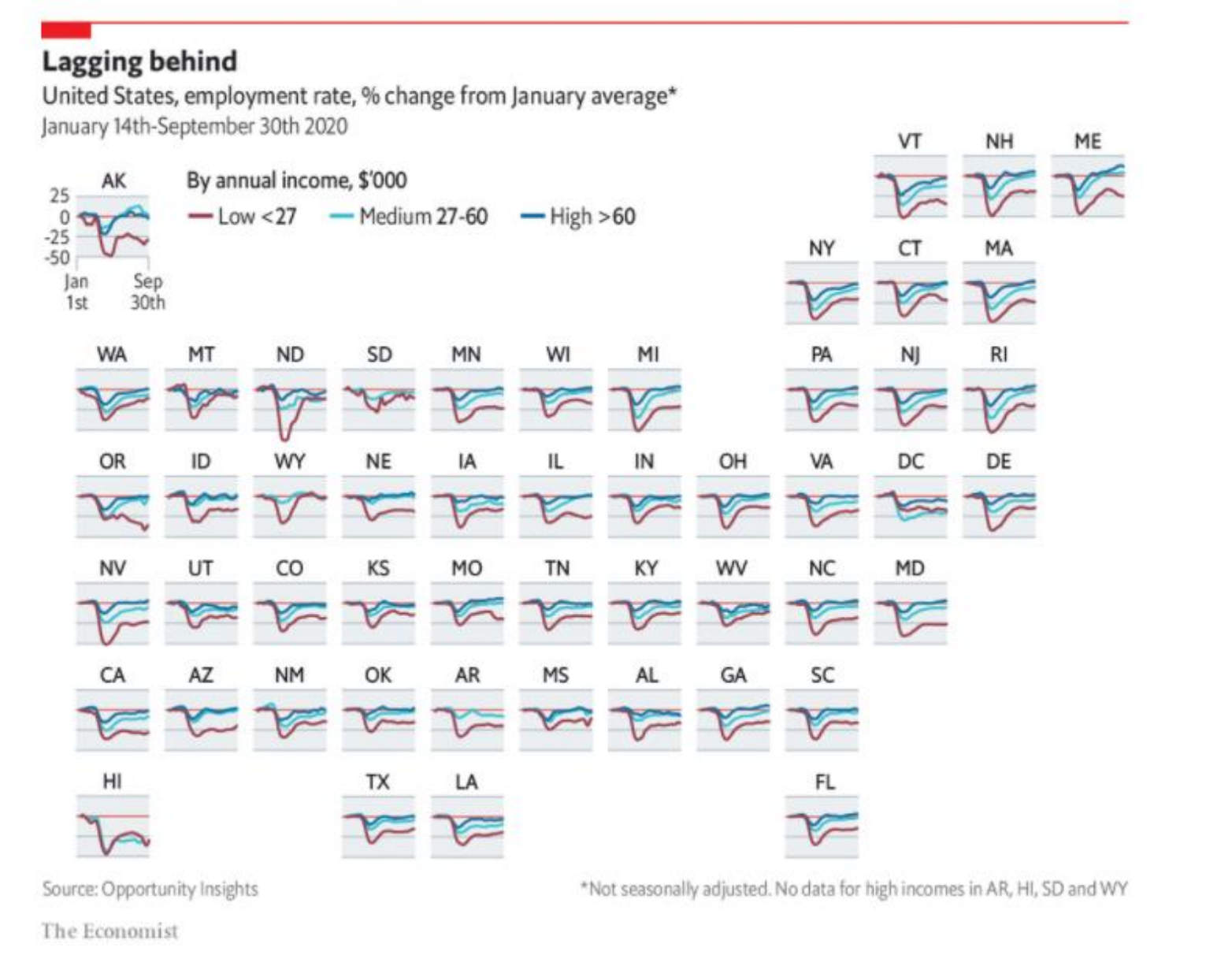
# Joy (Ridgeline) Plot



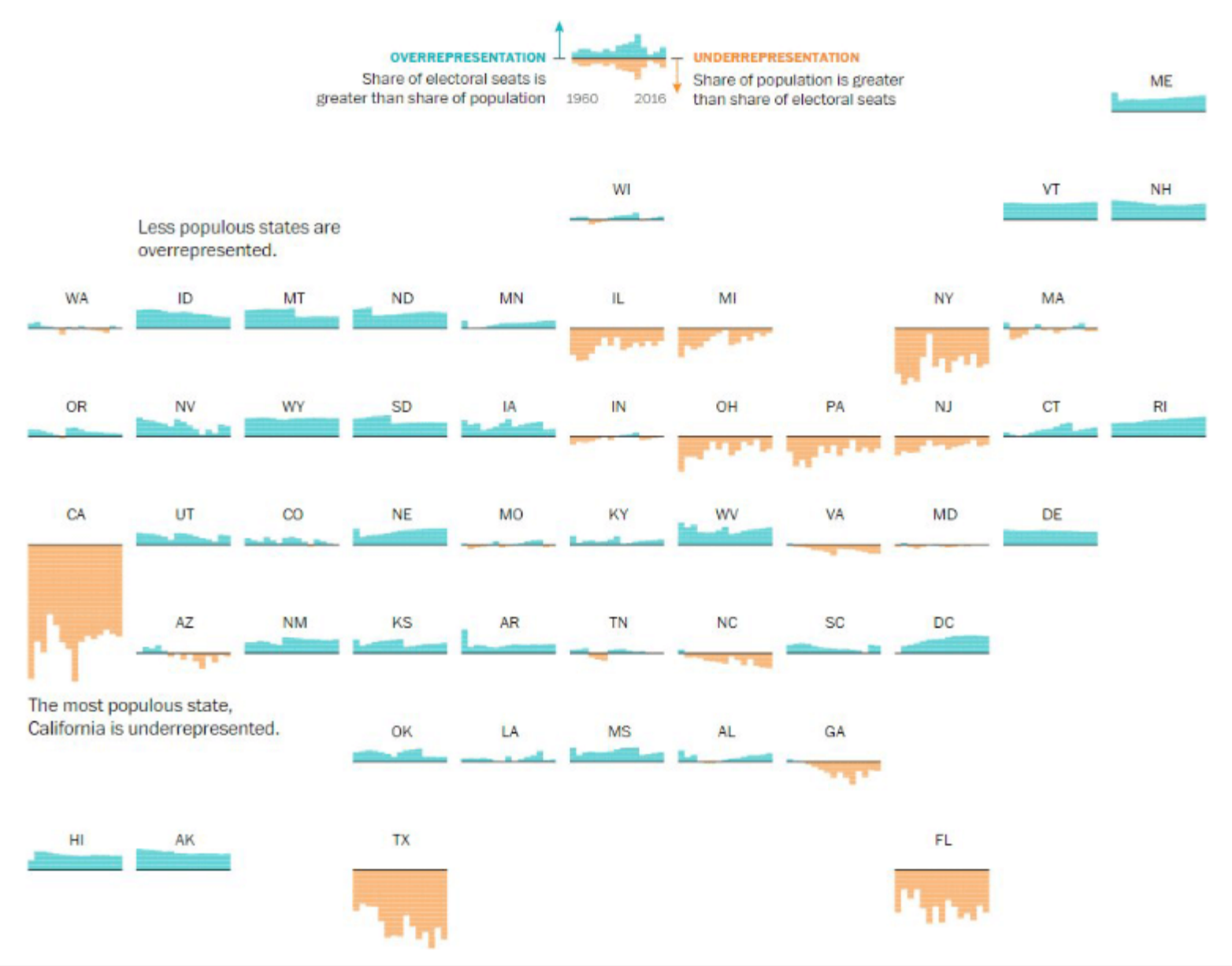
Source: <https://eagereyes.org/blog/2017/joy-plots>



# Tile Grid Map



Source: <https://www.economist.com/graphic-detail/2020/12/01/the-recovery-of-low-wage-jobs-in-america-from-covid-19-has-halted>



Source: <https://www.washingtonpost.com/graphics/politics/how-fair-is-the-electoral-college/>

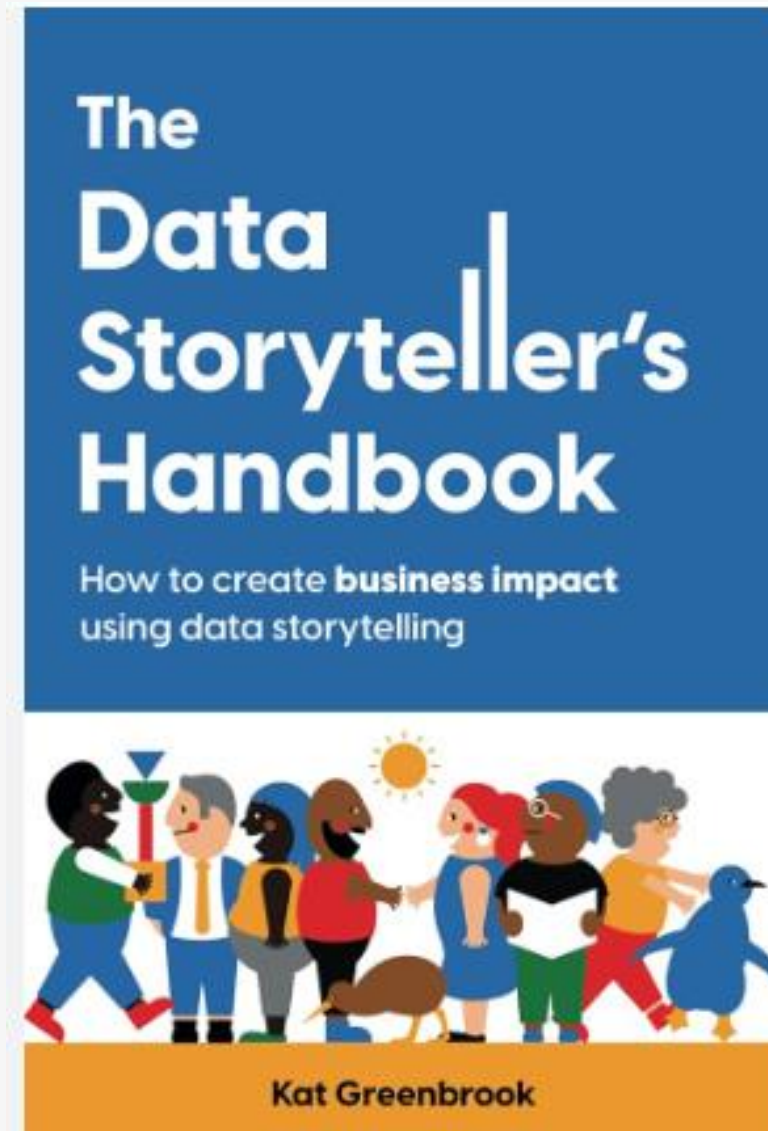
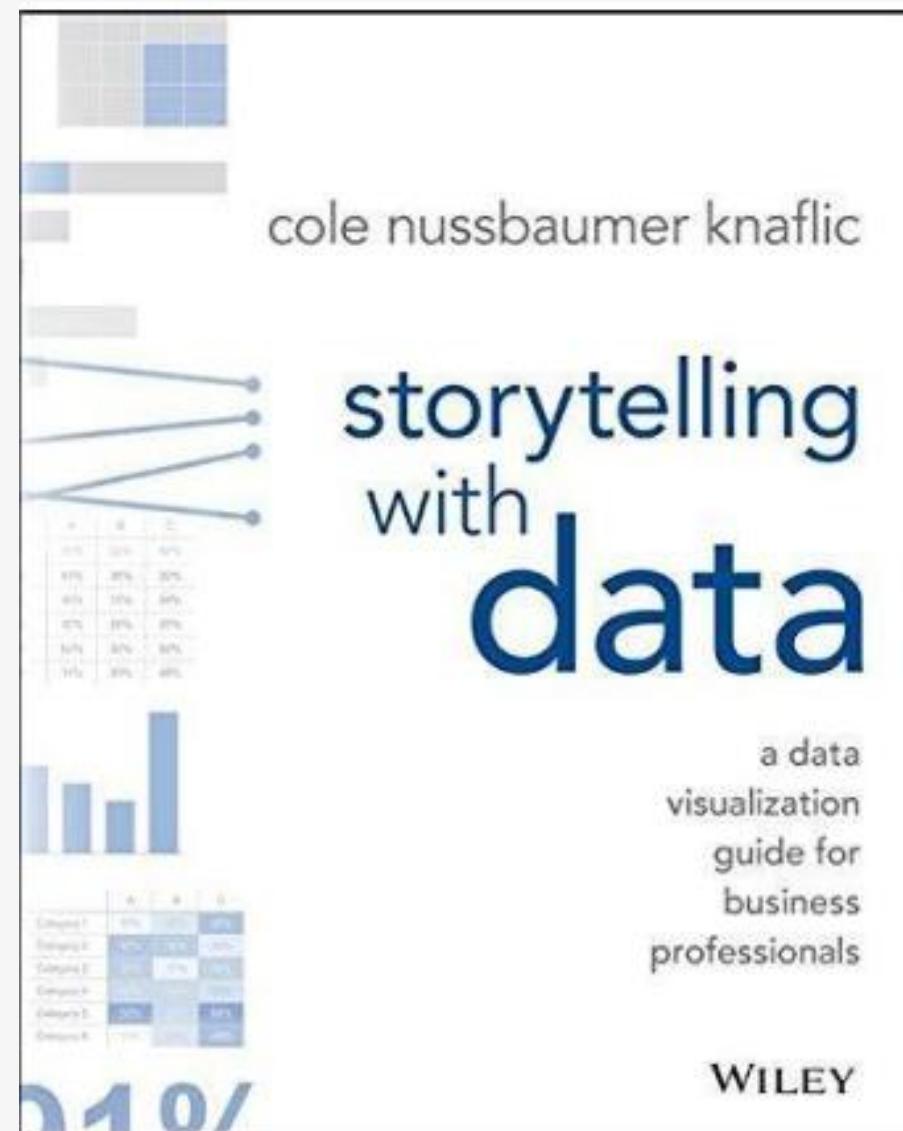


*Additional resources*





# Books



# Podcasts



storytelling  WITH data<sup>®</sup>



# YouTube Channels



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Businessweek

The New York Times

The Pudding



FiveThirtyEight

The logo for FiveThirtyEight, featuring a stylized orange and black graphic above the text "FiveThirtyEight".





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# Final tips