

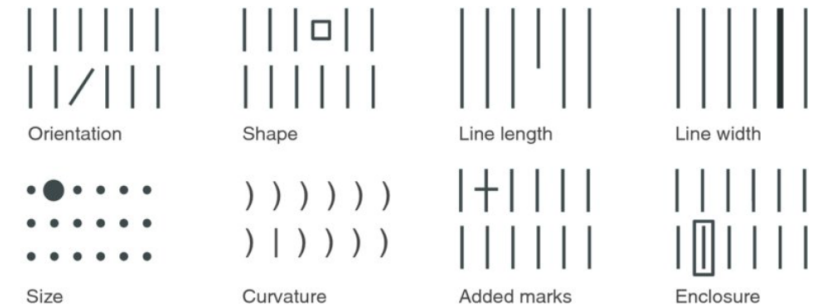
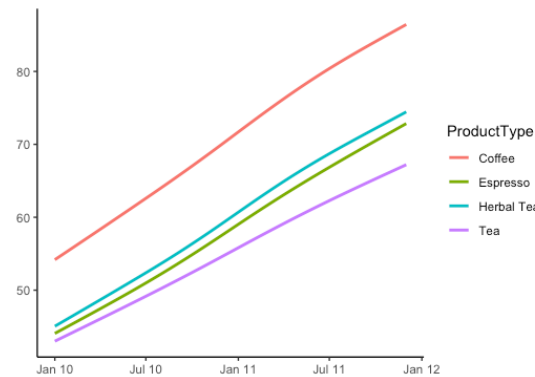
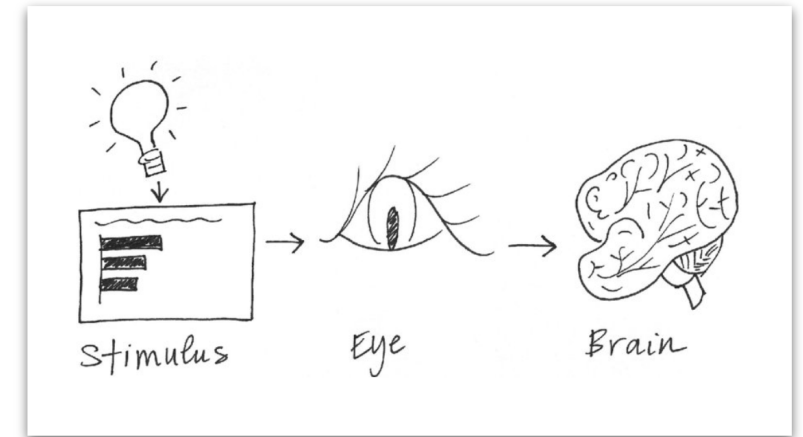
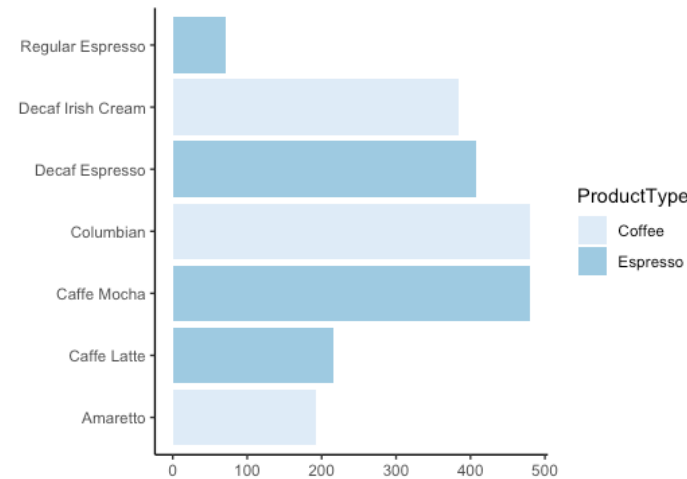
Visualization IV

Carolina A. de Lima Salge
Assistant Professor
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University of Georgia

Business Intelligence
Spring 2021

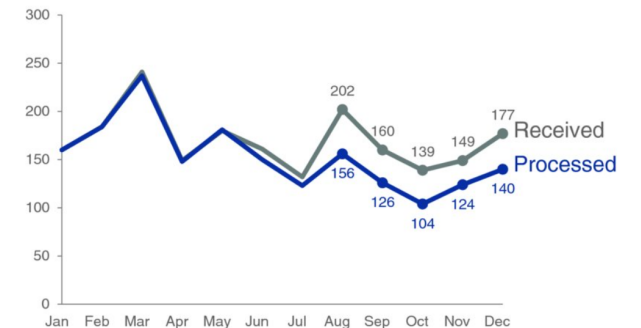
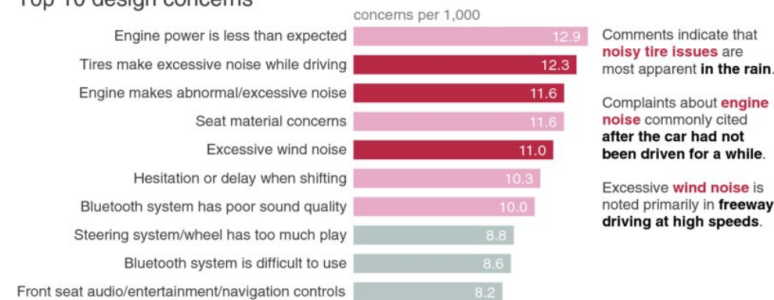


Terry College of Business
UNIVERSITY OF GEORGIA



Of the top design concerns, three are noise-related.

Top 10 design concerns



A Few Lessons from Knaflic (2015)

1

Understand the context

2

Choose an appropriate visual display

3

Eliminate clutter

4

Focus attention where you want it

5

Think like a designer

6

Tell a story



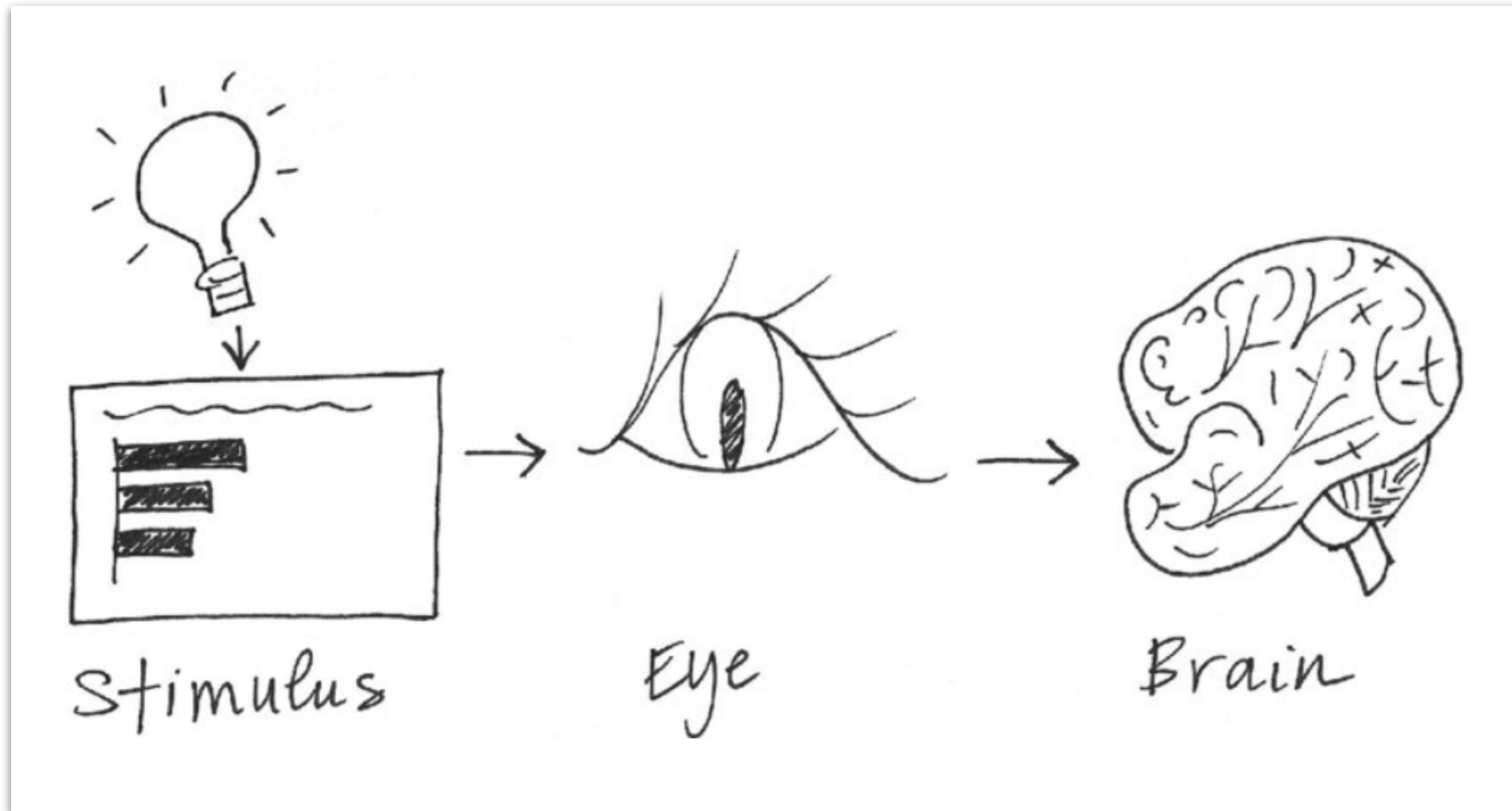
Focus your audience's attention

While it is important to eliminate distractions, it is also important to look at what remains – **the data!**

- Taking advantage of how people see
- Pre-attentive attributes



Light reflects stimulus, which is captured by our eyes, and processed by our brain



How many 3s are in this visual?

756395068473
658663037576
860372658602
846589107830



How many 3s are in this visual?

756**3**9506847**3**
65866**3**0**3**7576
860**3**72658602
8465891078**3**0



Leveraging your iconic memory



Happens super fast, don't realize it



Stays in our brain for a fraction of a second



Tuned to a set of pre-attentive attributes

Intensity of color



We can use it to show our audience what we want them to see



Pre-attentive attributes



Orientation



Shape



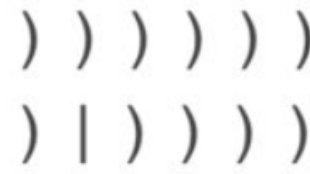
Line length



Line width



Size



Curvature



Added marks



Enclosure

Pre-attentive attributes



Long line > short line



Don't think of color in the same way



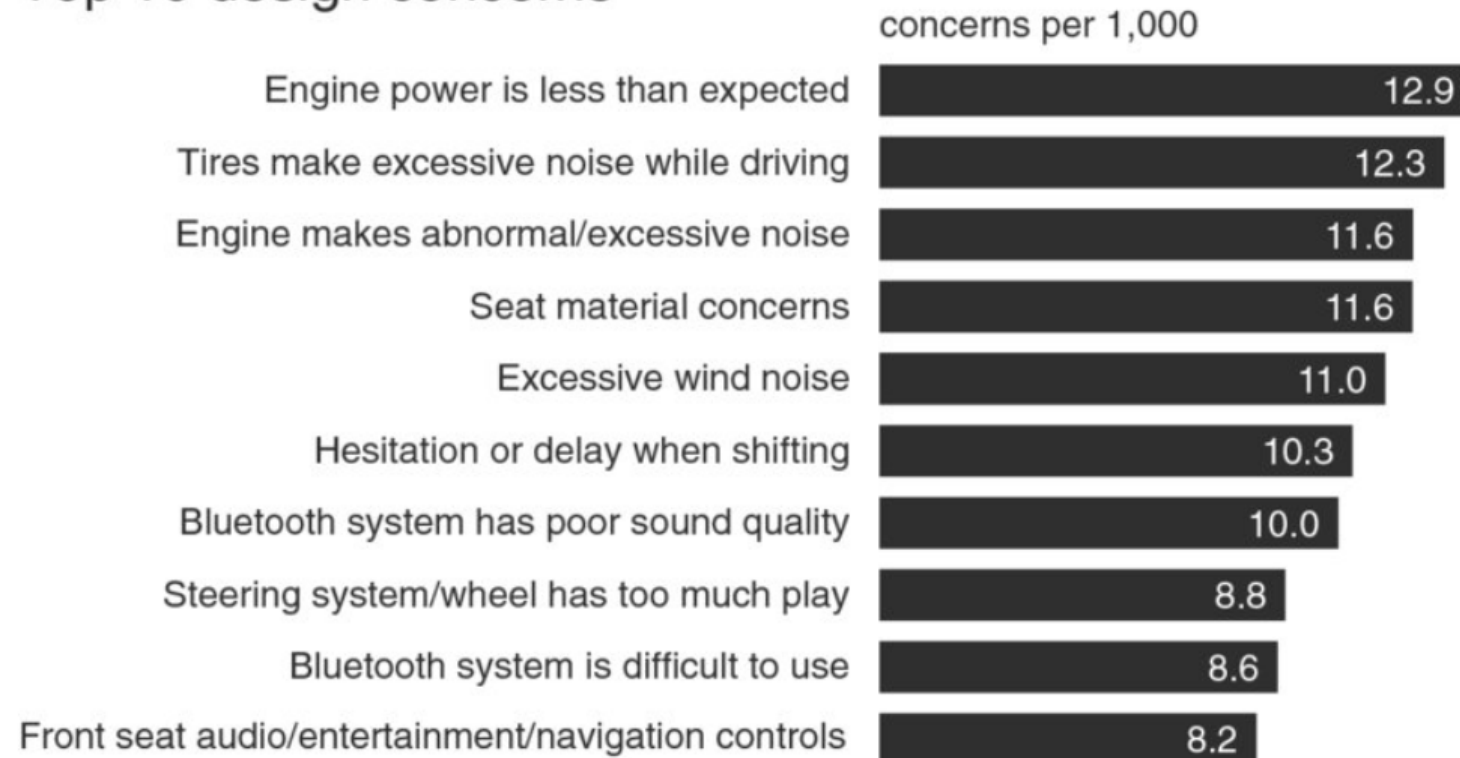
Attributes that can be used to encode quantitative information

Line length, spatial position, line width, size, and intensity



Exploratory

Top 10 design concerns

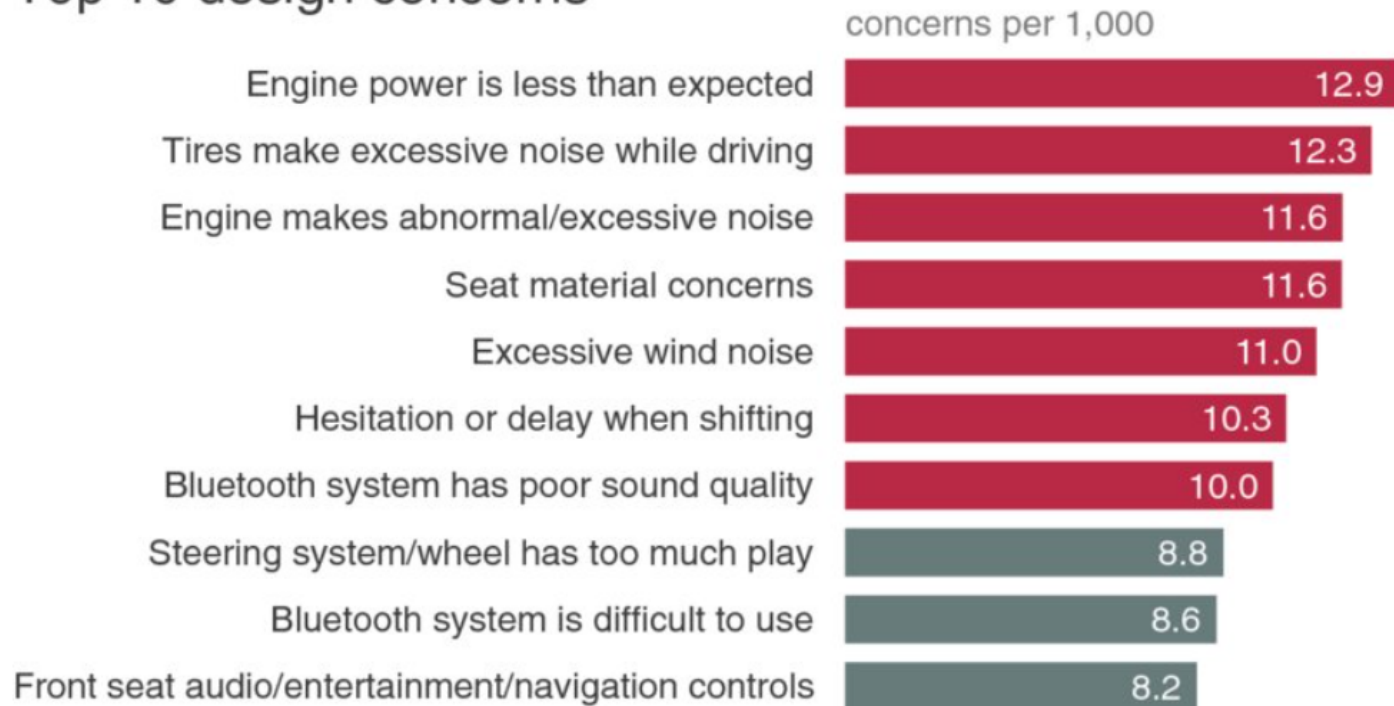


Explanatory

7 of the top 10 design concerns have 10 or more concerns per 1,000.

Discussion: is this an acceptable default rate?

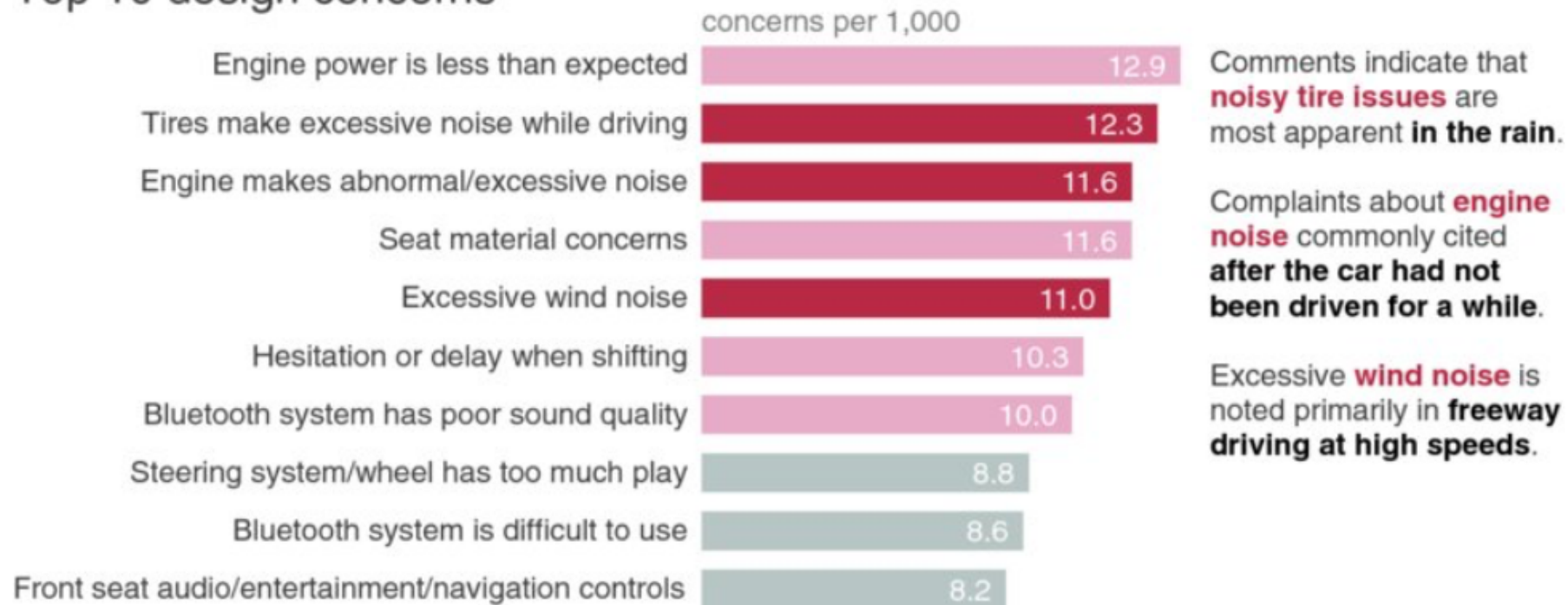
Top 10 design concerns



One step further – from macro to micro

Of the top design concerns, three are noise-related.

Top 10 design concerns



Pre-attentive attributes



When you highlight one point, it can make others harder to see



Don't use pre-attentive attributes in exploratory analysis

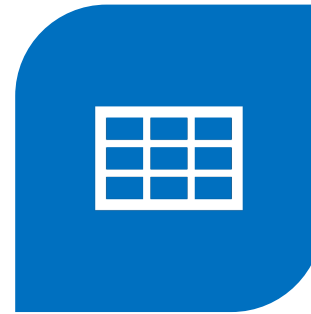
How to determine what to stand out?



PUSH EVERYTHING
TO THE BACKGROUND



MAKE DATA STAND
OUT



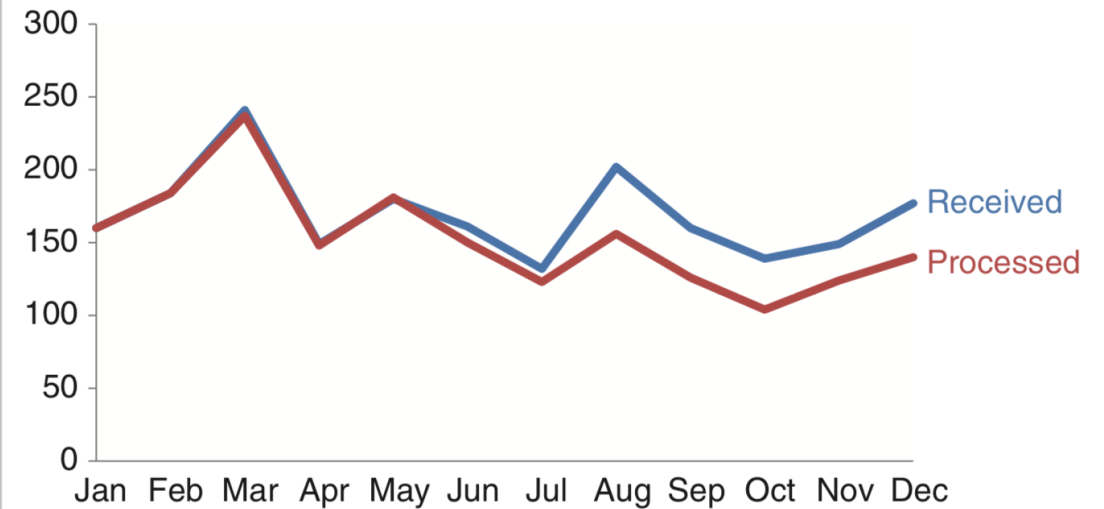
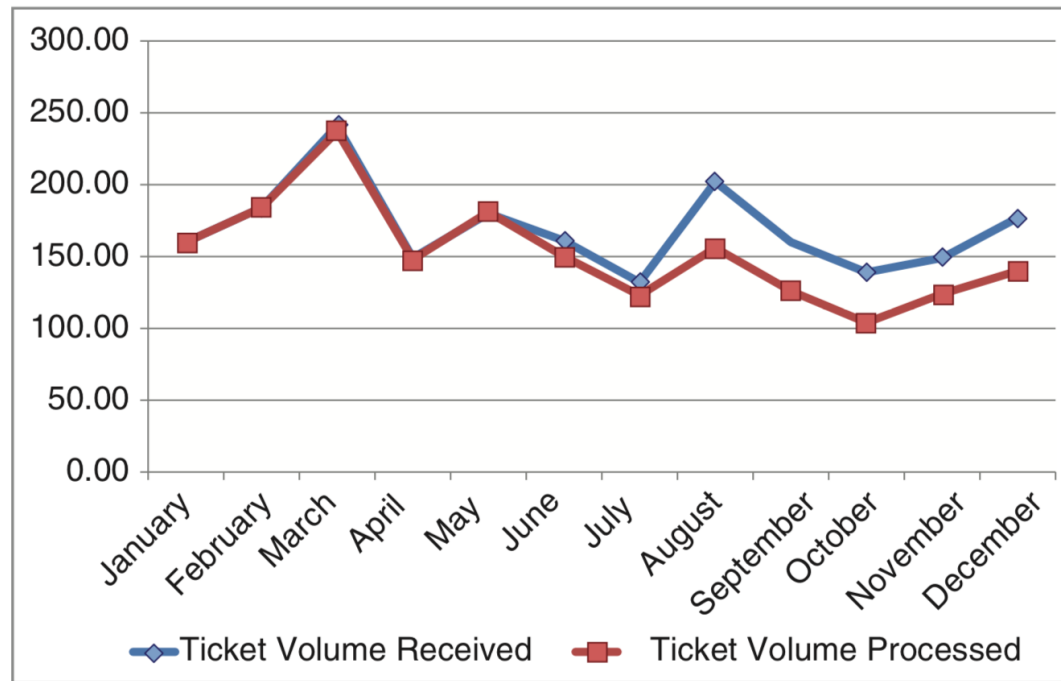
ADD DATA MARKERS
(CLUTTER, I KNOW!)



BE STRATEGIC ABOUT
WHICH MARKERS TO
PRESERVE



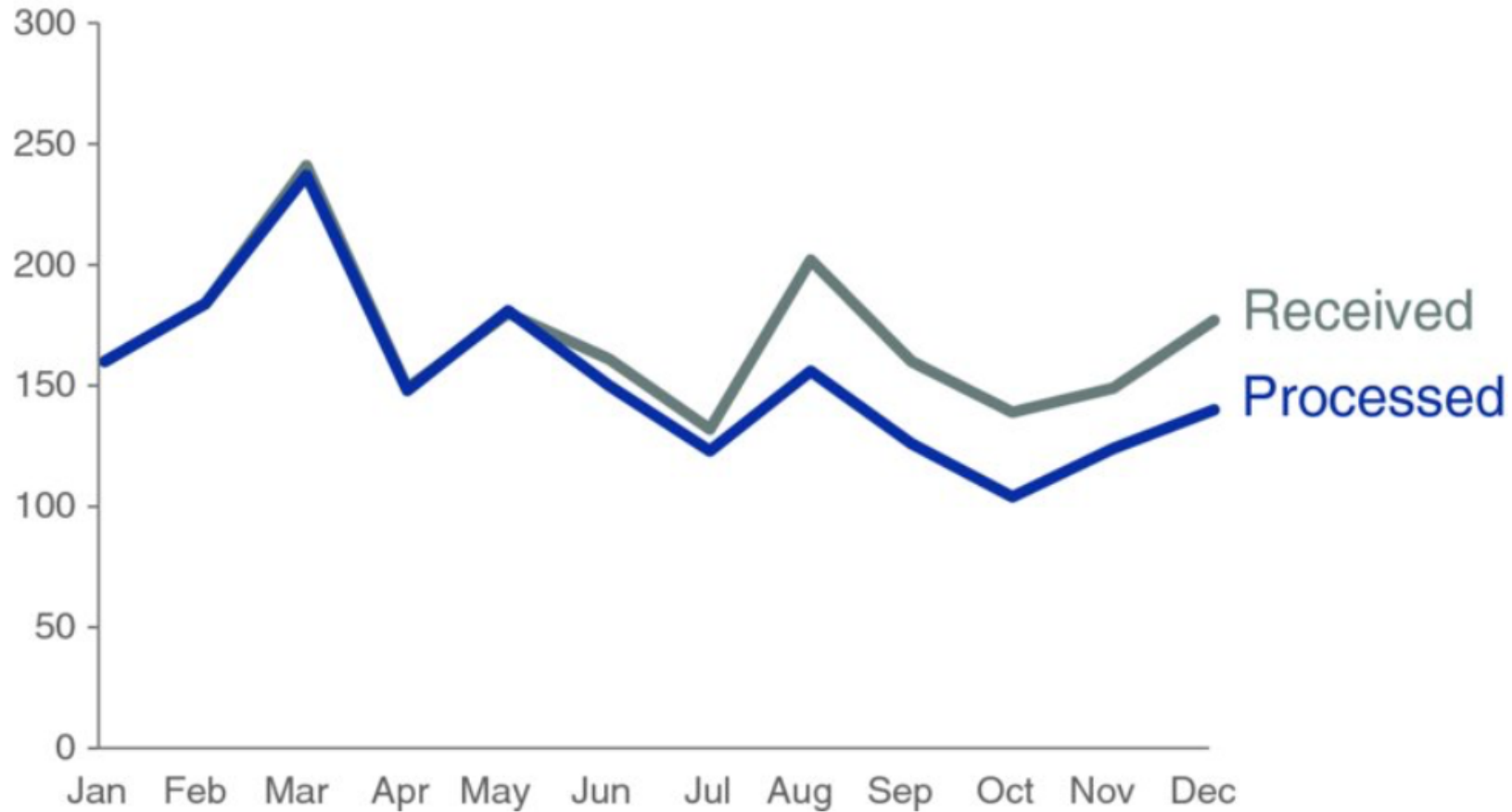
Revisiting ticket volume



Push everything to background



Make data stand out



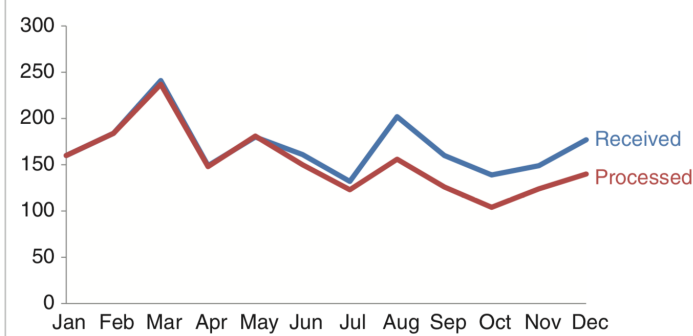
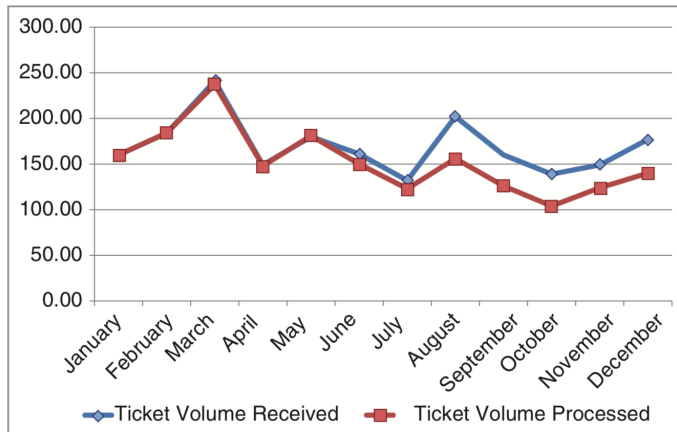
Add markers



Be strategic about markers



Graph evolution



Size and color

Size matters

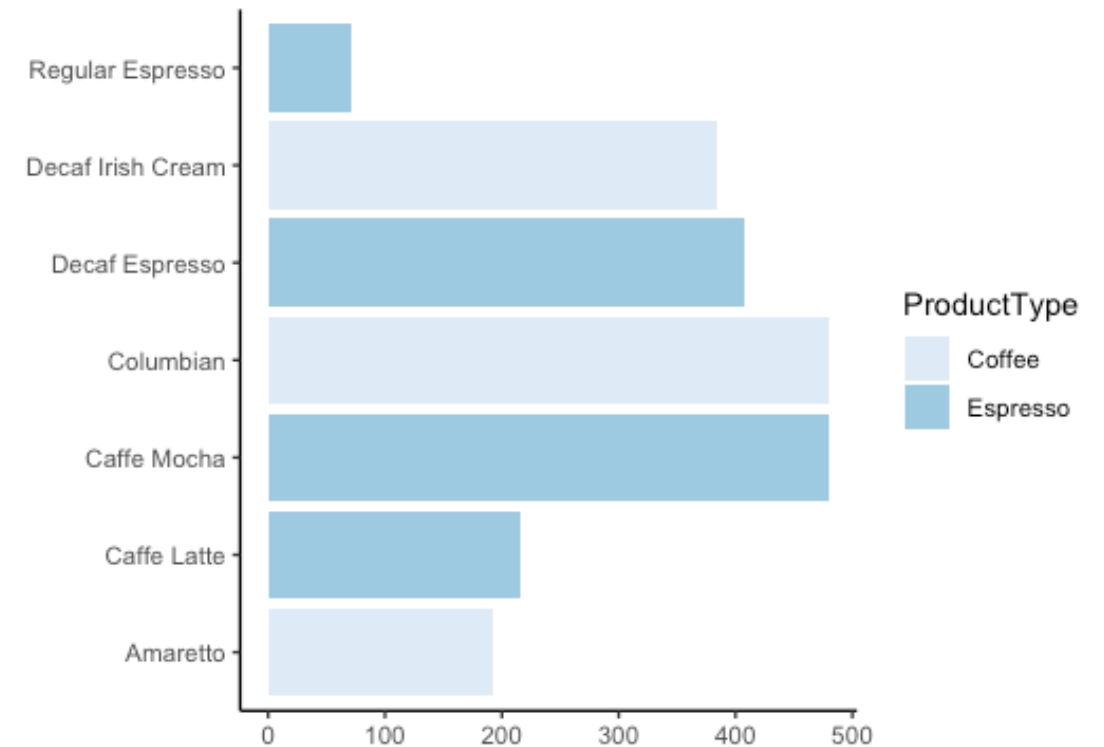
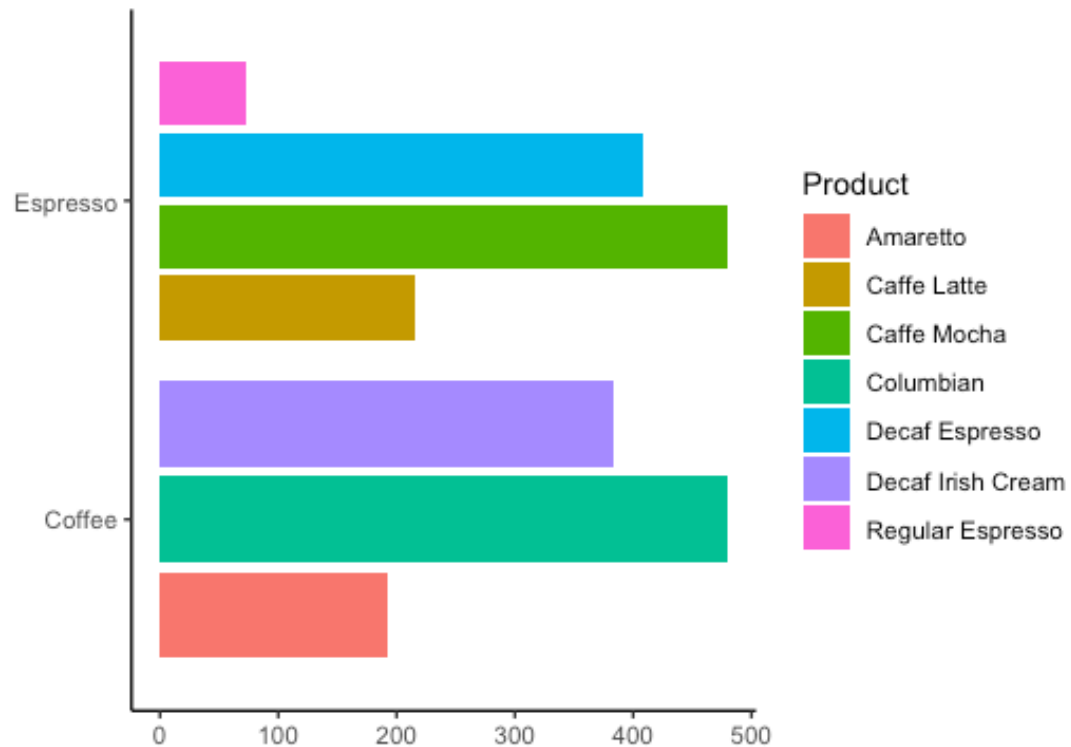
- Relative size denotes relative importance

Resist the urge to use color for the sake of being colorful

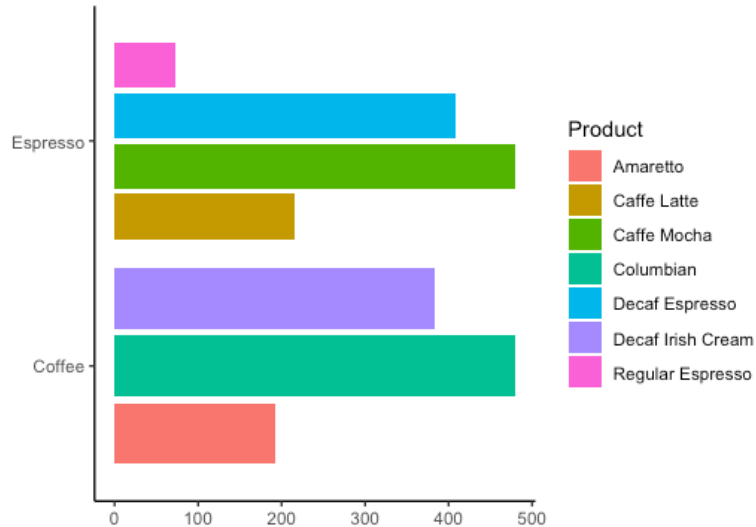
- Leverage color strategically
- **Grey** as base color
- **Blue** for attention-grabbing
 - Avoid issue of colorblindness
 - Prints well in black and white



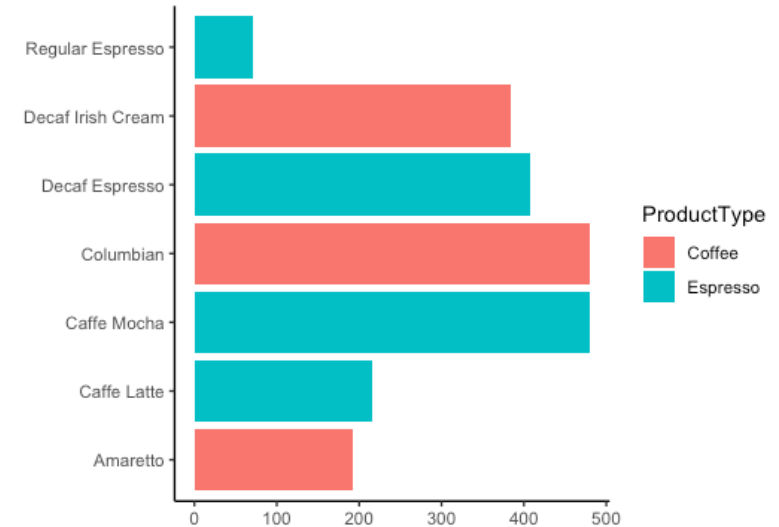
Use color sparingly



Use color sparingly (step 1. change mapping)

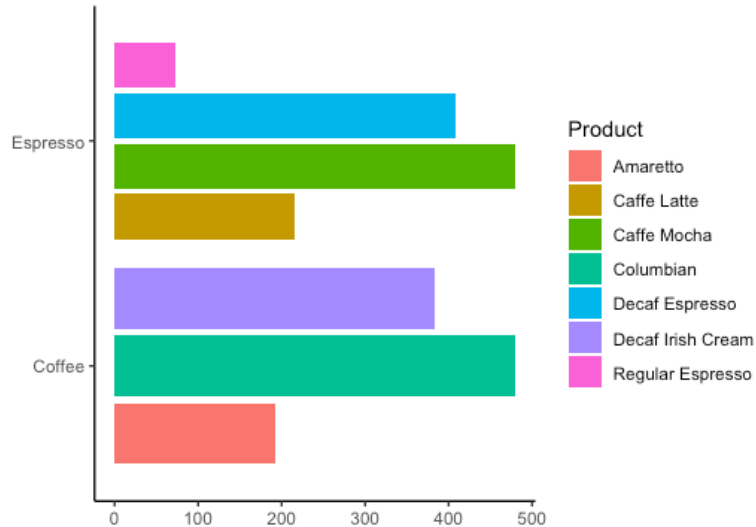


```
CoffeeChain %>%
  filter(ProductType %in% c("Coffee", "Espresso")) %>%
  ggplot(., mapping = aes(x = ProductType, fill = Product)) +
  geom_bar(position = "dodge2") +
  theme_classic() +
  coord_flip() +
  labs(x = NULL, y = NULL)
```

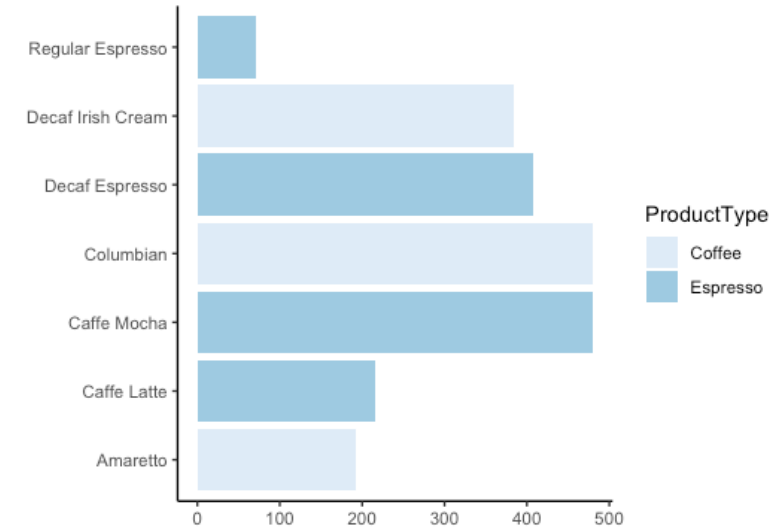


```
CoffeeChain %>%
  filter(ProductType %in% c("Coffee", "Espresso")) %>%
  ggplot(., mapping = aes(x = Product, fill = ProductType)) +
  geom_bar(position = "dodge2") +
  theme_classic() +
  coord_flip() +
  labs(x = NULL, y = NULL)
```

Use color sparingly (2. change palette)



```
CoffeeChain %>%
  filter(ProductType %in% c("Coffee", "Espresso")) %>%
  ggplot(., mapping = aes(x = ProductType, fill = Product)) +
  geom_bar(position = "dodge2") +
  theme_classic() +
  coord_flip() +
  labs(x = NULL, y = NULL)
```



```
CoffeeChain %>%
  filter(ProductType %in% c("Coffee", "Espresso")) %>%
  ggplot(., mapping = aes(x = Product, fill = ProductType)) +
  geom_bar(position = "dodge2") +
  theme_classic() +
  coord_flip() +
  labs(x = NULL, y = NULL) +
  scale_fill_brewer(palette = "Blues")
```


Design with colorblind in mind

8% of men and 0.5% of women are colorblind

- Avoid shades of red and green together
- **Blue** for positive and **orange** for negative

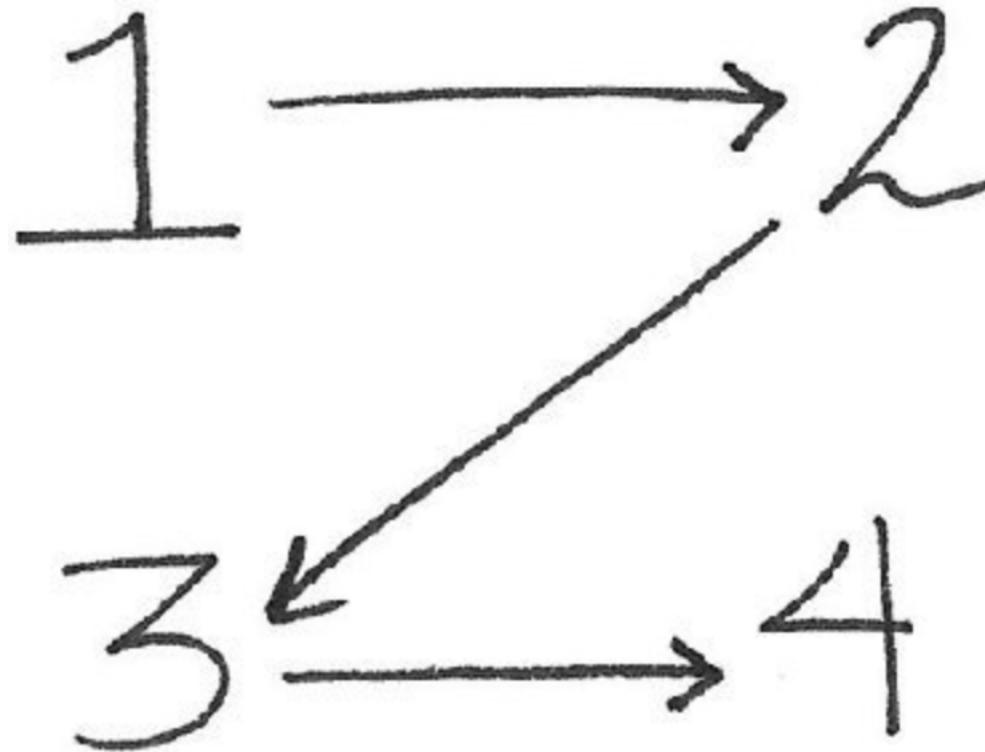
vischeck.com

colororacle.org

checkmycolours.com



The zigzag “z” of taking information



Main takeaways

Focus attention where you want it

- Make data stand out
- Add markers (strategically)
- Leverage pre-attentive attributes (e.g., size)
- Use color sparingly and design for colorblindness
- Place most important object in the top left (1)



At-Home Exercises

Practice, practice, practice...

Open the CoffeeChain dataset in R. Next, re-do all graphs (points, lines, and bars) you created from last time to *focus attention where you want it*

- Do the same for Tableau
- If you want more practice in R for descriptive analytics and exploratory data analysis consider doing the following DataCamp module: **Case Study: Exploratory Data Analysis in R**
<https://learn.datacamp.com/courses/case-study-exploratory-data-analysis-in-r>

Read chapter 4 (“focus your audience’s attention”) of Storytelling with data



Thank You!

