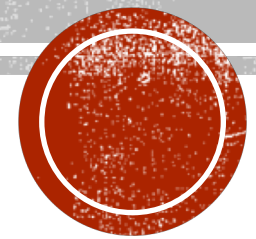
BUS195B – INTRO TO DATA VIZ

January 29, 2019



AGENDA

- Syllabus/Class Questions
- History of Data Viz
- Intro to Data Viz & Textbook
- Bad Visuals vs. Good Visuals

EDWARD TUFTE

- Pioneer in the field of Data Viz
- "Few teachers are as accomplished as Edward Tufte when it comes to demonstrating why good design matters in the world."

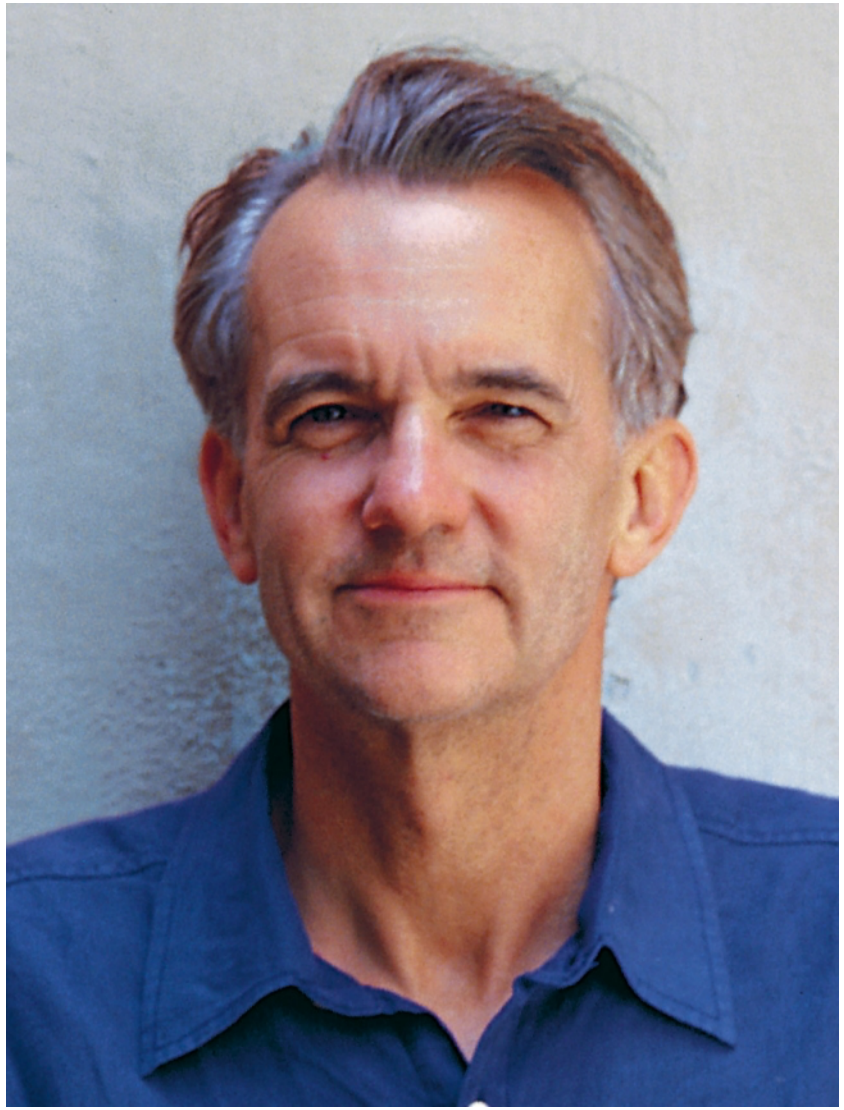
—*Wired* magazine

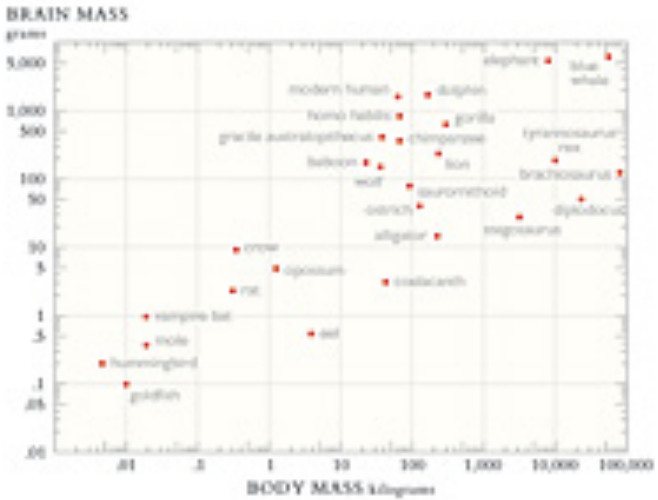
- "Edward Tufte is a brilliant observer and analyst of visual displays. The diversity of examples (in Visual Explanations) is awesome. Every aspect of this book is of the highest quality."

—*Journal of The American Statistical Association*

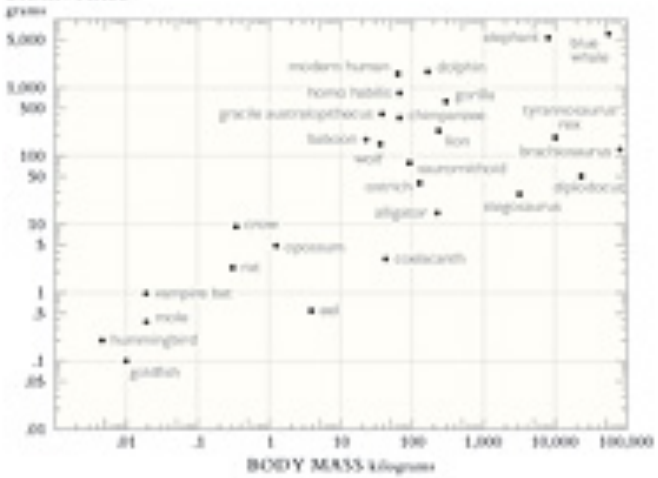
- "The Leonardo da Vinci of data"

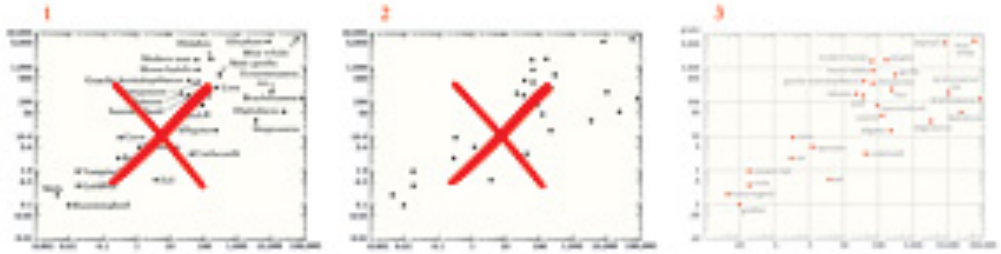
—*New York Times*





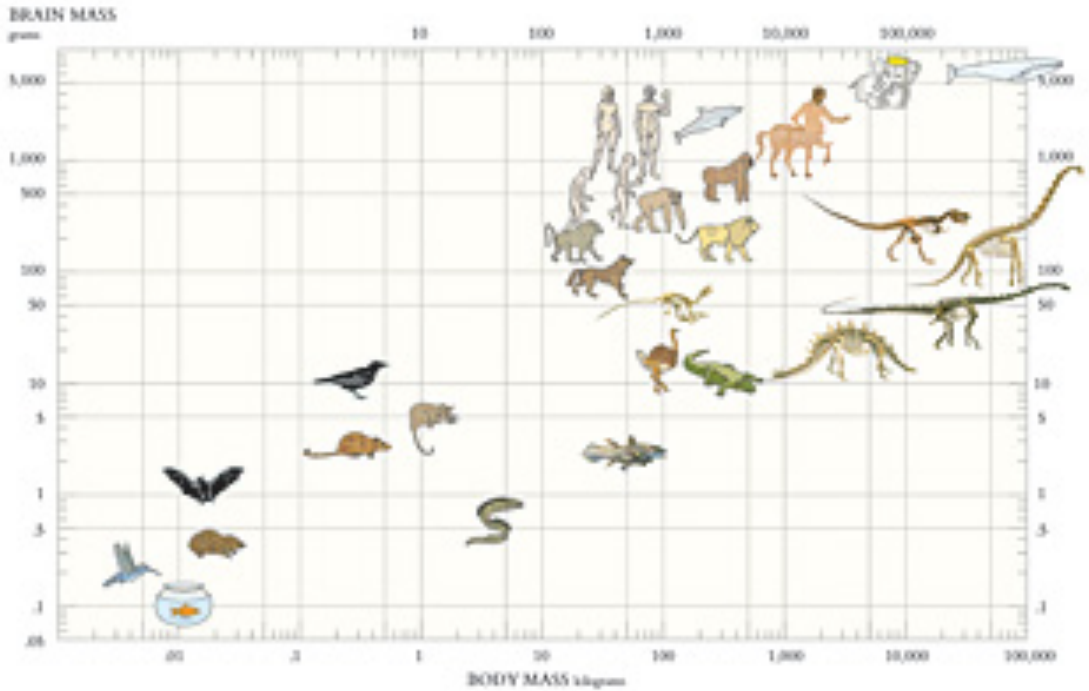
In the data graphic above, *red* clearly clusters 26 data-dots in a context of grayed-down words and the two-variable data field; *black* indicates the logarithmic scale and the variables; *gray* shows the new grid and also mutes the visual presence of the animal names. *Label-clutter has vanished, but the labels are still there.* This revised graphic resembles our old friend the centaur with its red-dot stars shining together, distinguished from but adjacent to the words. Black dots also work, as shown below, since the grayed words are on a separate visual level from the dots.





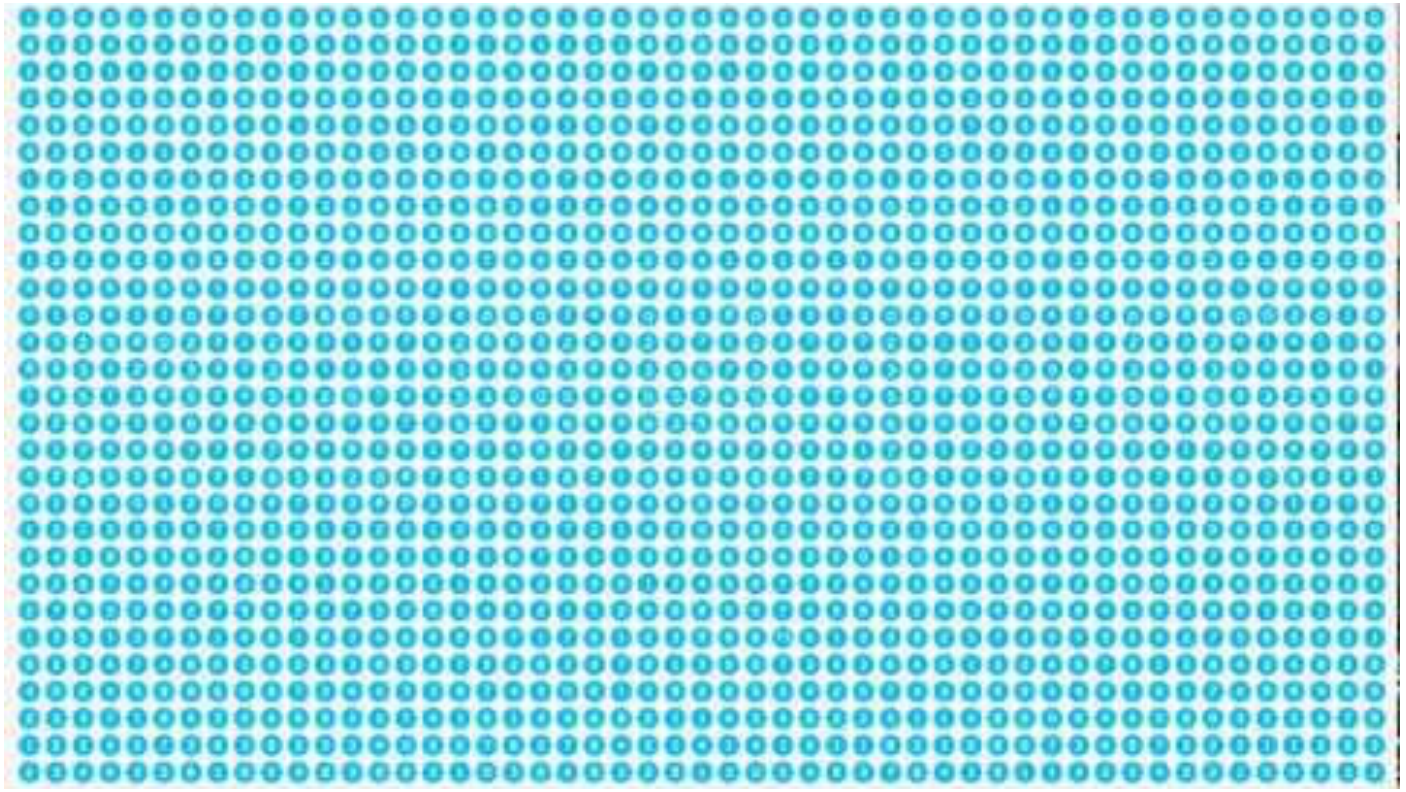
The logic of this redesign sequence reflects fundamental ideas: 1. Clutter is a failure of design, not an attribute of information. 2. Visual problems should not be fixed by compromising the information. 3. Instead fix the design.

Words and data dots are abstracted encodings for the animals and their body and brain masses. In a spirit of seeking visual solutions for visual problems, we can let each animal represent itself at its two-space location in the scatterplot below! Icon sizes are not proportional to anything other than space available, except for the big brachiosaurus and tiny humans (at right) whose amazing relative sizes are approximately correct. Other details here will repay study.



INTRODUCTION

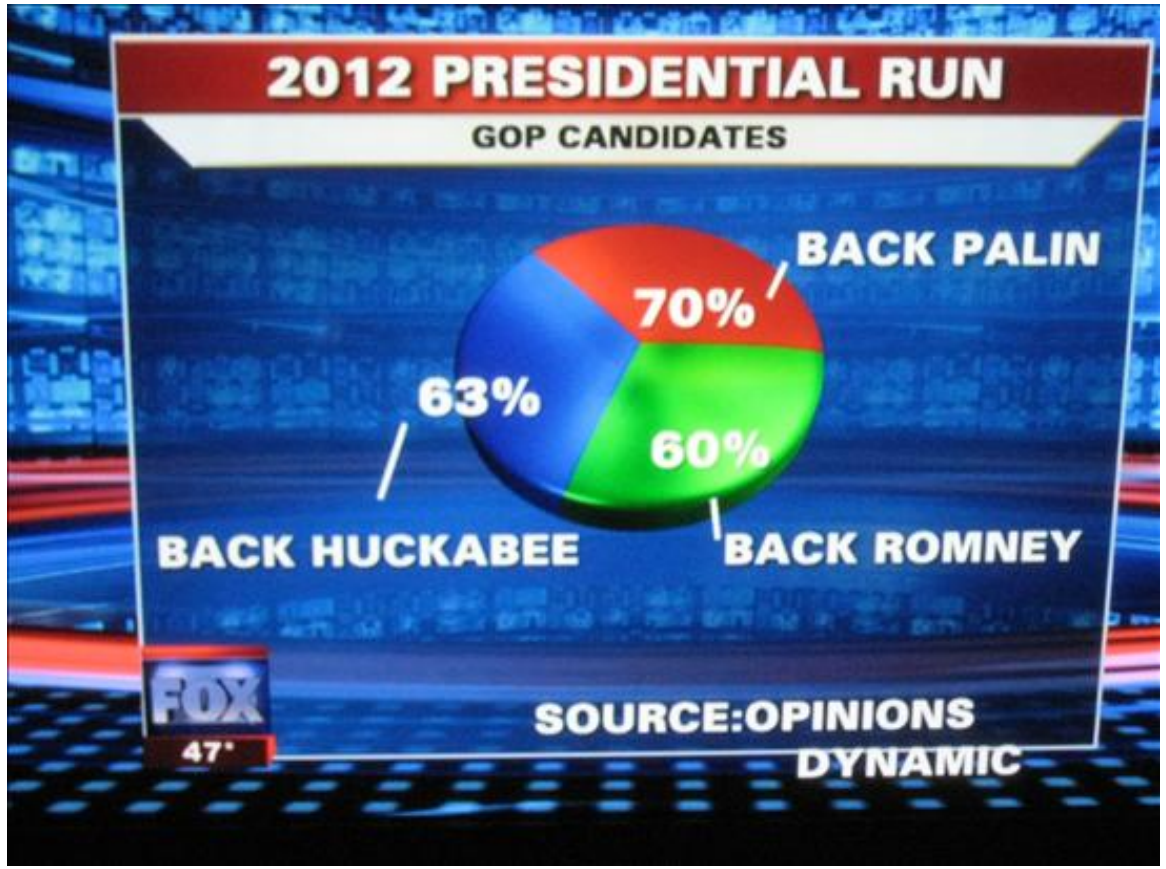
- "Your message is only as good as your ability to share it"

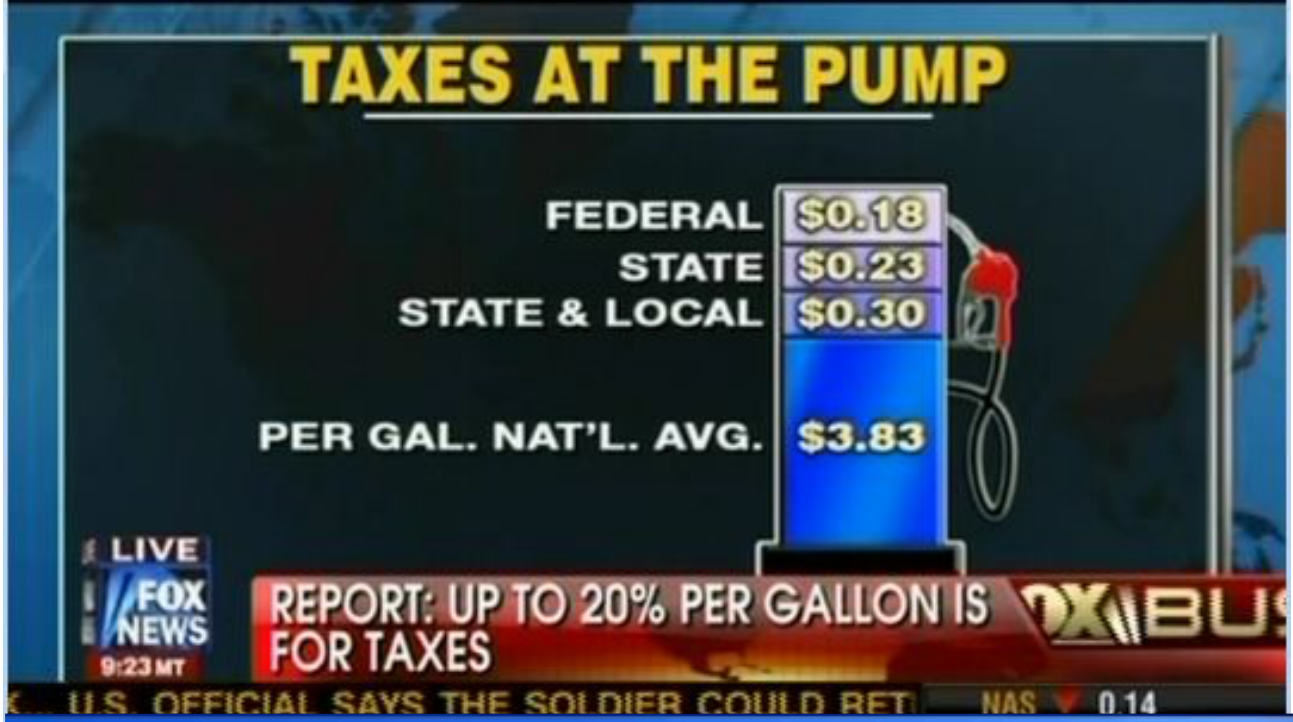


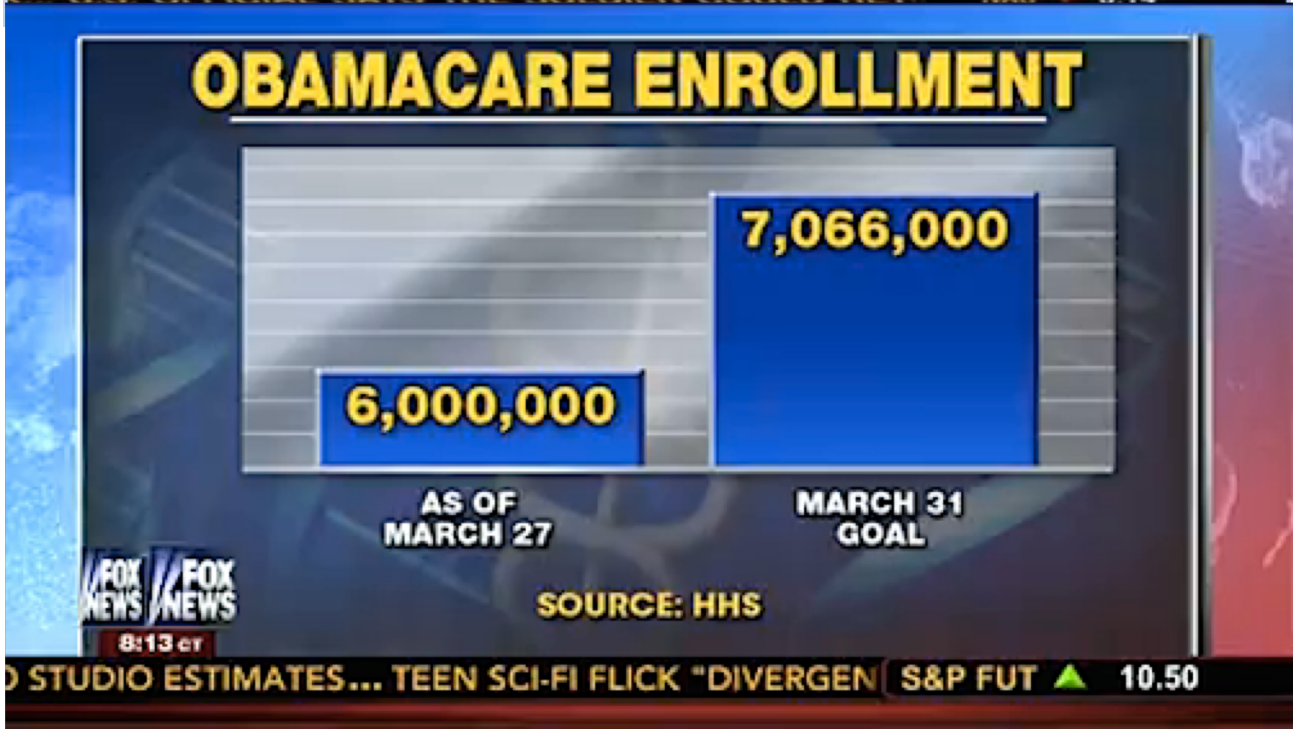
STORYTELLING WITH DATA

- Textbook format and style
- Showing data → Storytelling with data
- Data Visualization vs.
  - *Data Computing*
  - *Data Manipulating*
  - *Data Scientist*
  - *Data Modeling*

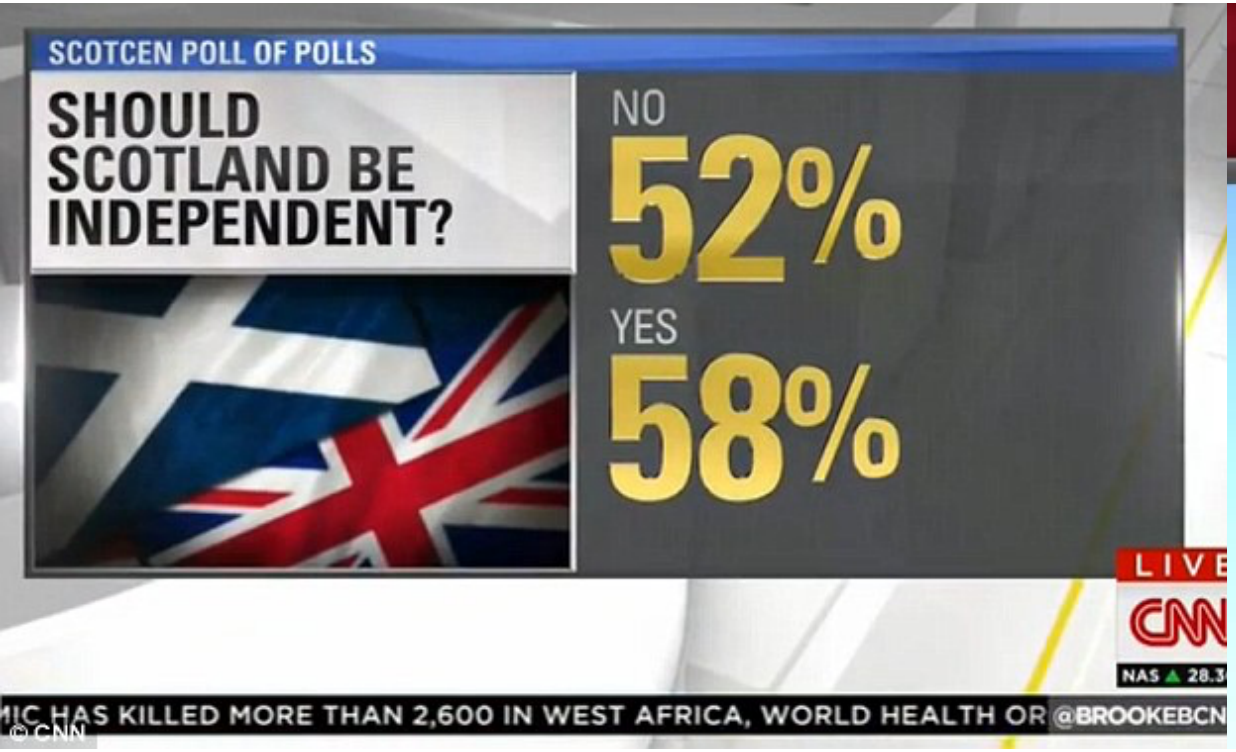
FOX NEWS


2012 PRESIDENTIAL RUN
GOP CANDIDATES
BACK PALIN
70%
63%
60%
BACK HUCKABEE
BACK ROMNEY
FOX
47°
SOURCE:OPINIONS
DYNAMIC


TAXES AT THE PUMP
FEDERAL $0.18
STATE $0.23
STATE & LOCAL $0.30
PER GAL. NAT'L. AVG. $3.83
LIVE
FOX NEWS
9:23 MT
REPORT: UP TO 20% PER GALLON IS FOR TAXES
U.S. OFFICIAL SAYS THE SOLDIER COULD BE
NAS 0.14


OBAMACARE ENROLLMENT
6,000,000
7,066,000
AS OF MARCH 27
MARCH 31 GOAL
SOURCE: HHS
FOX NEWS
FOX NEWS
8:13 ET
STUDIO ESTIMATES... TEEN SCI-FI FLICK "DIVERGEN
S&P FUT 10.50

CNN NEWS


SCOTCEN POLL OF POLLS
SHOULD SCOTLAND BE INDEPENDENT?
NO
52%
YES
58%
LIVE
CNN
NAS
IC HAS KILLED MORE THAN 2,600 IN WEST AFRICA, WORLD HEALTH OR
@BROOKEBCN
© CNN

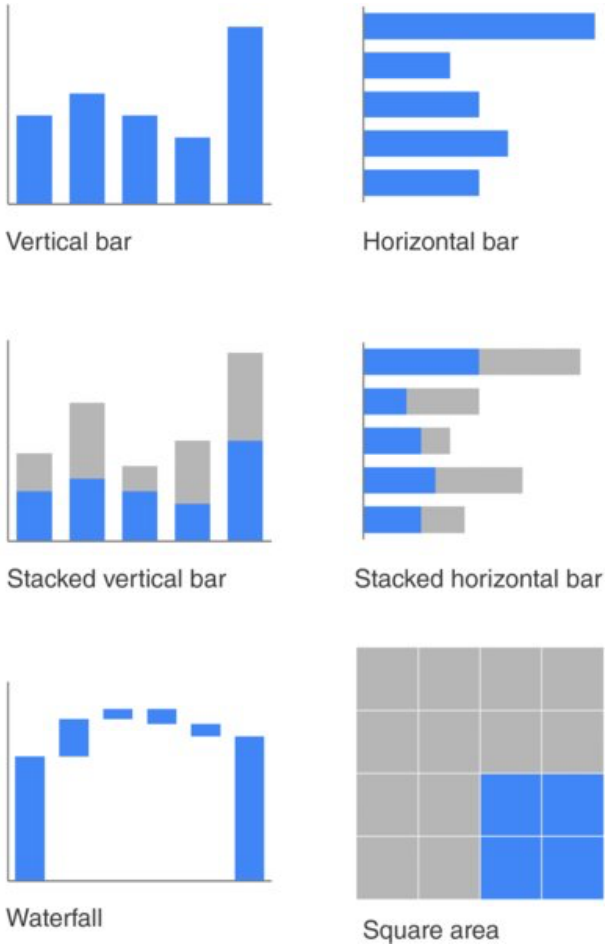

EARLY APPROVAL RATINGS
SOURCE: CNN/ORC POLL | CNN/USA TODAY/GALLUP | GALLUP
SAMPLING ERROR: +/-3% PTS
80%
70%
60%
50%
40%
EISENHOWER '53
KENNEDY '61
NIXON '69
CARTER '77
REAGAN '81
BUSH '89
CLINTON '93
BUSH '01
OBAMA '09
TRUMP NOW

CHAPTER 1 – IMPORTANCE OF CONTEXT

- Who is your audience?
- What do they need to know?
- Will the visual catch their attention?
- Your need to communicate

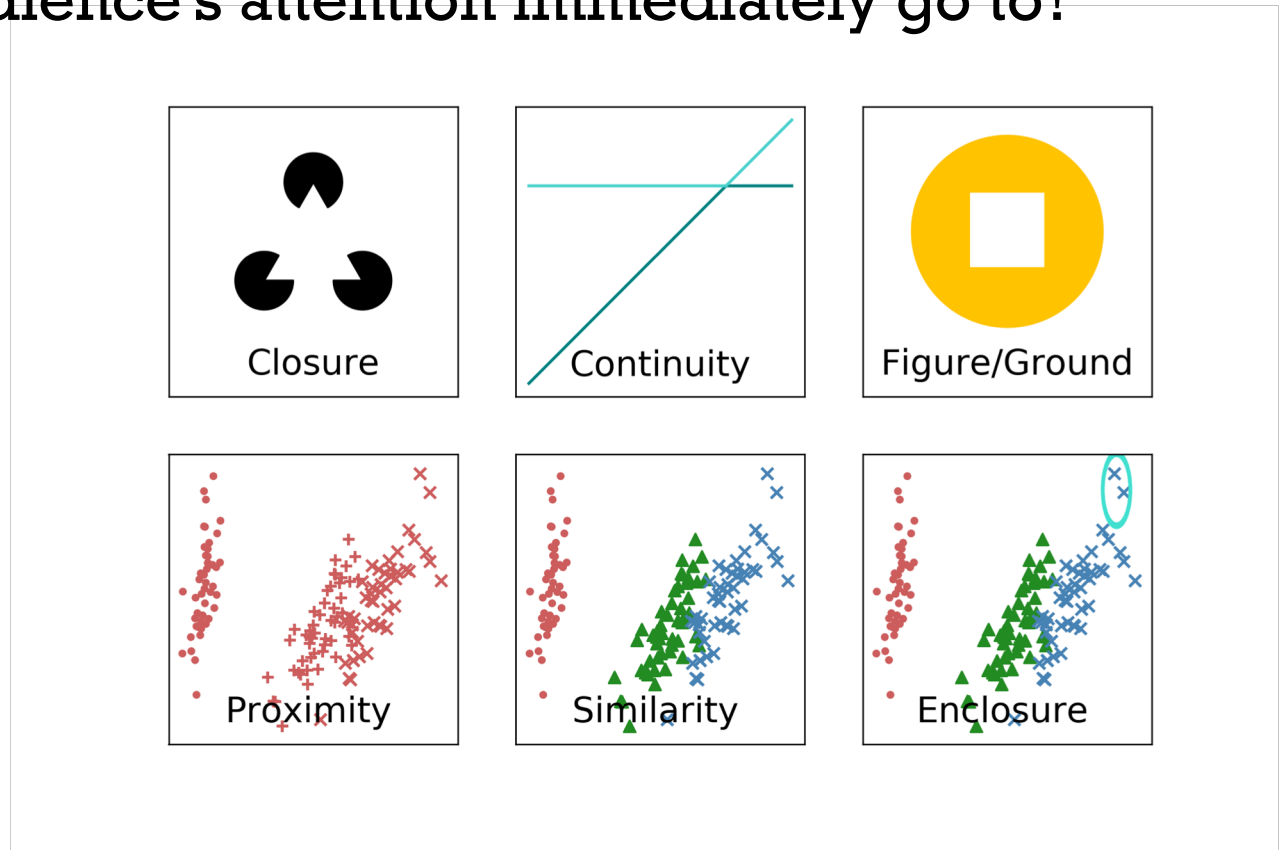
CHAPTER 2 – CHOOSING EFFECTIVE VISUALS

- What is the best way to show the data?
- Types of visuals
- Visuals to avoid



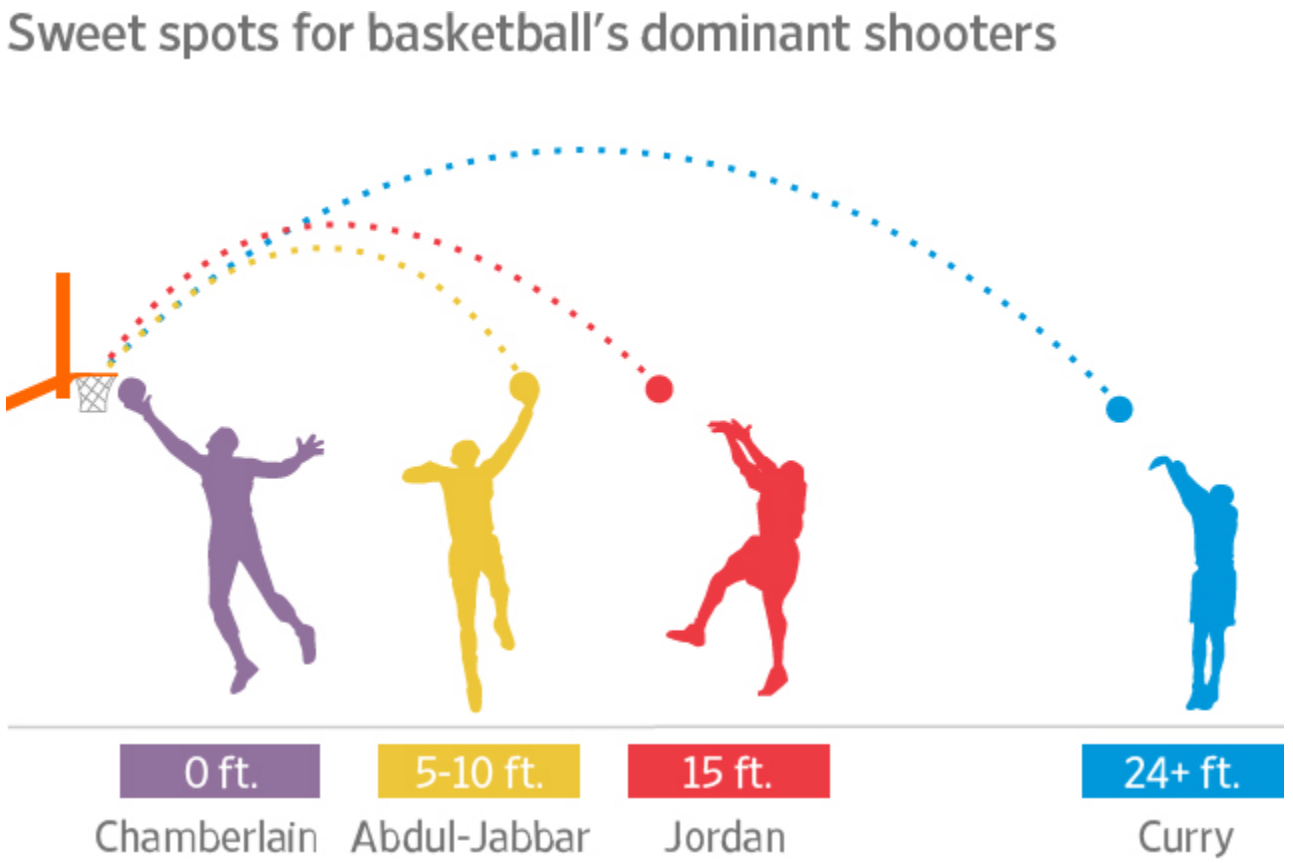
CHAPTER 3 – CLUTTER IS YOUR ENEMY

- Blank page → Every element is a cognitive load to your audience
- Where will the audience's attention immediately go to?
- Visual perception



CHAPTER 4 – FOCUS AUDIENCE'S ATTENTION

- Size
- Color
- Position
- Attributes & Hierarchy

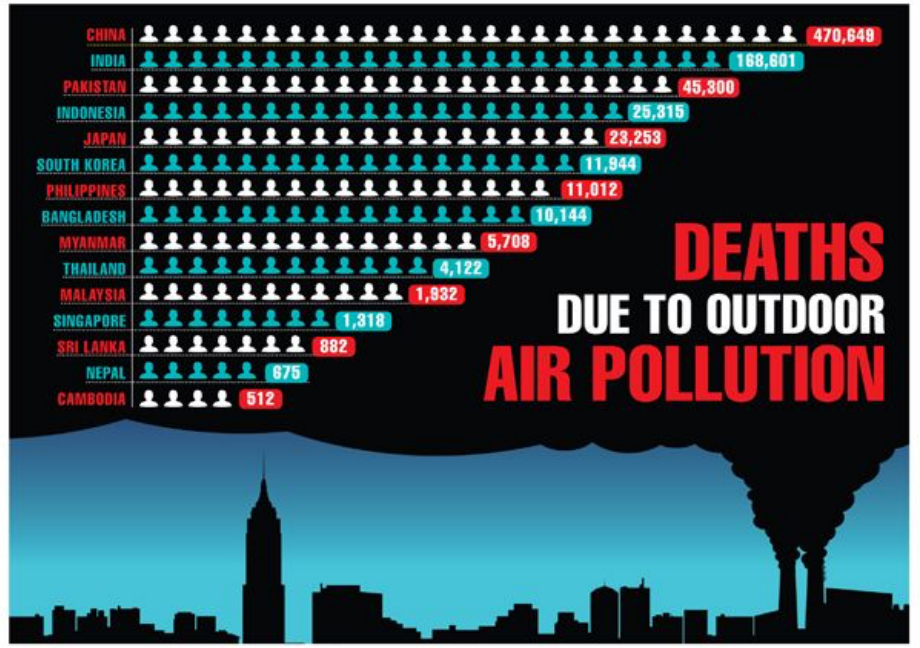


CHAPTER 5 – THINK LIKE A DESIGNER

- Traditional design concepts
- Accessibility, aesthetics, affordance
- Strategies for gaining audience acceptance

CHAPTER 6 – DISSECTING MODEL VISUALS

- Types of graphs and ordering of data
- How to emphasize and de-emphasize through different attributes
  - Color
  - Thickness
  - Size
  - Alignment
- Use of words, titles, labels, and annotations



(SOURCE: WORLD HEALTH ORGANISATION REPORT 2008)

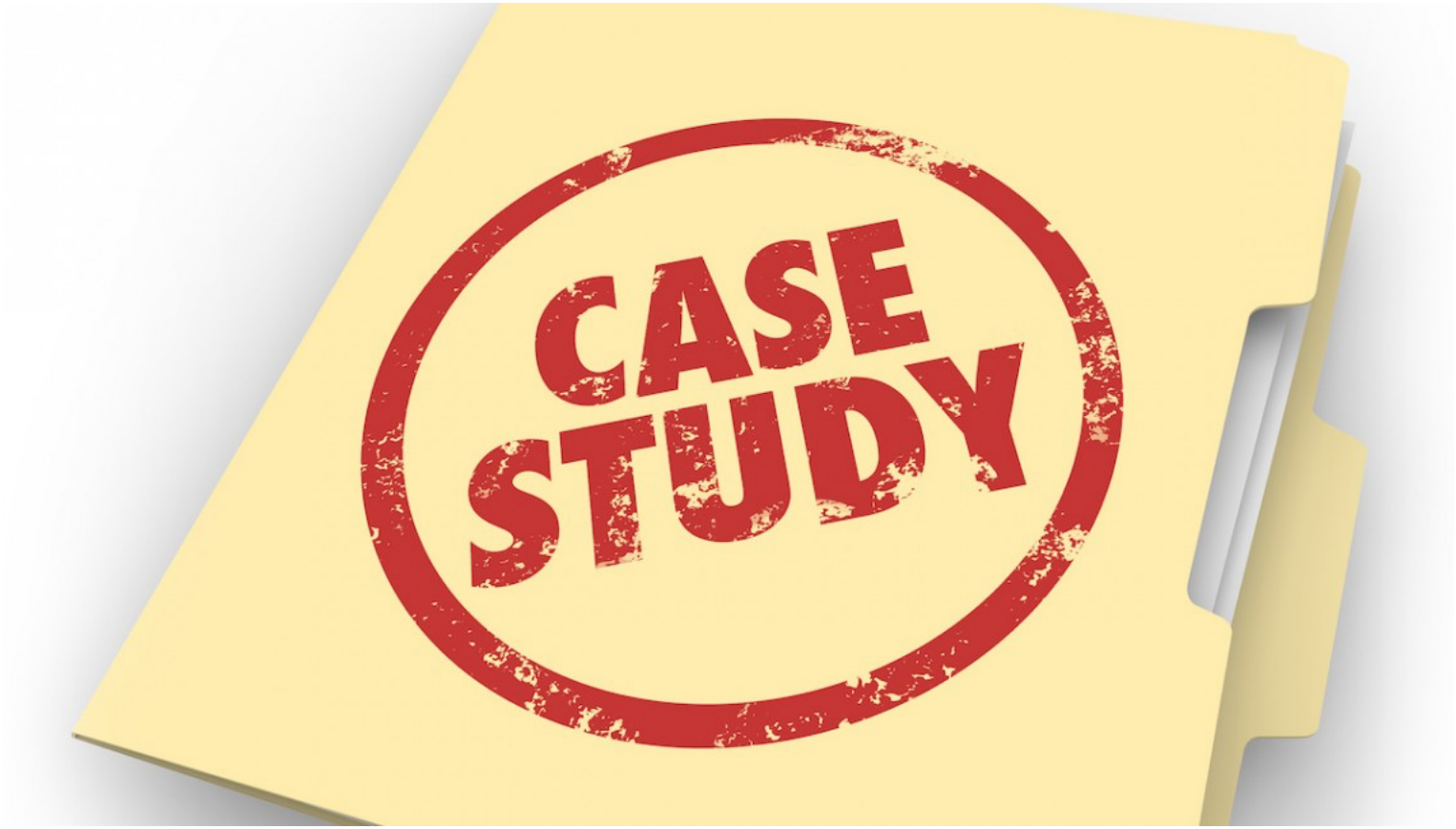
CHAPTER 7 – LESSONS IN STORYTELLING

- Beginning, Middle, End
- How to present data visuals effectively

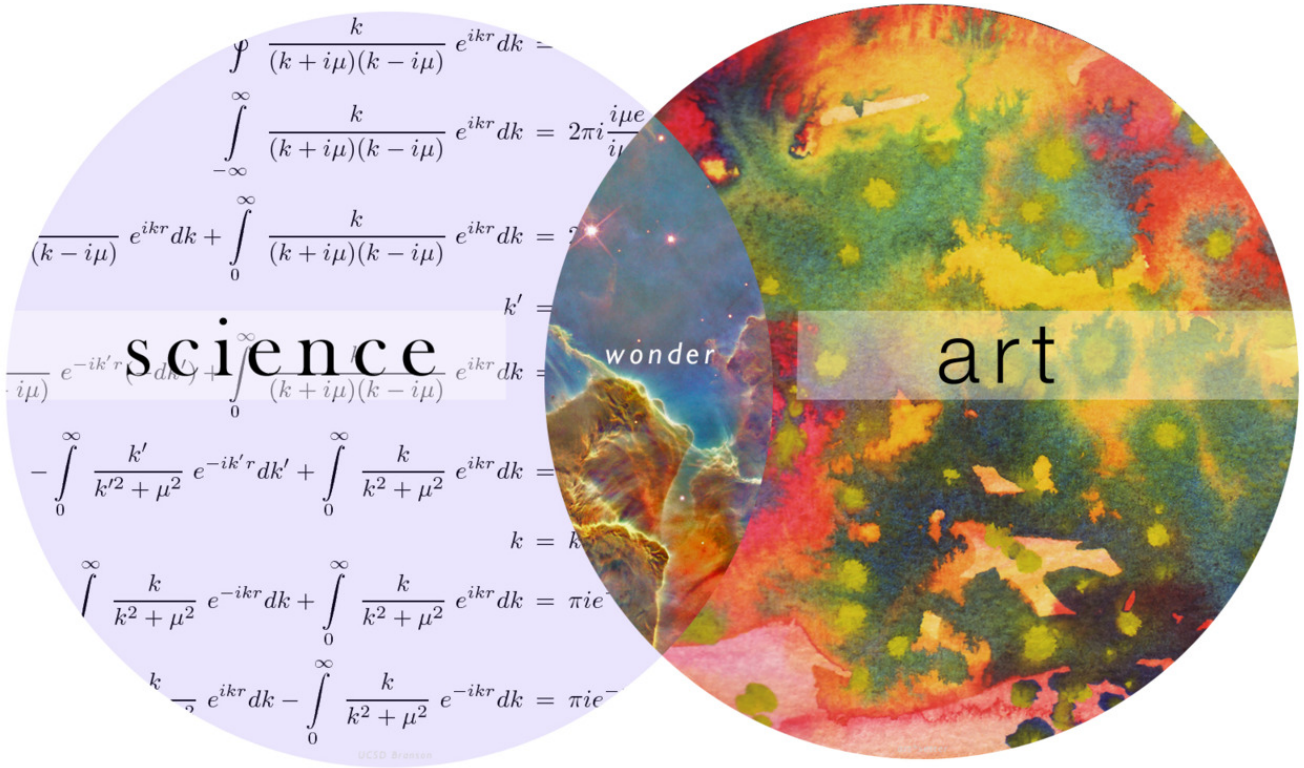
CHAPTER 8 – PULLING IT ALL TOGETHER

- Pulling together Ch.1 to 7 → Results
- Applications to real life examples

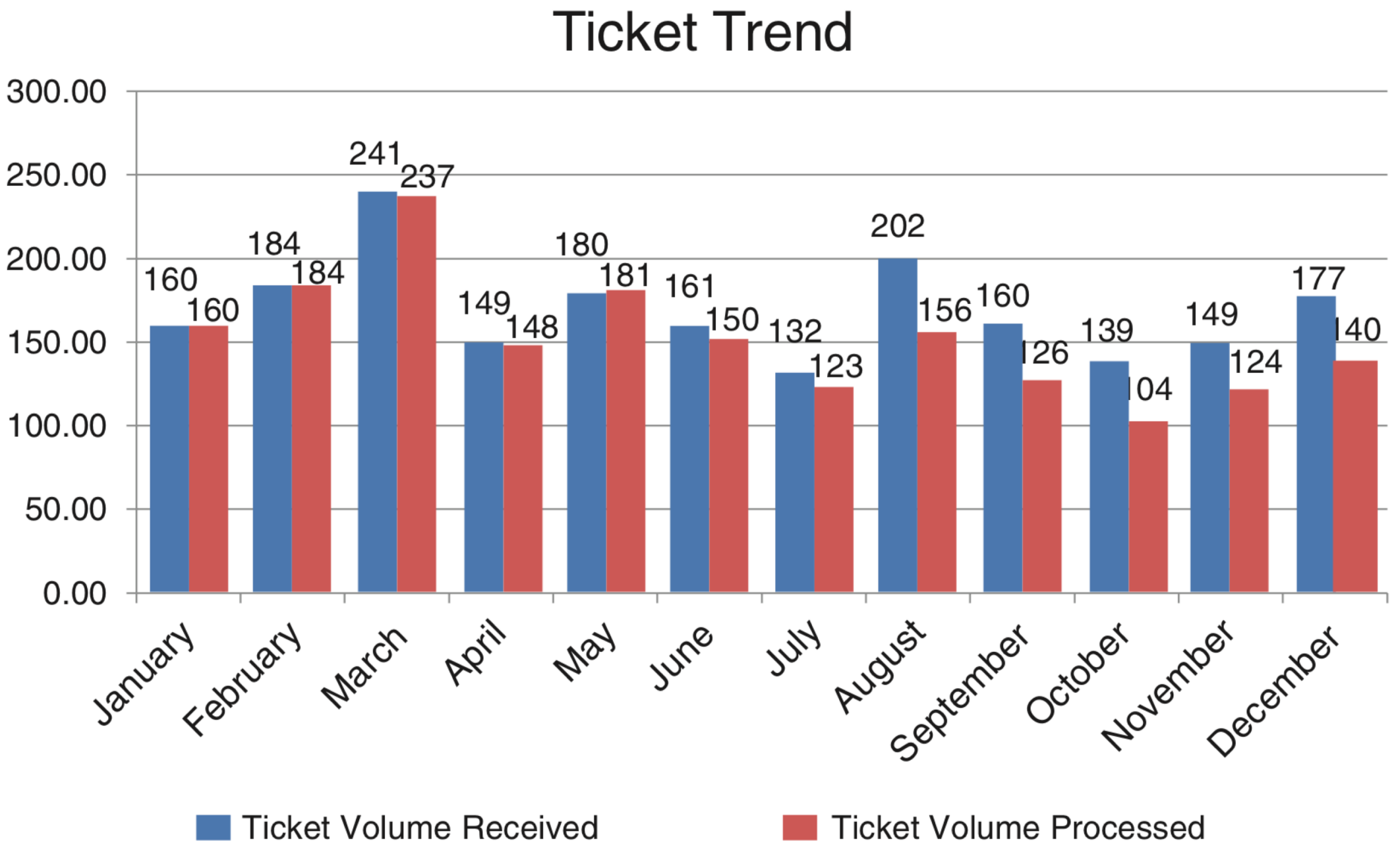
CHAPTER 9 – CASE STUDIES



CHAPTER 10 – FINAL THOUGHTS



BAD VISUALS VS. GOOD VISUALS

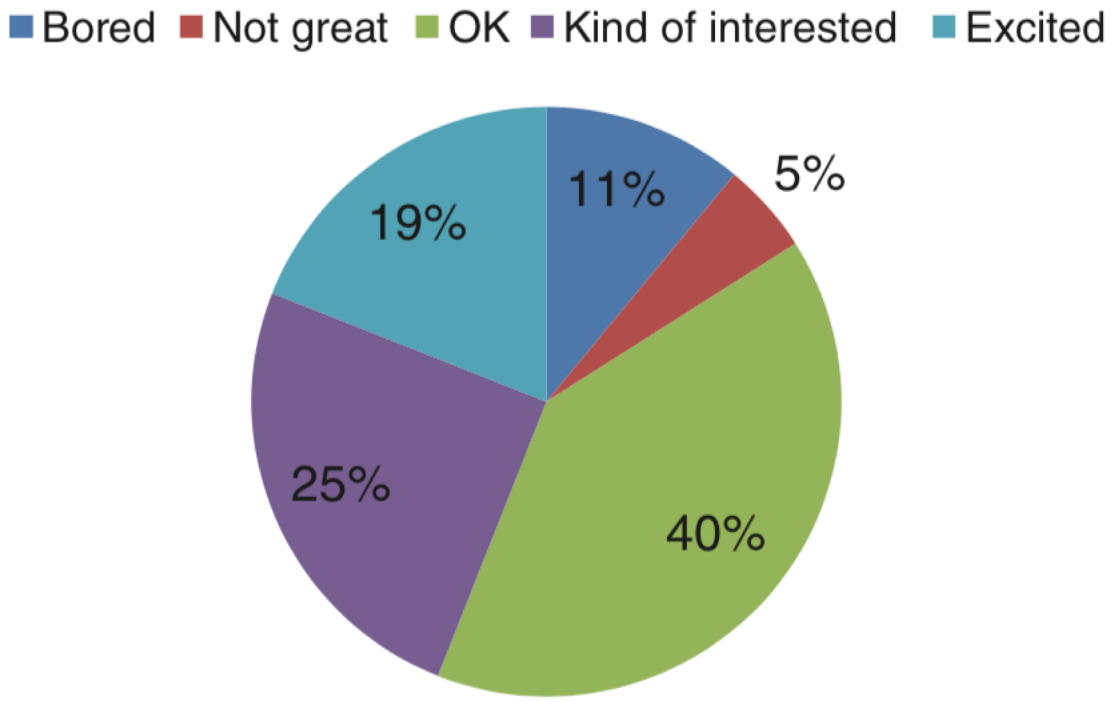

Ticket Trend
300.00
250.00
200.00
150.00
100.00
50.00
0.00
160
160
184
184
241
237
149
148
180
181
161
150
132
123
202
156
160
126
139
104
149
124
177
140
January
February
March
April
May
June
July
August
September
October
November
December
Ticket Volume Received
Ticket Volume Processed

Ticket volume over time

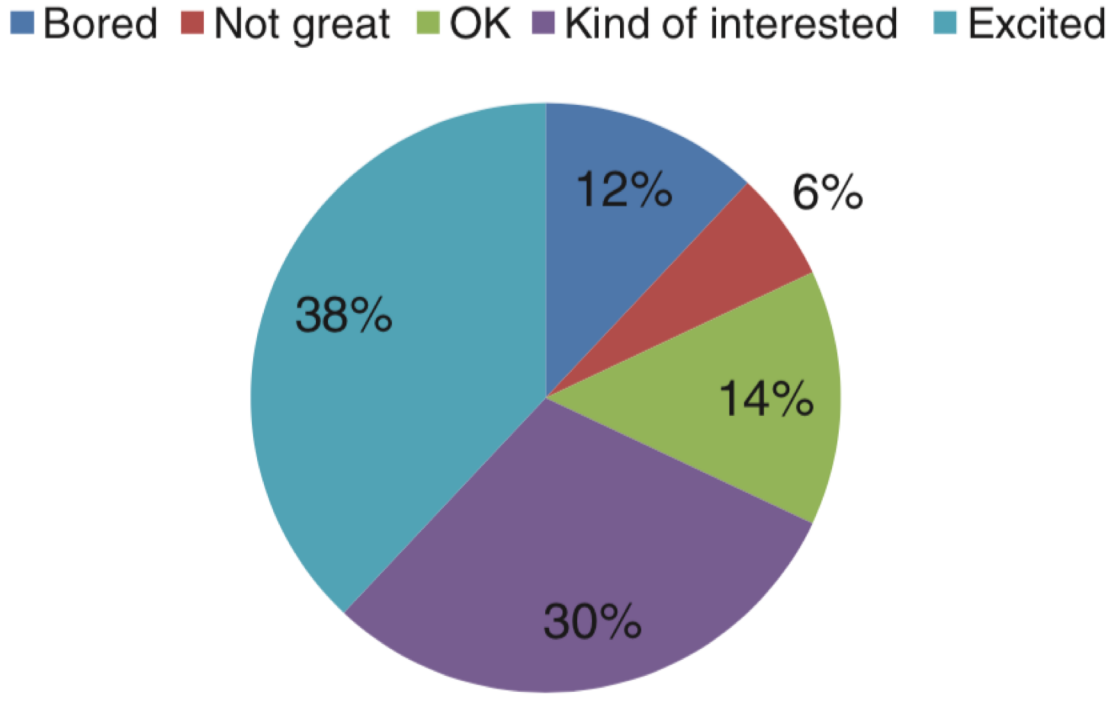
Data source: XYZ Dashboard, as of 12/31/2014 | A detailed analysis on tickets processed per person and time to resolve issues was undertaken to inform this request and can be provided if needed.

Survey Results

PRE: How do you feel about doing science?

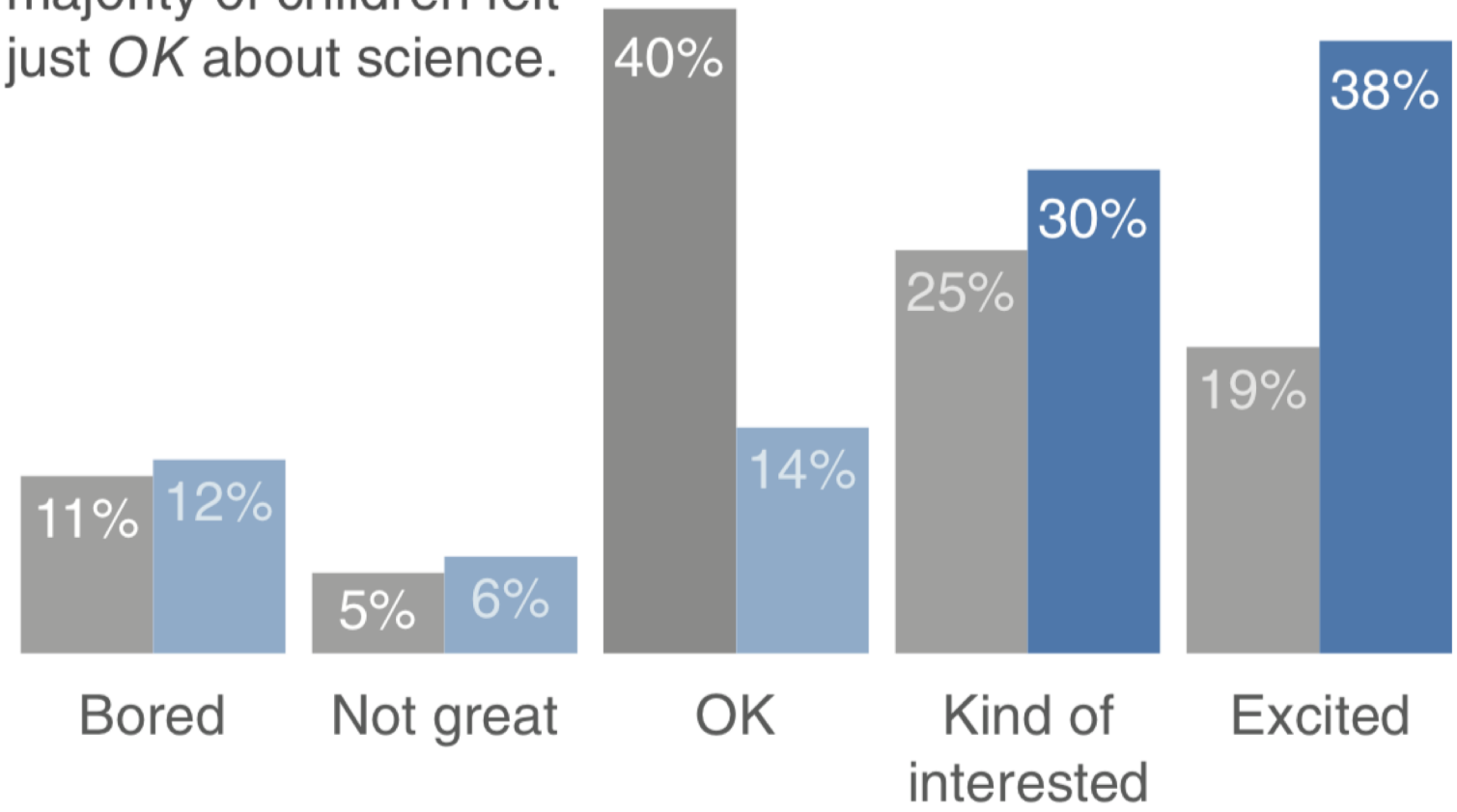


POST: How do you feel about doing science?



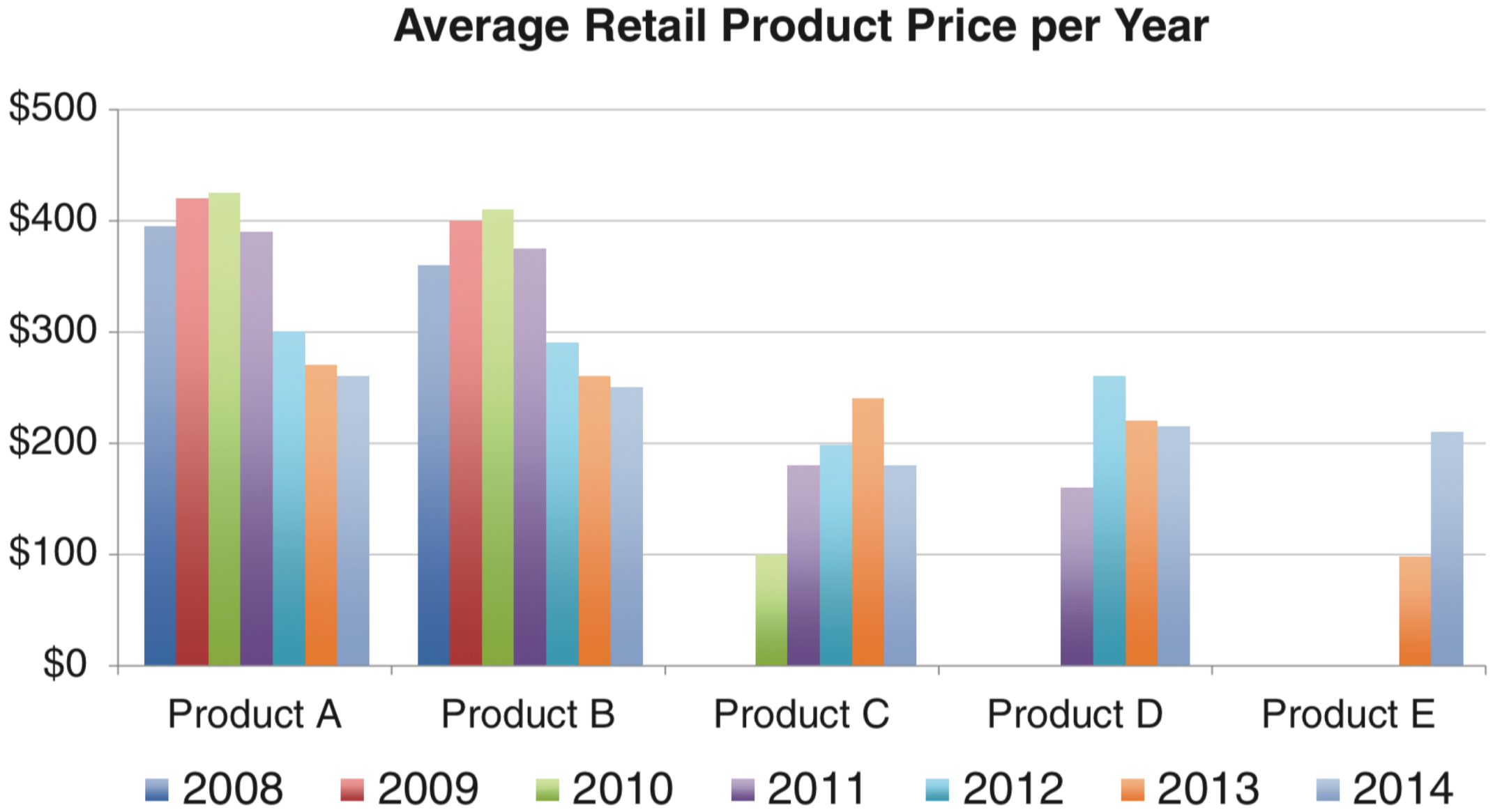
How do you feel about science?

BEFORE program, the majority of children felt just *OK* about science.

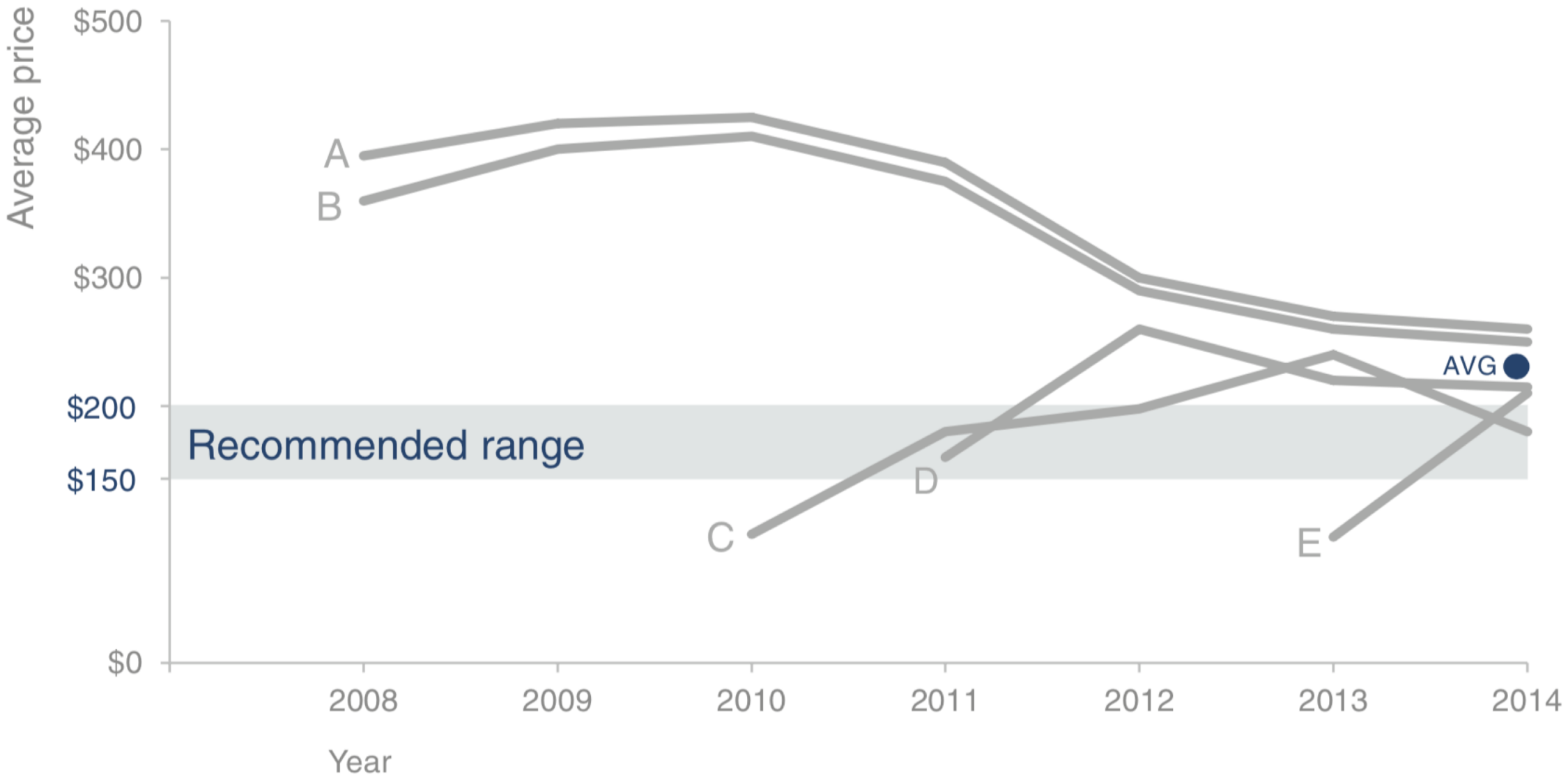


AFTER program, more children were *Kind of interested* & *Excited* about science.

Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).


Average Retail Product Price per Year
$500
$400
$300
$200
$100
$0
Product A
Product B
Product C
Product D
Product E
2008
2009
2010
2011
2012
2013
2014

Retail price over time by product



QUESTIONS?