TECH-TALK MONDAYS WEBINAR SERIES

*Tech-Talk Mondays Presents:*

# The Art of Creating a Masterful Data Visualization Story

Ann Dzuranin, Ph.D., CPA
Fatema El-Wakeel, CMA, MBA

July 12, 2021

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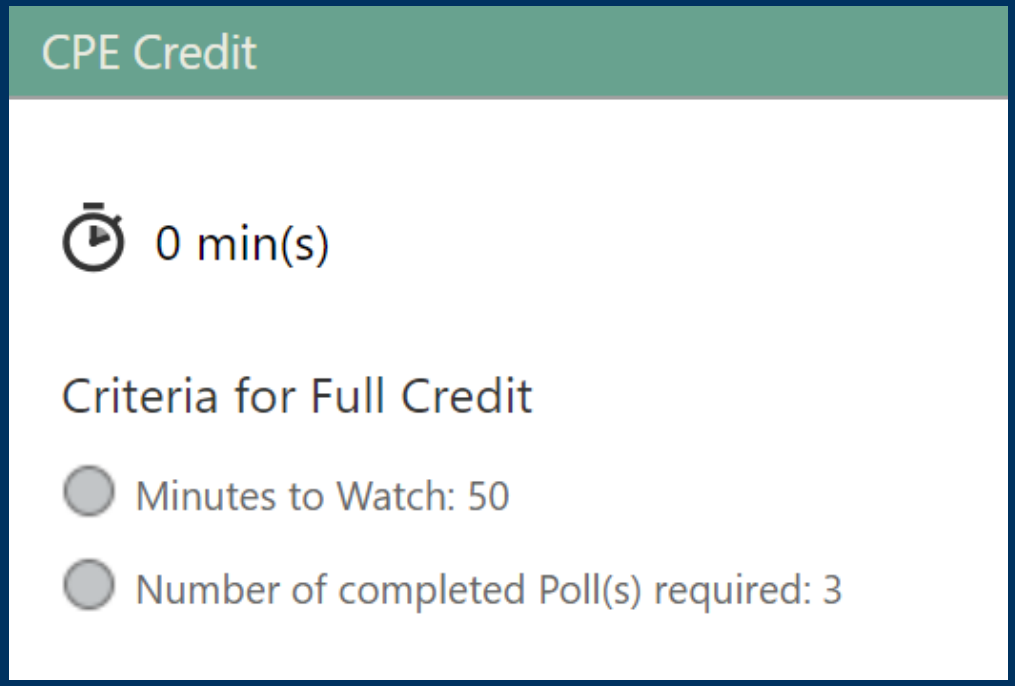

# Moderator

**Steve Shannon**

**Director**

**Partnership Marketing, Business Development**

**IMA**

# Featured Presenter

**Ann Dzuranin, Ph.D., CPA**

**Dean's Distinguished Professor of Analytics in Accounting**

Northern Illinois University

# Ann Dzuranin's Biography

- Dr. Ann C. Dzuranin is the Dean's Distinguished Professor of Analytics in Accounting at Northern Illinois University. She earned her B.S. from Fairleigh Dickinson University, MBA from New York University, and Ph.D. from the University of South Florida. Ann is a CPA (NJ) with 15 years of experience in both public and corporate accounting.
- Ann conducts behavioral research in management accounting decision making and the ways in which accounting information systems interact with those decisions. Her publications include Issues in Accounting Education, Journal of Information Systems, Journal of Business Ethics, Management Accounting Quarterly, Journal of Corporate Accounting and Finance, and the Journal of Accounting Education.
- Ann received the 2018 American Accounting Association's Innovation in Accounting Education Award for her work in data analytics curriculum development. Ann's presentations on Data Analytics and Accounting curriculum have reached over 2,400 people and her materials have been shared with more than 60 universities.

# Featured Presenter

**Fatema El-Wakeel, CMA, MBA**

**Data Analytics Manager**

Jaguar Land Rover

**Member**

IMA Global Board of Directors

# Fatema El-Wakeel's Biography

- Fatema El-Wakeel has more than 10 years of experience in scaling and enabling Data Analytics in organisations. This includes creating roadmaps, looking into strategy, setting Analytics Communities as well as executing projects and utilising Data Analytics to recommend Strategic and Operational decisions for the business. She worked across Europe, Middle East and Africa, as well as lead change management, organisation restructuring and innovation projects in both multinationals and public sectors. Her industry background includes consulting, automotive, IT, and hospitality, among others.

- Ms. El-Wakeel has served as the keynote speaker on Strategy, Data and Analytics topics at various conferences and as a guest lecturer and public speaker at universities and other forums. She is currently on IMA's Global Board and serves on the Technology Solutions Committee. In 2015, she was recognized with the IMA Distinguished Member Award; she has also been awarded IMA Leadership Platinum Level.

# Learning Objectives

*Upon completing this webinar, you will be able to:*

1. Apply storytelling skills to build data stories.
2. Discuss data visualization best practices.
3. Identify five key visualization focus areas.
4. Explain how to identify and avoid creating misleading visualizations.

# My Data Analytics Journey – Practitioner

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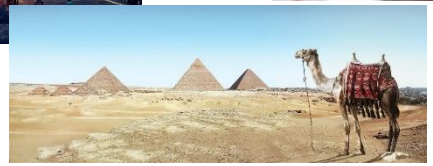

MANCHESTER 1824
The University of Manchester
Alliance Manchester Business School

#Analytics Driven Strategy
Created by: Fatema El-Wakeel

* All views mentioned in the presentation are my own





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# My Data Analytics Journey


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# Polling Question 1

Have you been using a “hook” in storytelling?

a) Yes
b) No

# Polling Question 1 Results (Placeholder)

# Do You Use a Hook in Storytelling?

Unusual, or

Something unexpected, or

Lands people in an action or

Conflict.

# How to Become a Good Storyteller

- Tailor to audience; personal & relatable
- Tell the **Story** like you tell it in real life
- Remove irrelevant details
- Use different prospective
- Make It visual. ...
- Surprises, positives

https://matthewluhnstory.com/
YouTube channel: fatemaelwakeel

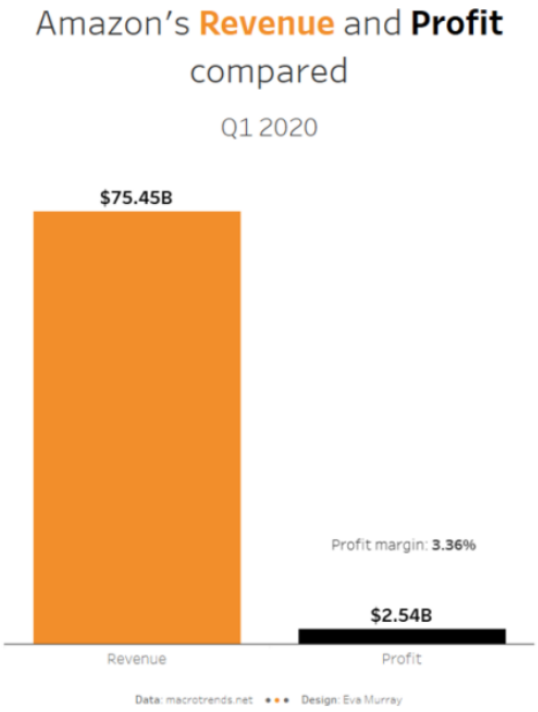
# Polling Question 2

Have you been given a visualization where you didn’t know how to read it?

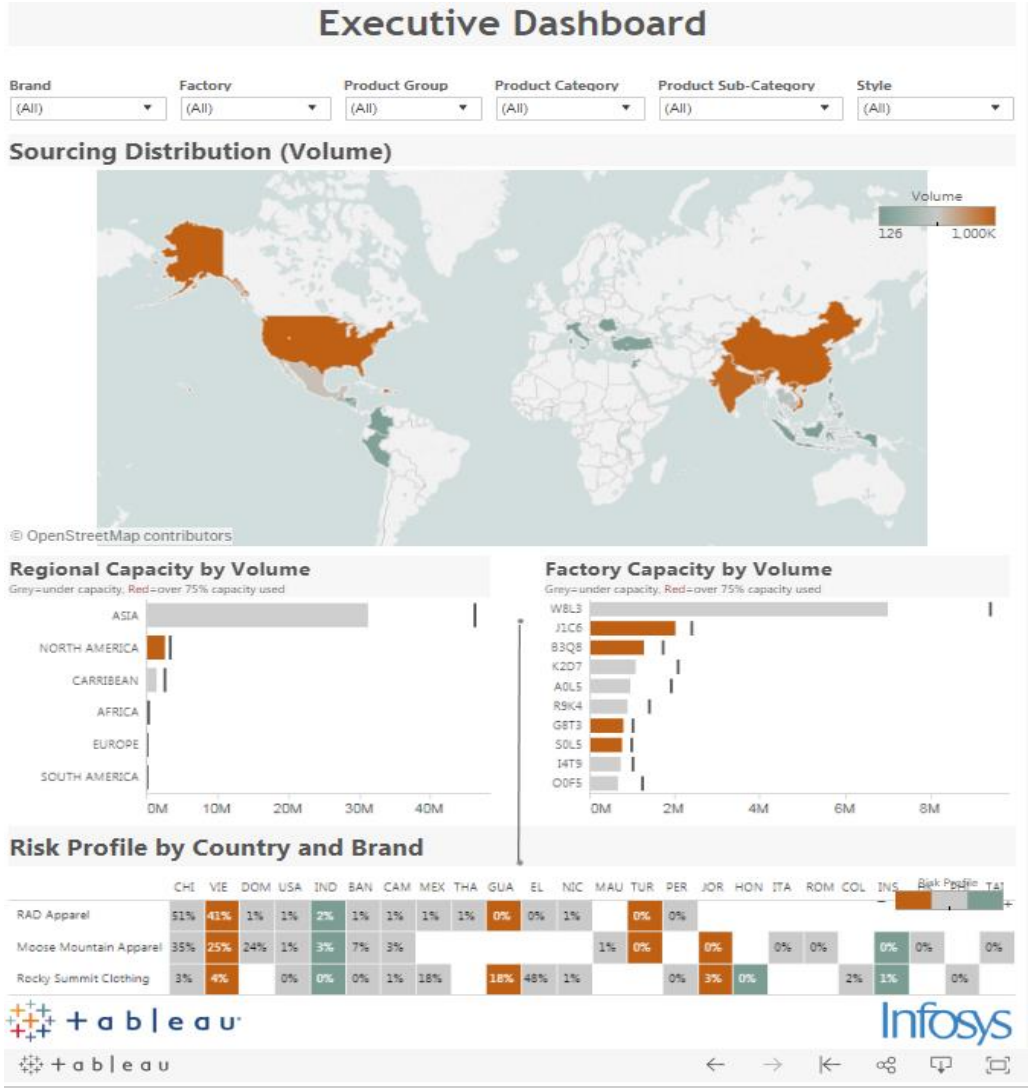
a) Yes
b) No

# Polling Question 2 Results (Placeholder)

# Storytelling

# Executive Dashboard Example



# Basic Visualization Etiquette

**Cover sheet**

**Sources of data**

**Creator**

**Interaction guidance**

**Programme**

**Colours**

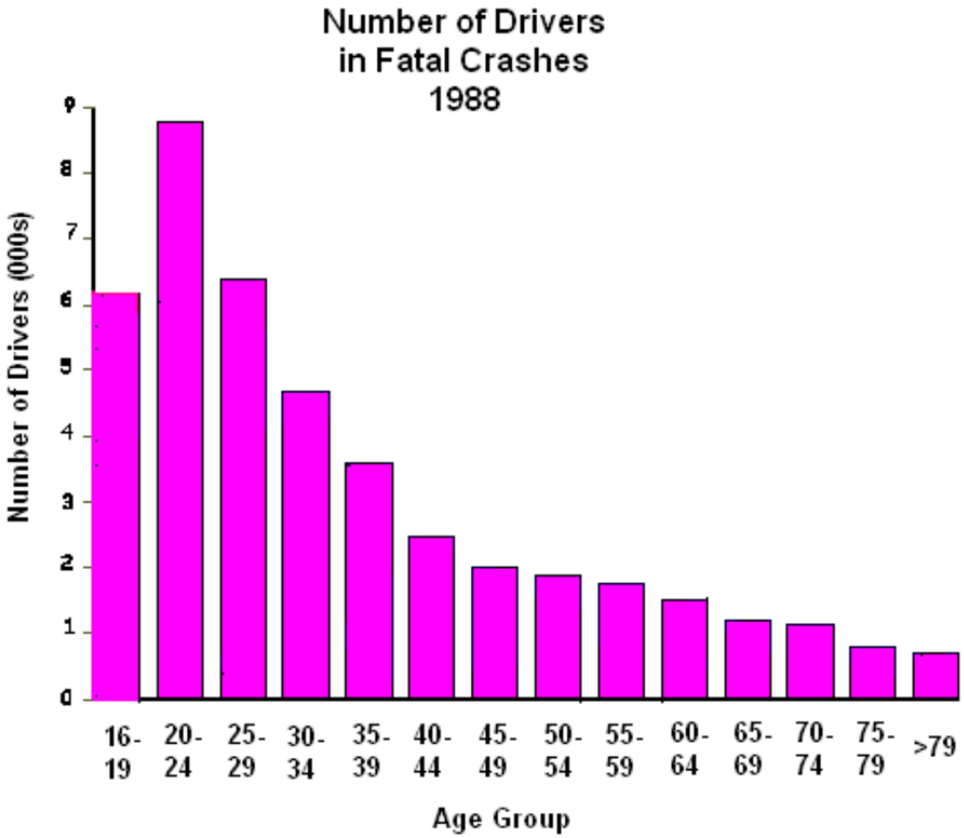
**Simplicity**

# Ethics and Data Visualization

# Misleading the User

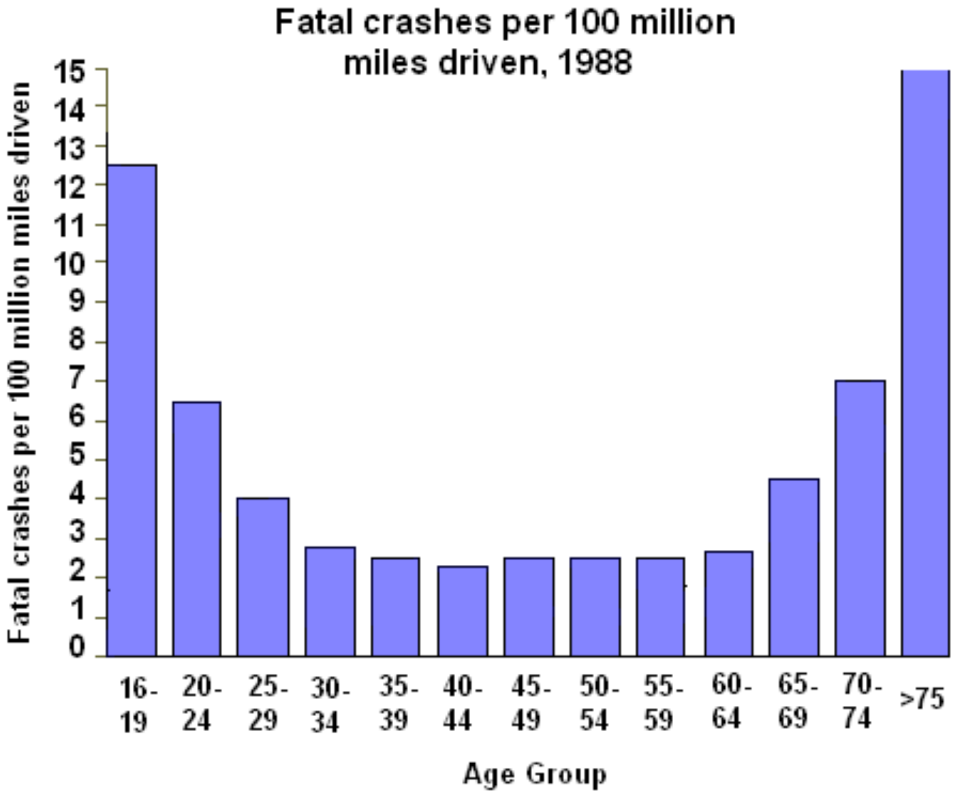
- Unintentional
- Intentional

# Unintentional Misleading Visual




Graph is based on data from this study: Williams, Allan F., Ph.D., and Oliver Carston, Ph.D., "Driver Age and Crash Involvement," Am J Public Health 1989; 79: 326-327.

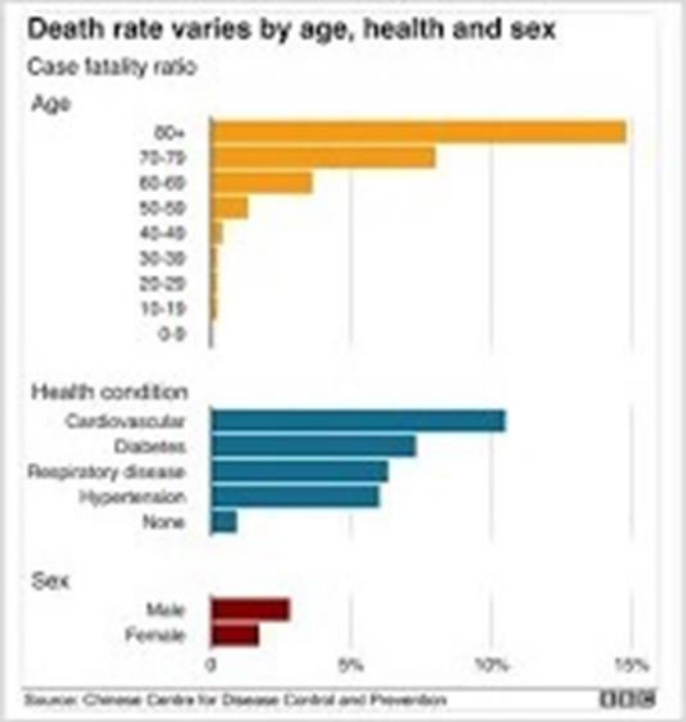
# Same Information but Not Misleading

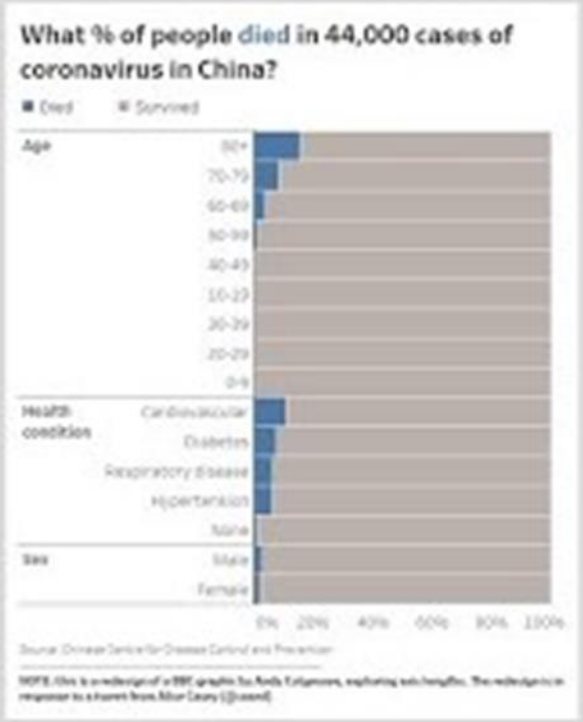



Graph is based on data from this study: Williams, Allan F., Ph.D., and Oliver Carston, Ph.D., "Driver Age and Crash Involvement," Am J Public Health 1989; 79: 326-327.

# What the BBC Got Wrong in this COVID-19 Visualization

## Do axis lengths matter?





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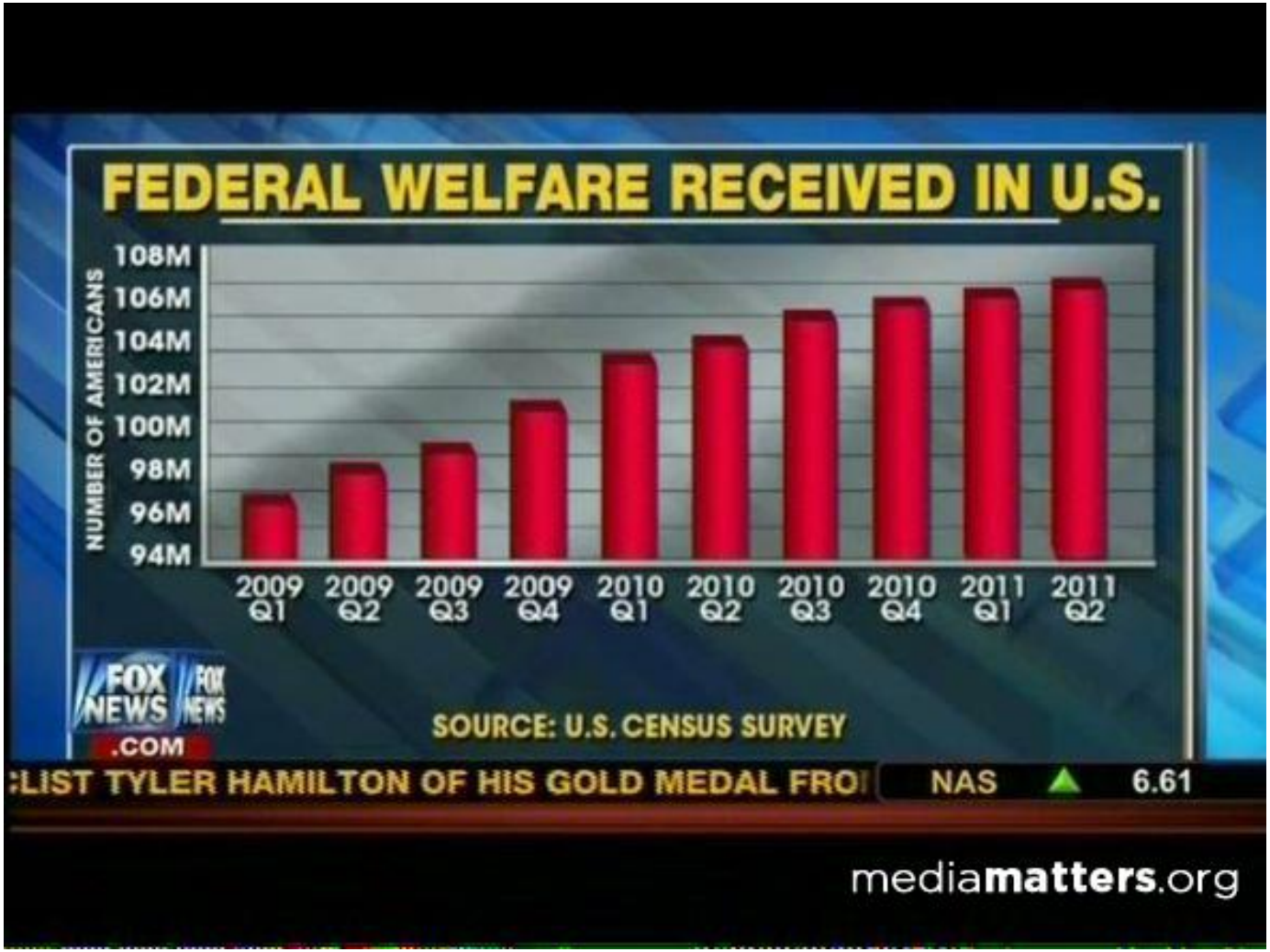
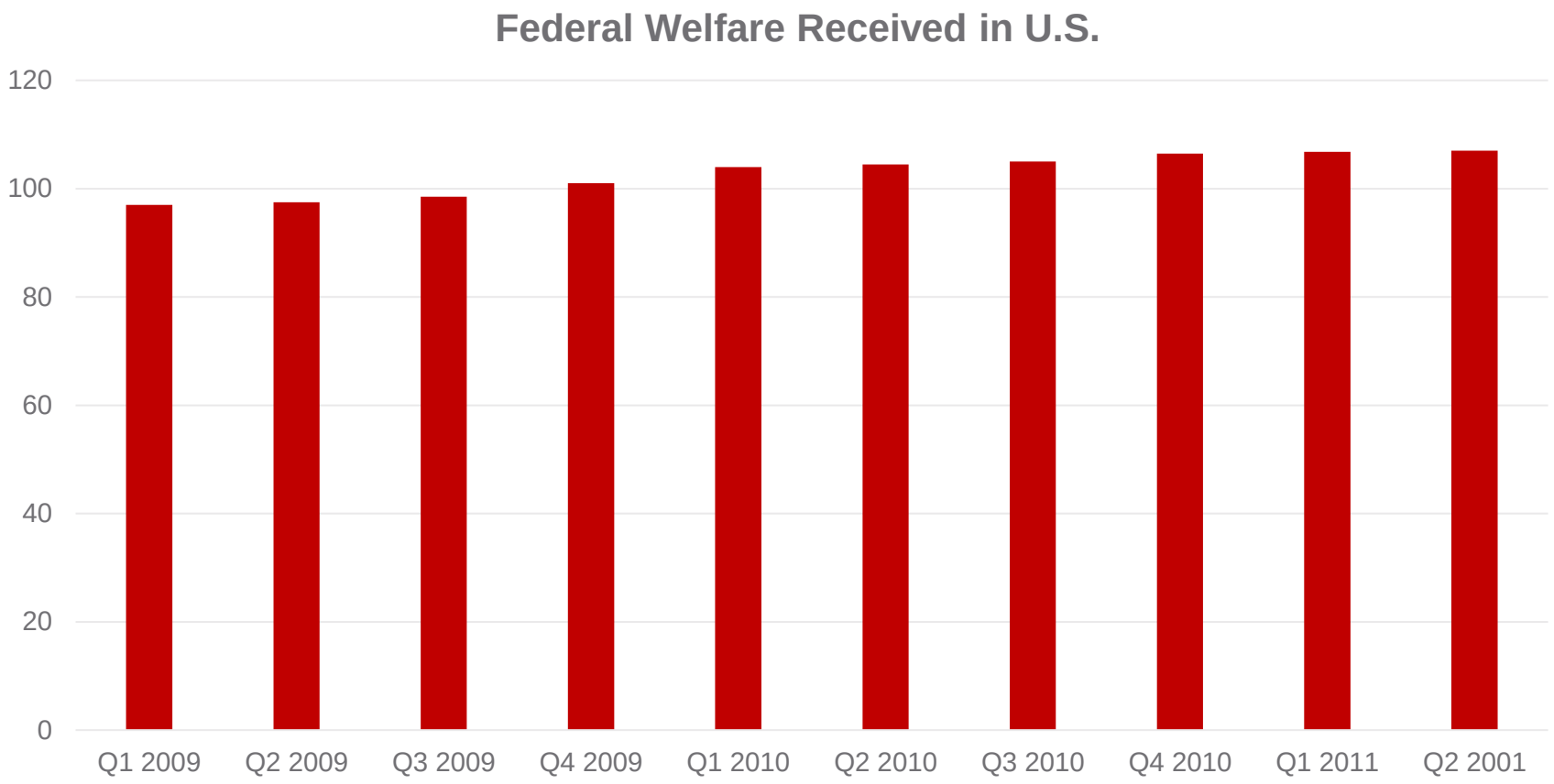
# Ways to Mislead the Reader

- Omitting the baseline
- Manipulating the Y-Axis
- Selectively picking data
- Using the wrong graph
- Going against conventions

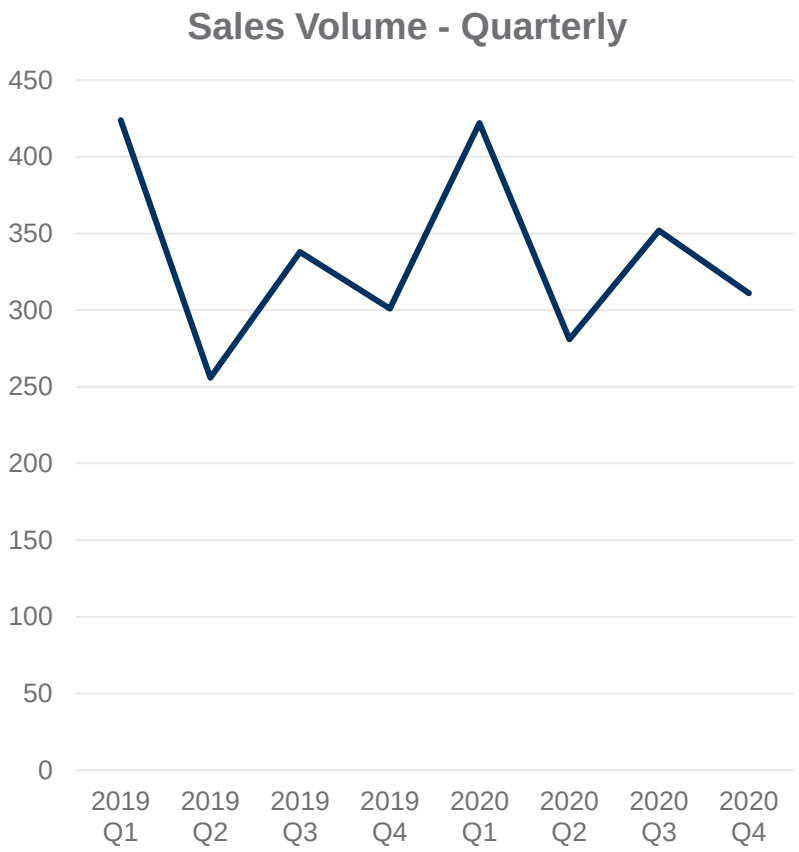
# Omitting the Baseline

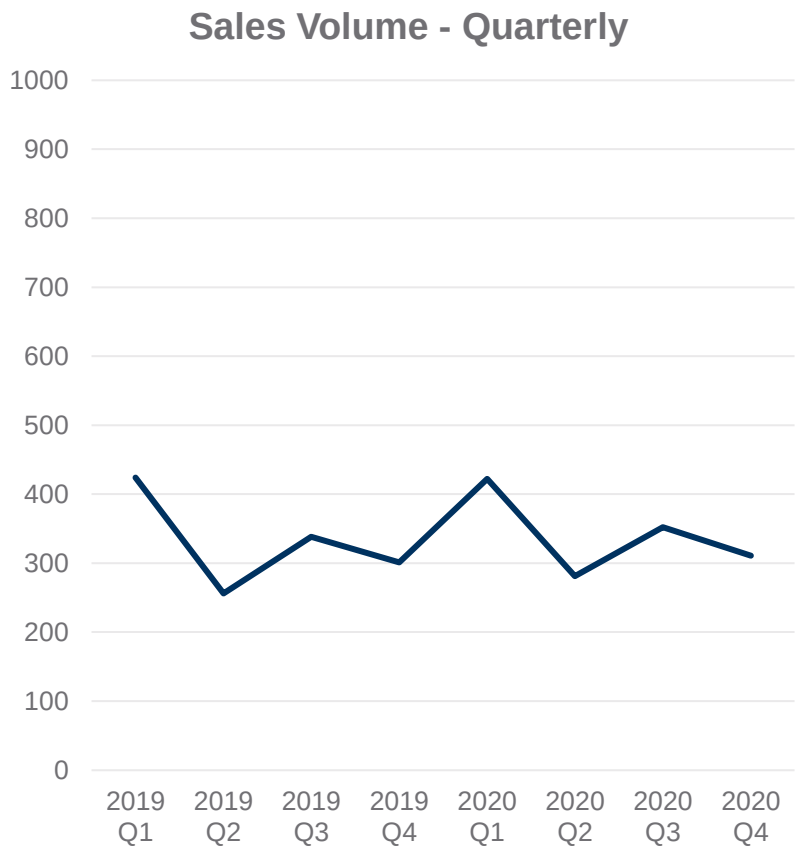


# When We Set the Axis at Zero

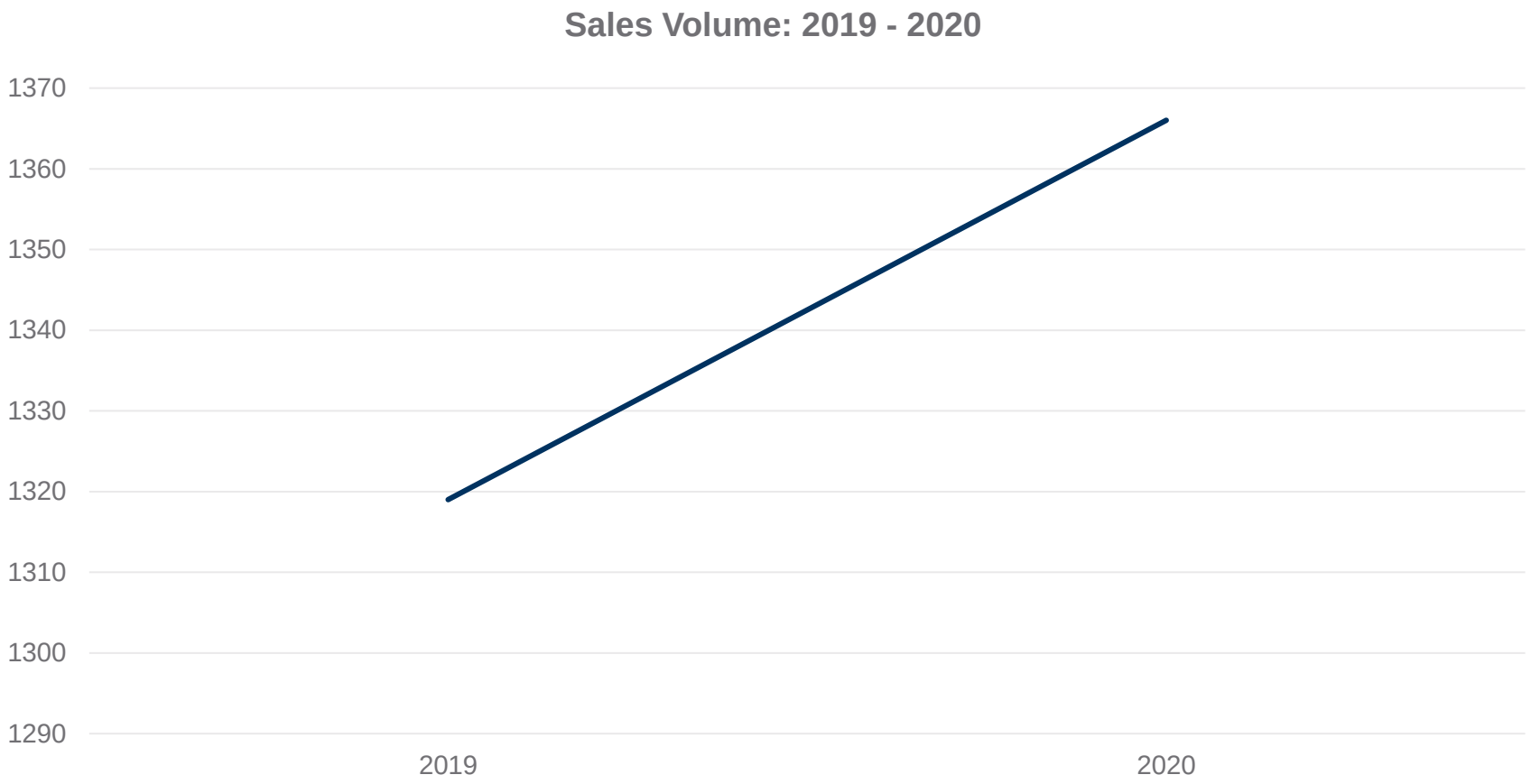


# Manipulating the Y-Axis



# “Cherry Picking” the Data





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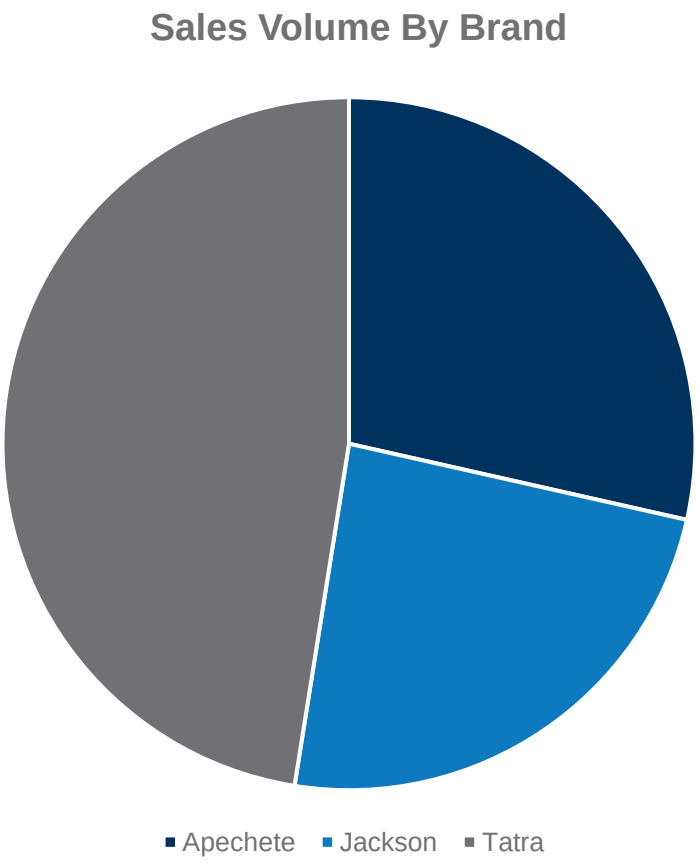
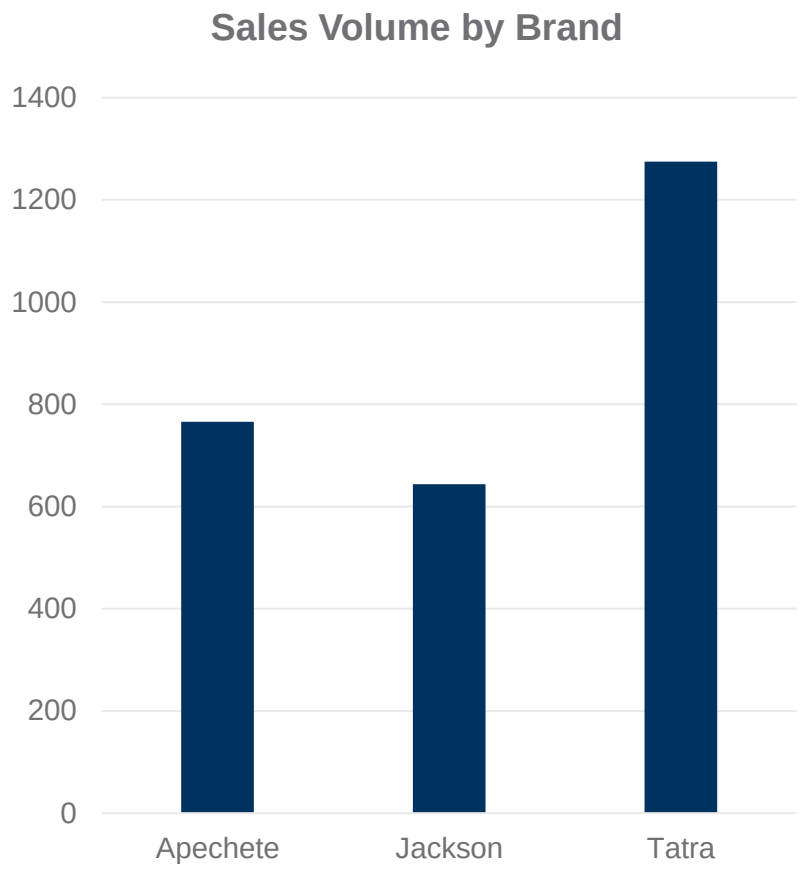
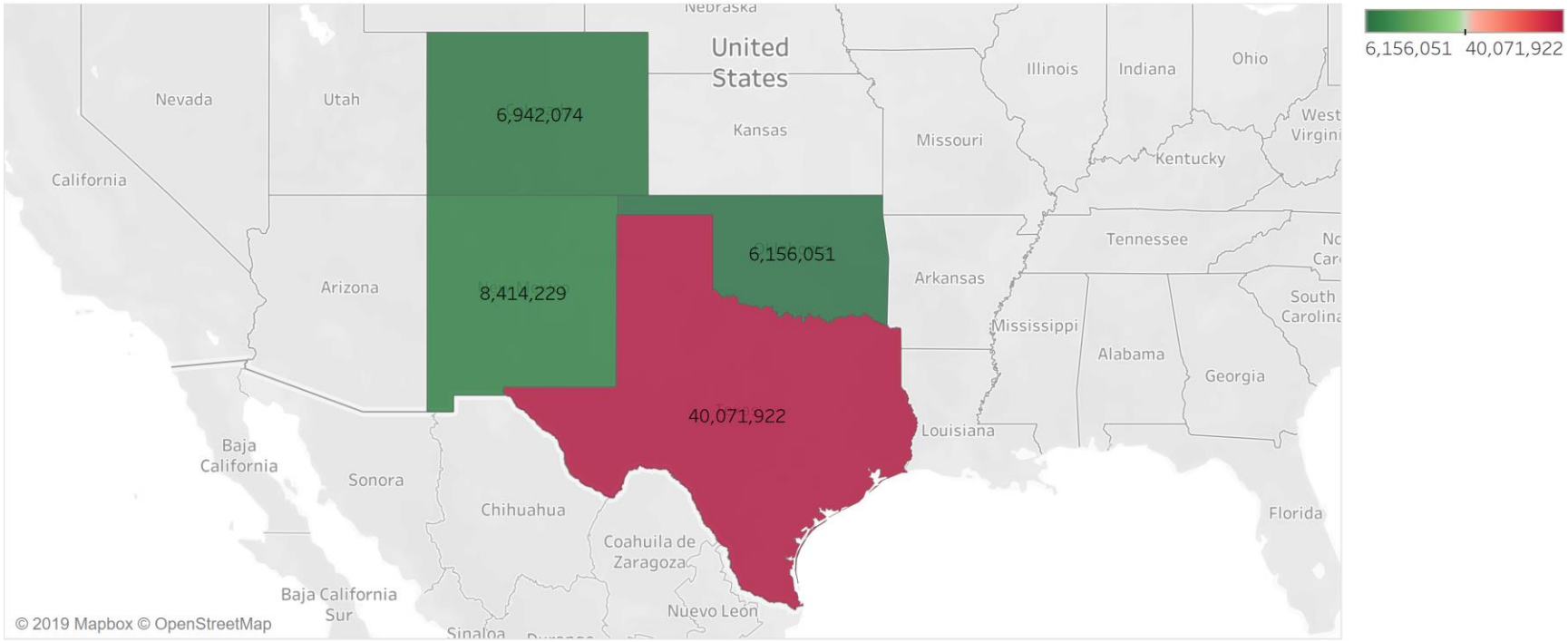
# Using the Wrong Graph



# Going Against Conventions

Revenue by State





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# Polling Question 3

Which of the following is false?

a) 50% of the information processed by the brain is visual
b) The human brain processes images 60,000 times faster than text.
c) 80% of the people remember what they see, compared to 10% what they hear, and 20% of what they read.
d) Most people only read 20 – 28% of the words on the page.

# Polling Question 3 Results (Placeholder)





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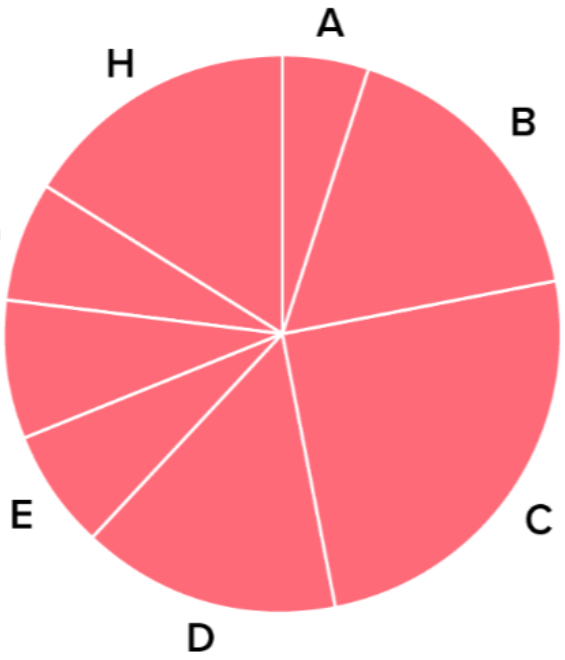
# Illusions and Biases

# Visual Illusions

- Human visual systems can be easily confused
  - Estimating size
  - Telling the difference in proportion
  - Information overload
- Try the visualization quiz on the following slides

# Question 1

**Seeing the wedges for the pie. Challenge 1 of 5**




Which is the third largest segment in the pie chart?

- A
- H
- B
- D

*1 of 5*





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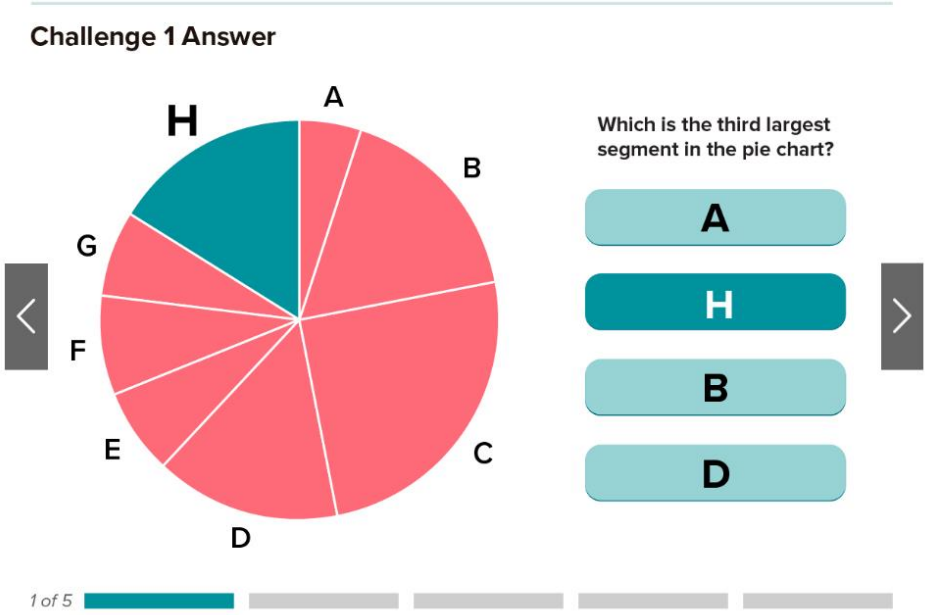
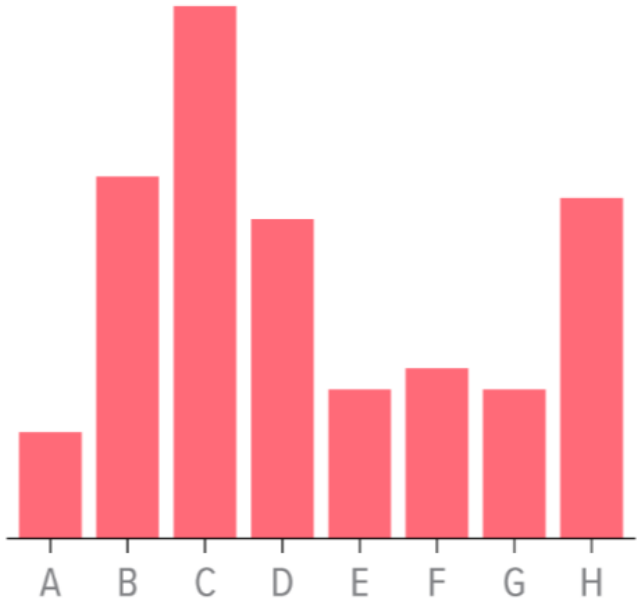
# Question 1 Answer




It is very difficult to tell proportions in a pie chart. This is especially true when there are many slices of similar sizes.

# Question 2

**Height anxiety. Challenge 2 of 5**




**Which is the third tallest bar?**

- H
- B
- D
- F

*2 of 5*





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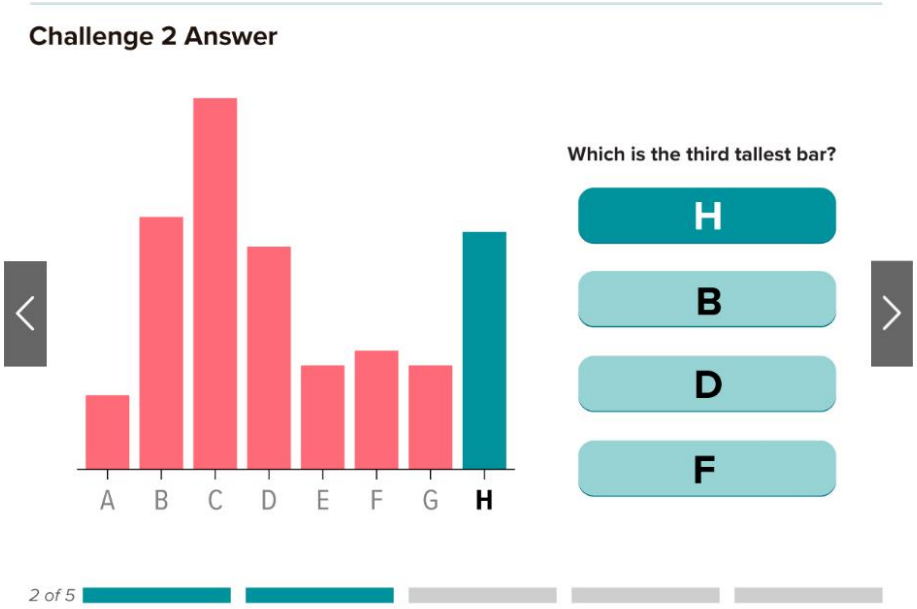
# Question 2 Answer

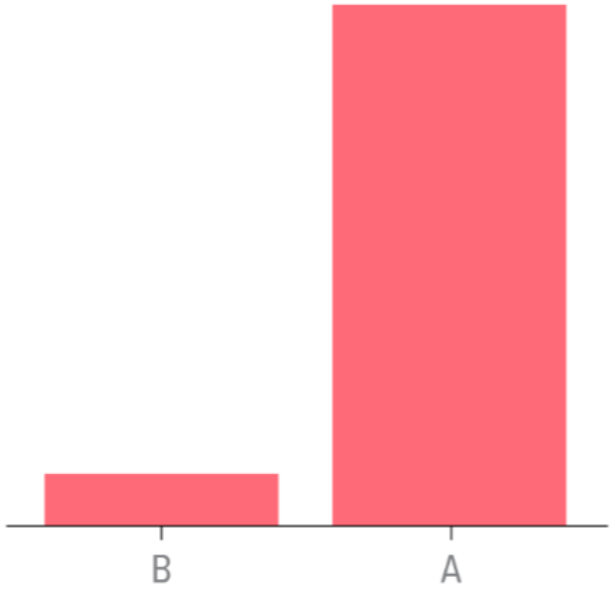



This one was a bit easier to identify but if the bars had been sorted from either high to low or low to high, it would have been very easy to answer.

Sorting makes it easier for the reader to make judgements.

# Question 3

**Bar none. Challenge 3 of 5**




**The value of A is how many times as large as the value of B?**

- 9
- 8
- 10
- 5

*3 of 5*





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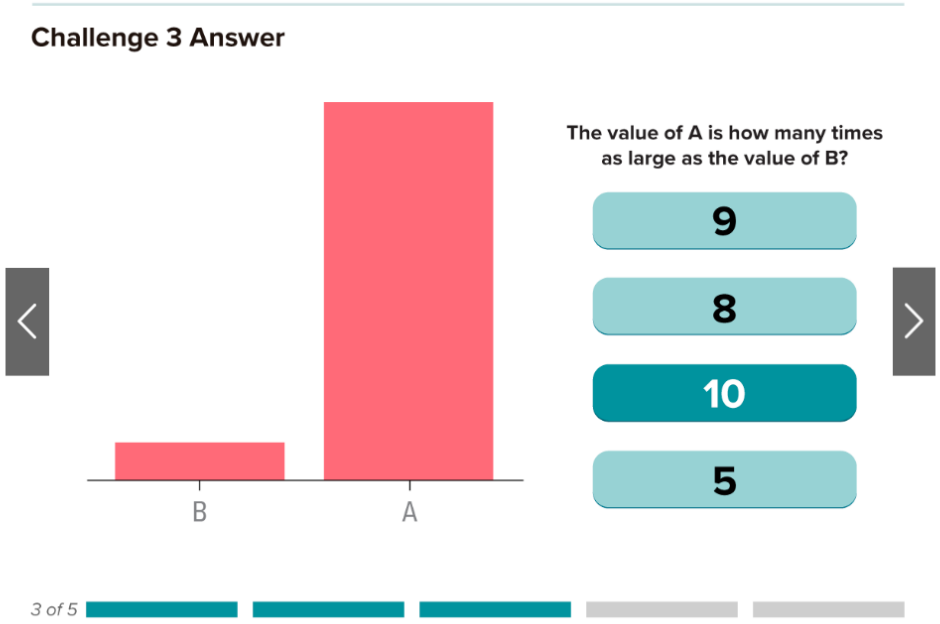
# Question 3 Answer

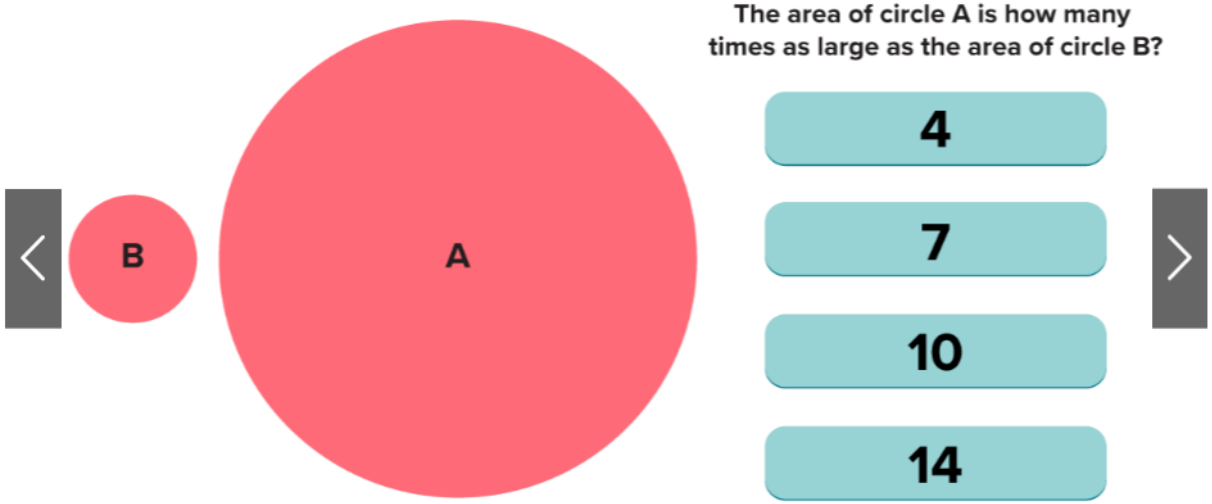



Without the scale on the left axis, it is difficult to determine how many times larger the A bar is from the B bar.

This is another example of the difficultly we have making proportion calculations.

# Question 4

**Eye on area. Challenge 4 of 5**




**The area of circle A is how many times as large as the area of circle B?**

- 4
- 7
- 10
- 14

*4 of 5*





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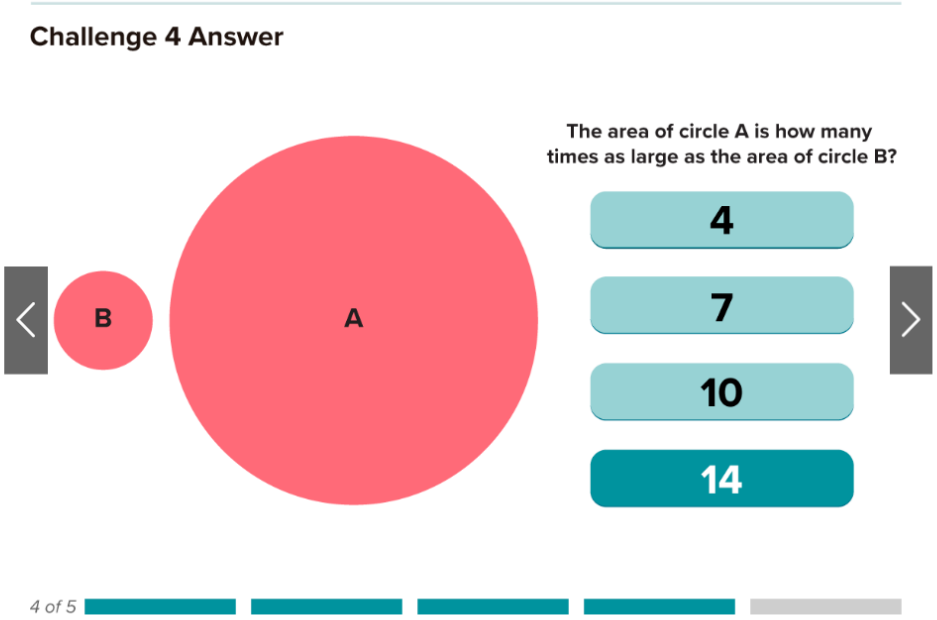
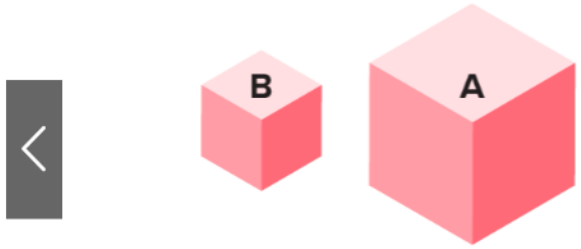
# Question 4 Answer




Again, we can see how difficult it is to estimate size from a visual image

# Question 5

**Vast volumes. Challenge 5 of 5**




**The volume of cube A is how many times as large as the volume of cube B?**

- 3
- 5
- 7
- 8

5 of 5





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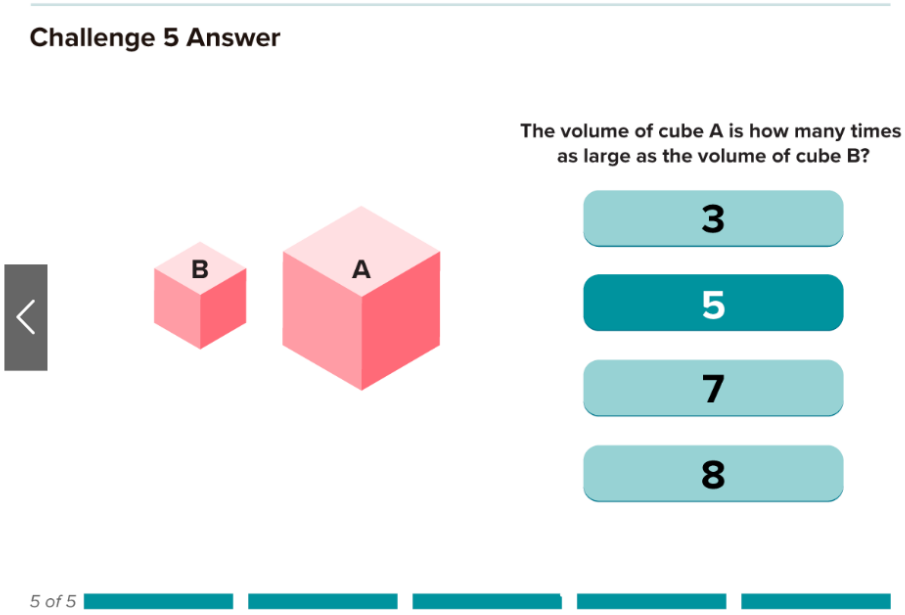
# Question 5 Answer




Similar to estimating size, we have difficulty estimating volume as well.

https://www.knowablemagazine.org/article/mind/2019/science-data-visualization

# Consider Decision-Making Biases

- Anchoring and Adjustment
- Availability Bias
- Confirmation Bias
- Optimism and Loss Aversion
- Framing
- Sunk Cost

# Polling Question 4

Searching only for evidence that agrees with your point of view is which type of bias?

a) Availability
b) Confirmation
c) Optimism and Loss Aversion
d) Framing

# Polling Question 4 Results (Placeholder)

# Questions & Answers

***Use the* Q & A Panel *to send your questions to our panelists.***

**Ann Dzuranin, Ph.D., CPA**
**Dean's Distinguished Professor of Analytics in Accounting**
Northern Illinois University

**Fatema El-Wakeel, CMA, MBA**
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Jaguar Land Rover

**Steve Shannon**
**Director**
**Partnership Marketing, Business Development**
IMA

# Thank You to Our Presenters!

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# Final Reminders

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