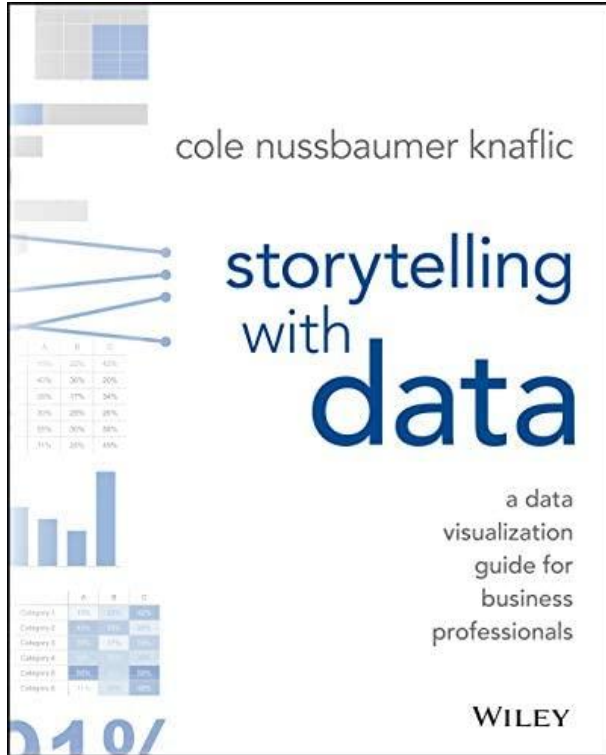


Using Color in Data Visualization



Optional book on styling



- <https://www.amazon.com/Storytelling-Data-Visualization-Business-Professionals/dp/1119002257>

Styling your visualizations

- Styling plays important part in data visualization in business.
- Smart decisions about styling a chart can:
 1. eliminate distractions
 2. help clarify a point
 3. direct the audience attention
 4. evoke an emotion ...
- Color is a big part of the styling process

Things to consider

- Color is a powerful tool but be very mindful of how you use it
- Less is more. Use as little color as possible. Every additional color can be a distraction.
- Even pretty colors can create a bad combination.
- Professional visualizations are not about being pretty.



What to think about when selecting colors

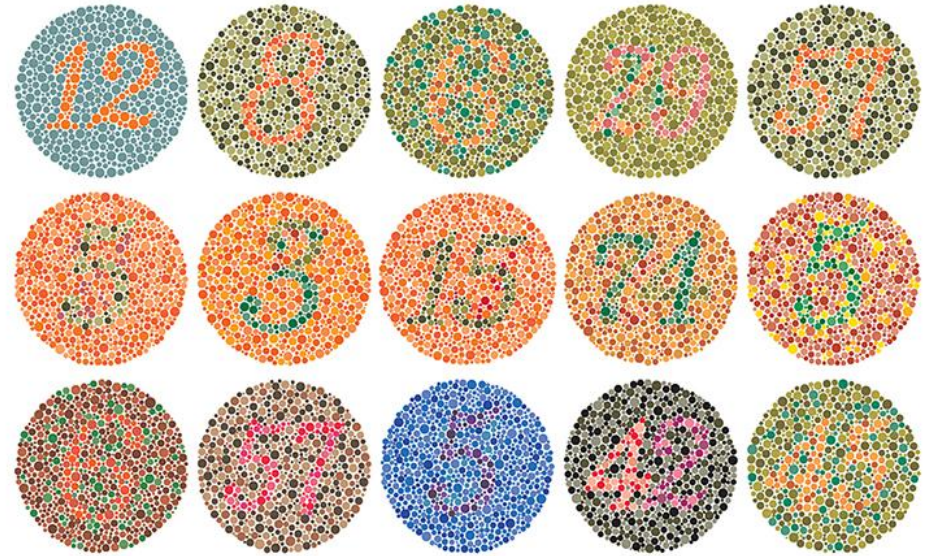
1. Color blindness
2. Color associations
3. Use color sparingly
4. Use color to draw attention
5. Background color
6. Using different shades of the same color vs adding more hues
7. Printing in grayscale (black and white)

1. Color Blindness

About 8% of men and 0.5% of women are colorblind.

Source:

<https://www.colourblindawareness.org>



Types of color blindness

Normal vision



Inability to see red



Inability to see blue



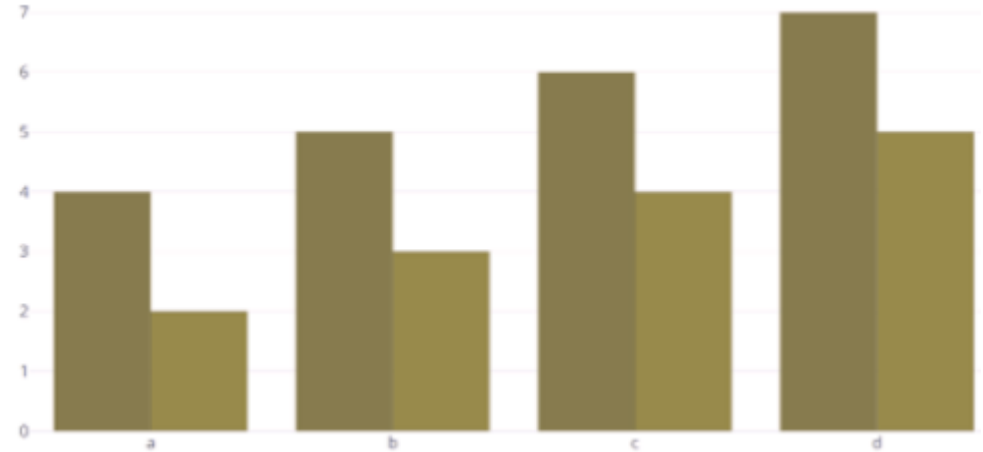
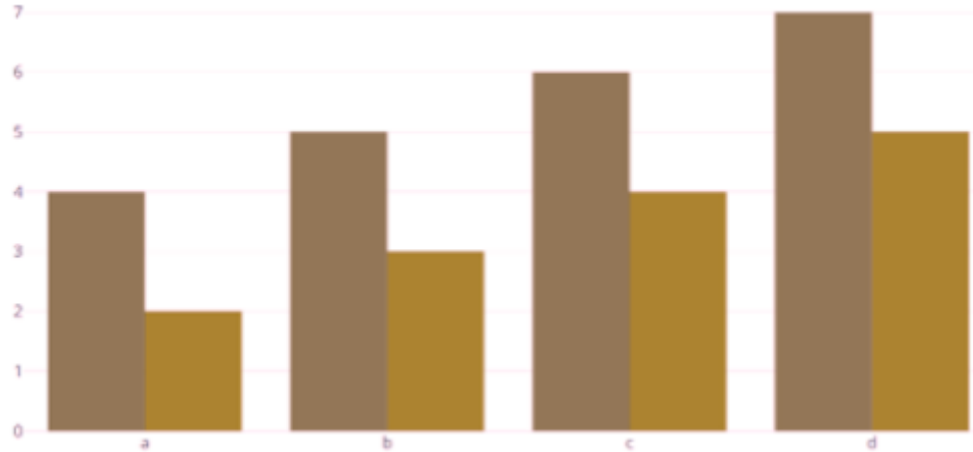
Inability to see green



Color Blindness

- As you may see in the previous slide – the two images on the right look very similar.
- People with red or green color blindness often have a hard time telling red from green. Avoid using shades of red and green together in your charts.

Red and green together



You don't have to always avoid the use of red and green together if you have additional indicators

Category	Order Date			
	2011	2012	2013	2014
Furniture		▲ 8.48%	▲ 16.65%	▲ 8.29%
Office Supplies		▼ -9.58%	▲ 33.72%	▲ 34.34%
Technology		▼ -7.13%	▲ 38.87%	▲ 20.34%



2. Color Associations



Color Psychology



Red

Anger, danger, warmth and passion. Can increase heart rate and raise blood pressure, and be overwhelming if used too much.



Orange

Bright, fun, friendly and playful. Commands attention without being overpowering.



Yellow

Positive, optimistic and energetic. Good for point of sale messaging and calls to action.



Green

Growth, rebirth, nature, stability, endurance and abundance. Has a balancing or harmonizing effect and is often used in relation to wealth.



Blue

Trustworthy, calm and peaceful. Often used in banking. Light blue can be relaxing, while dark blue can signify strength and reliability.



Purple

Nostalgic, sentimental and sophisticated. Symbolises wealth and luxury.



Pink

Dusty pink can be sentimental, while a vibrant pink symbolises a youthful energy.



Brown

Honesty and simplicity. Often used for organic companies and can bring warmth and wholesomeness to designs.



White

Simplicity and purity. Considered neutral, it conveys cleanliness and minimalism.



Black

Bold, powerful, classic, confidence and sophistication. Makes designs feel edgier or elegant and is used for typography and other functional parts for neutrality.



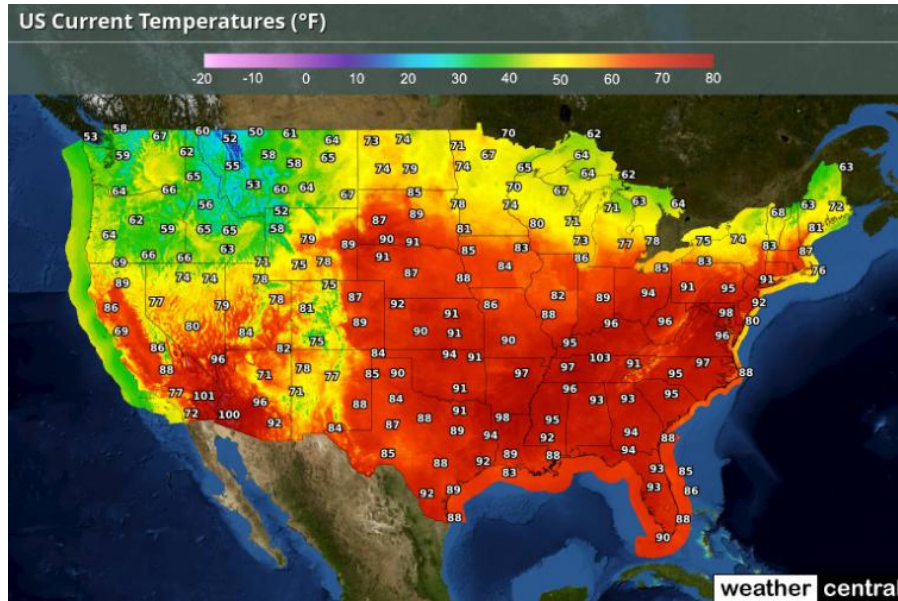
Grey

Neutral, moody, conservative and formal. Often used when formality and professionalism are key.

Color Associations can vary with the context

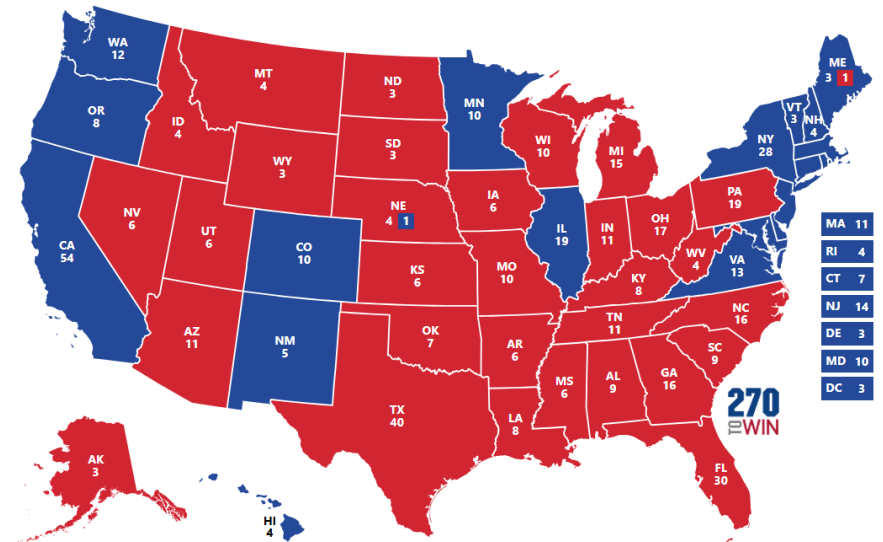
Red = hot

Blue = cold

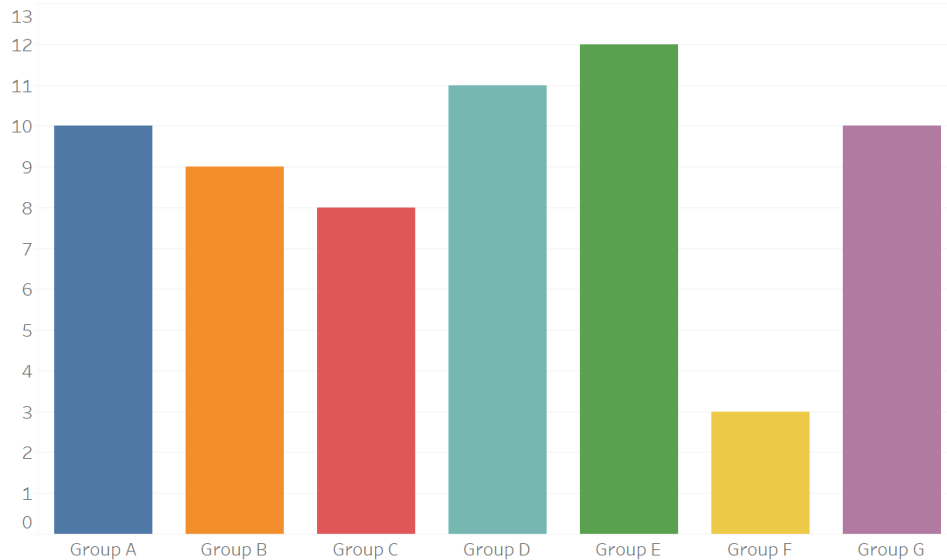


Red = republican states

Blue = democratic states



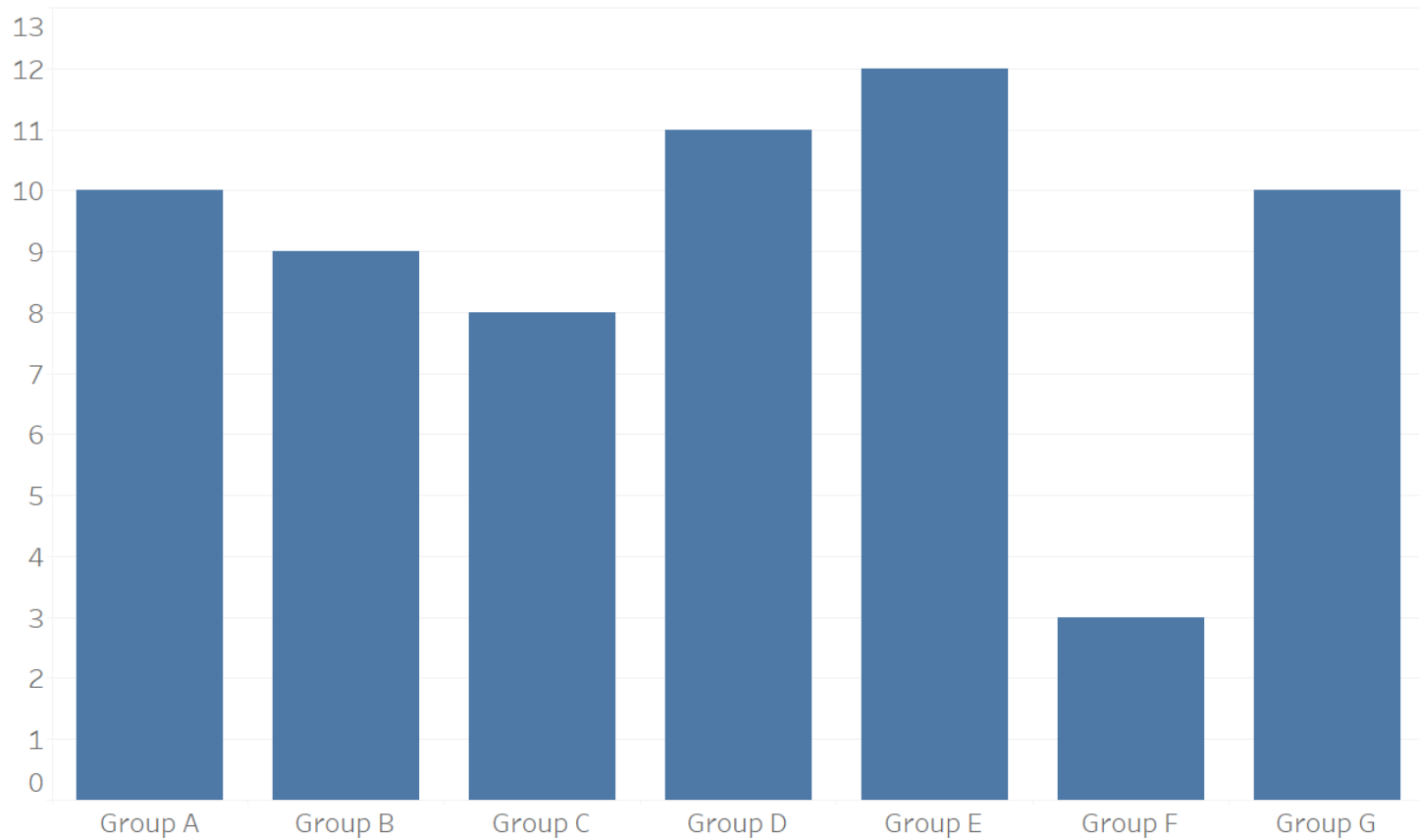
3. Use color sparingly



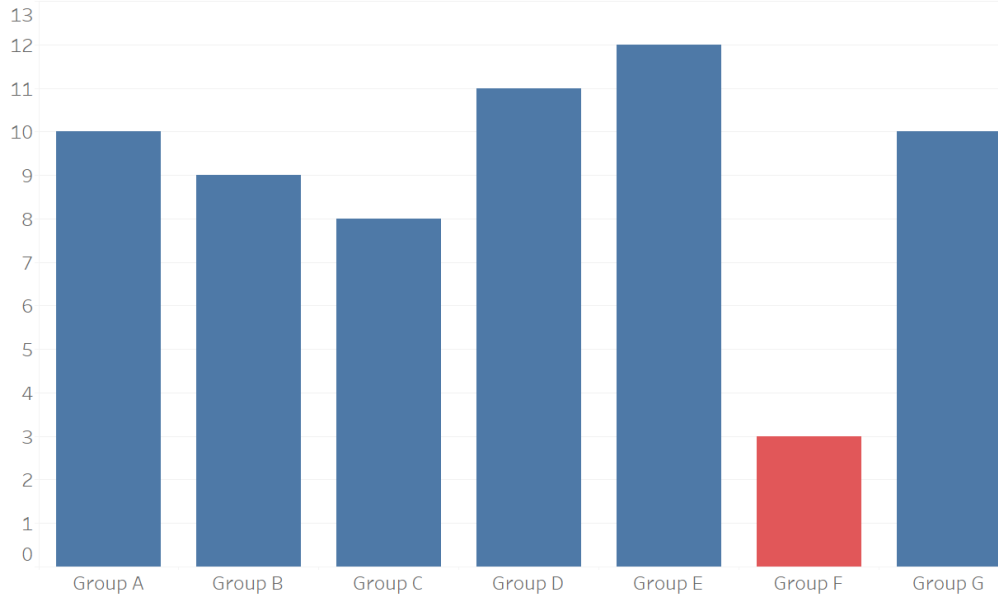
- What do you think about this chart?
- Do we need different colors for all these groups?
- How can we make it better?



This is better



4. Use color to draw attention

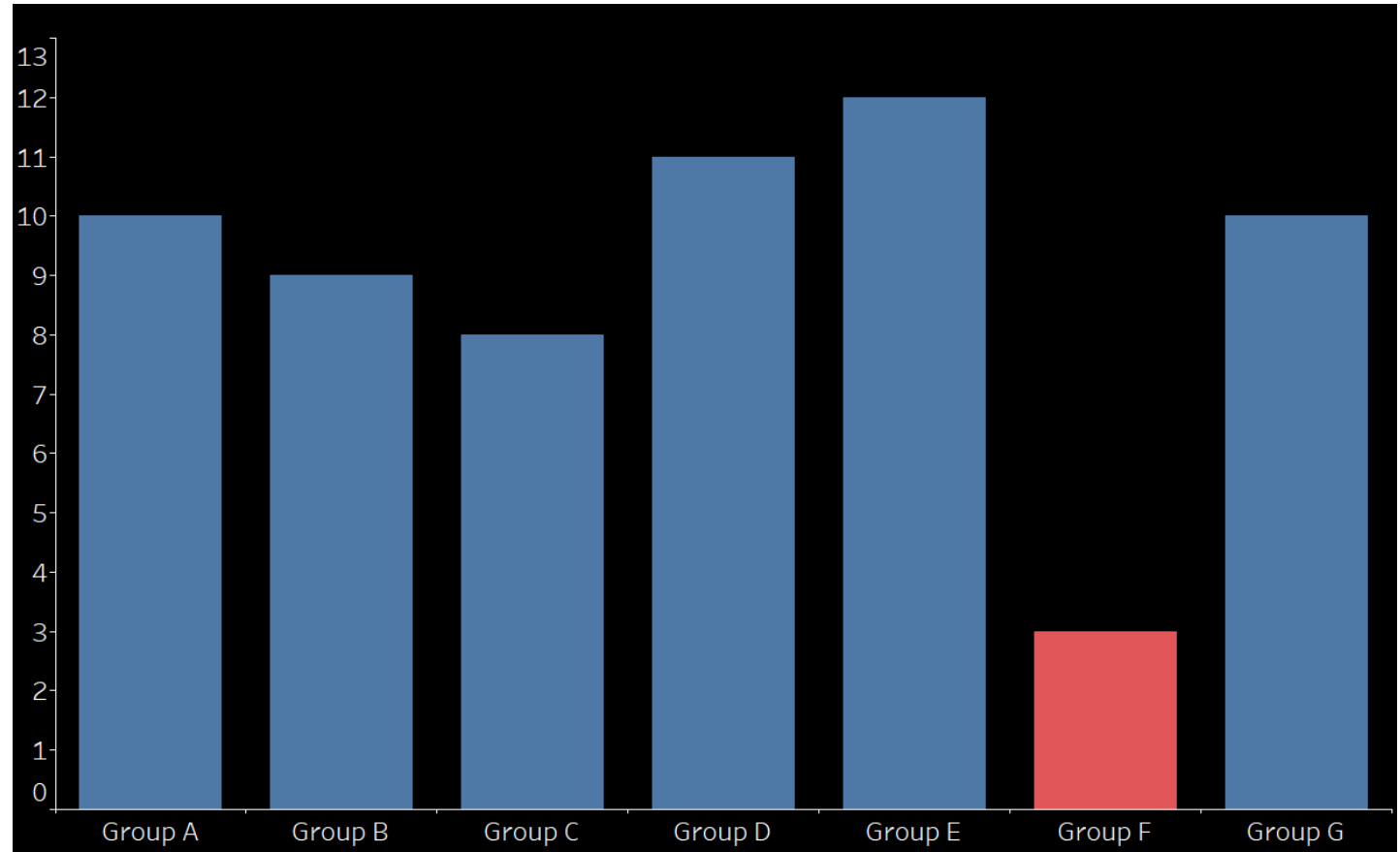


Let's say Group F is underperforming. Maybe this is an area that the company needs to focus on improving. We can use color to draw attention to it. Red indicates a problem.

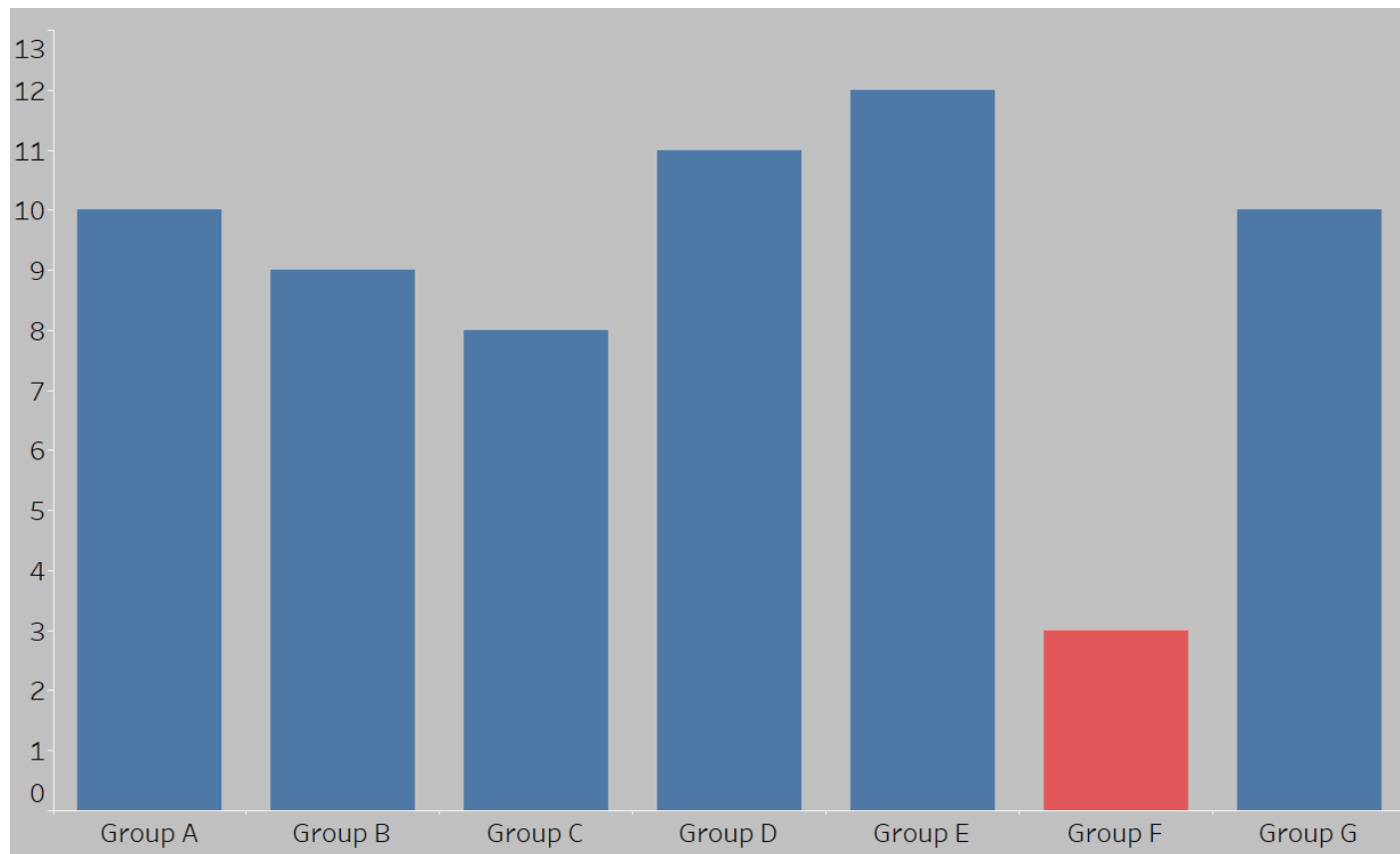
5. Background color

- In this class we will use white background for charts. Later when we do dashboards, I will allow you more flexibility.
- It is safe to always use *white* background. Choose that if possible.
- Sometimes you may need to use a template with *black* background. You'll need to roll with it.
- Best avoid any other color background.

What do you
think about
this one ?



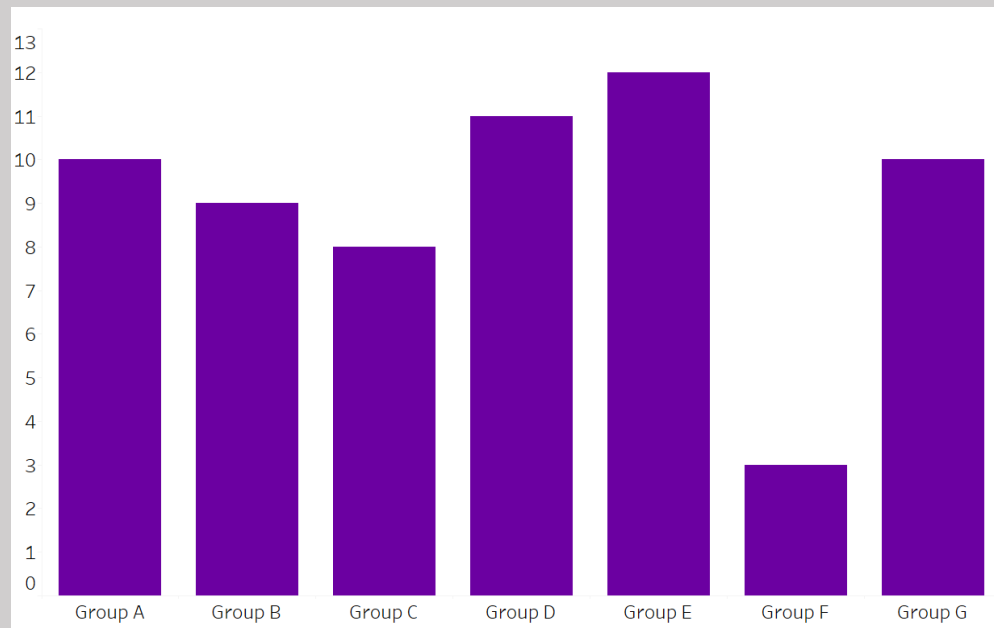
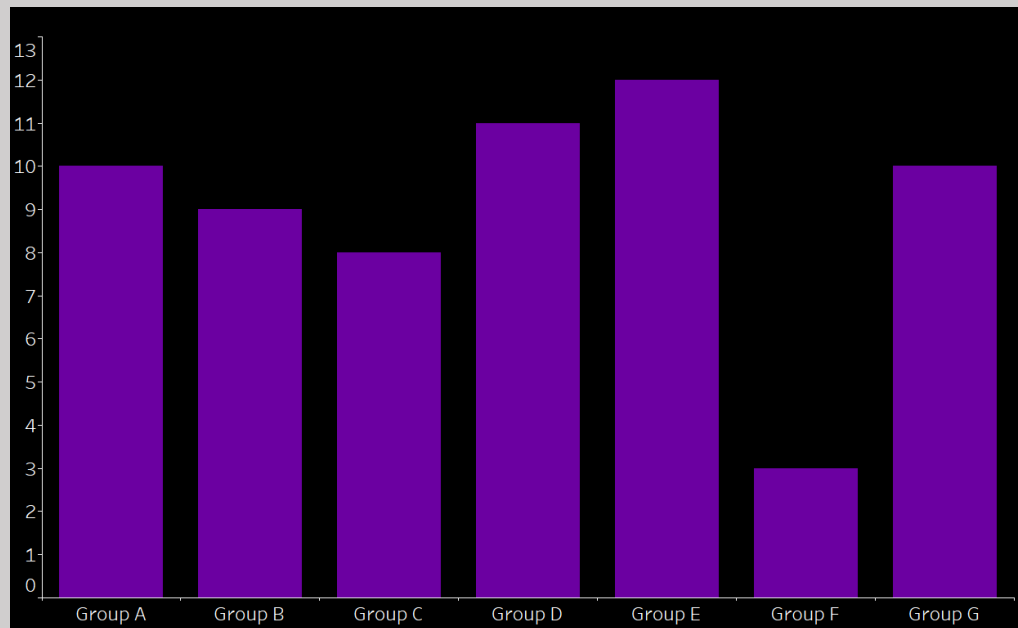
How about this
one ?



When using a black background

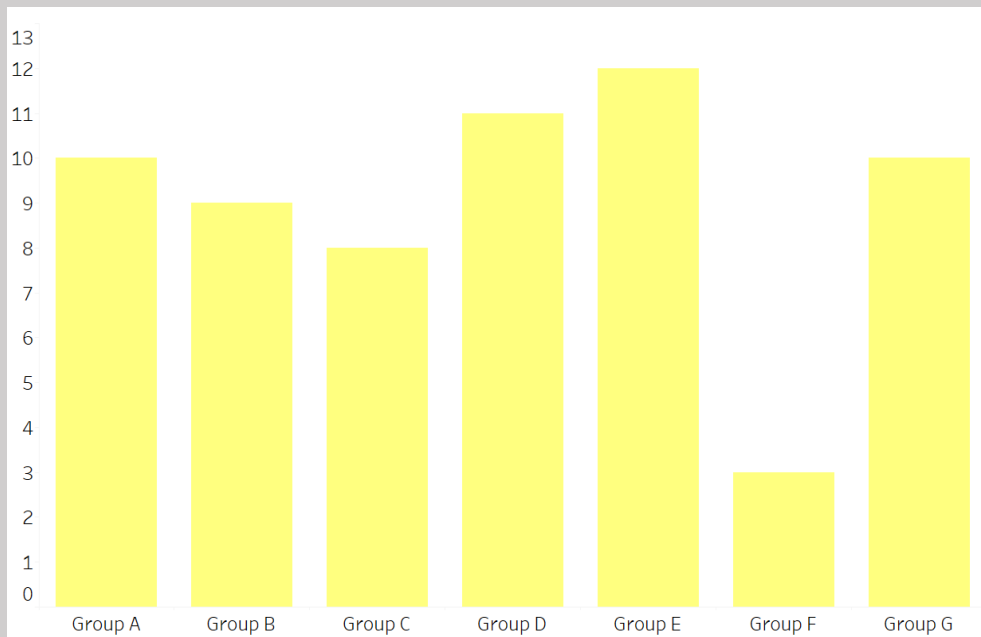
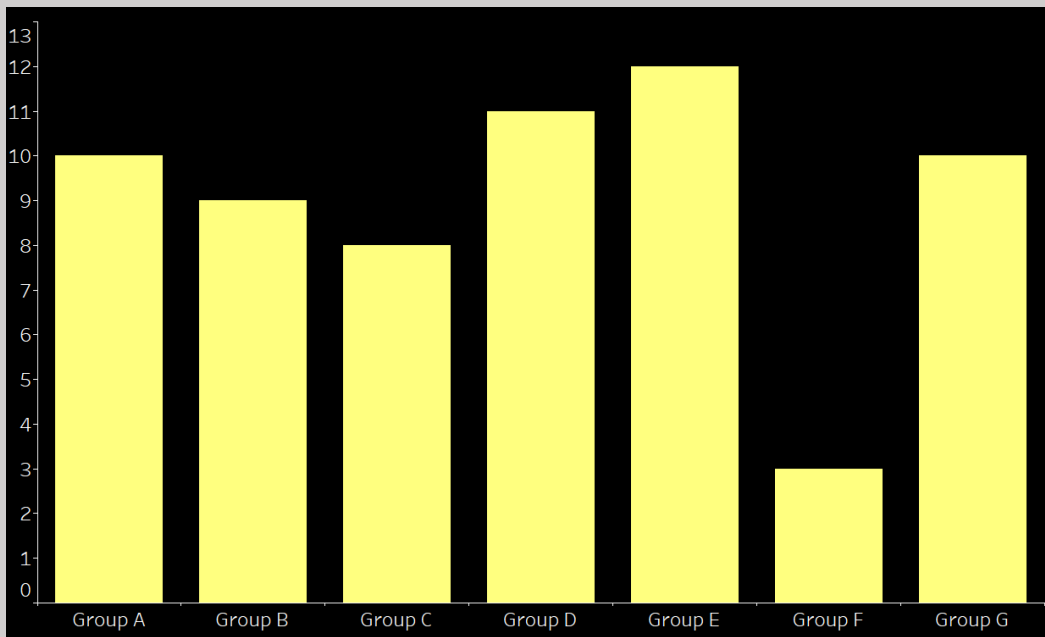
People see black as *elegant, dramatic and stylish*, so they're tempted to use it.

If you decide to (or have to) use black background, consider all other colors on the chart/dashboard.



Which one looks better?

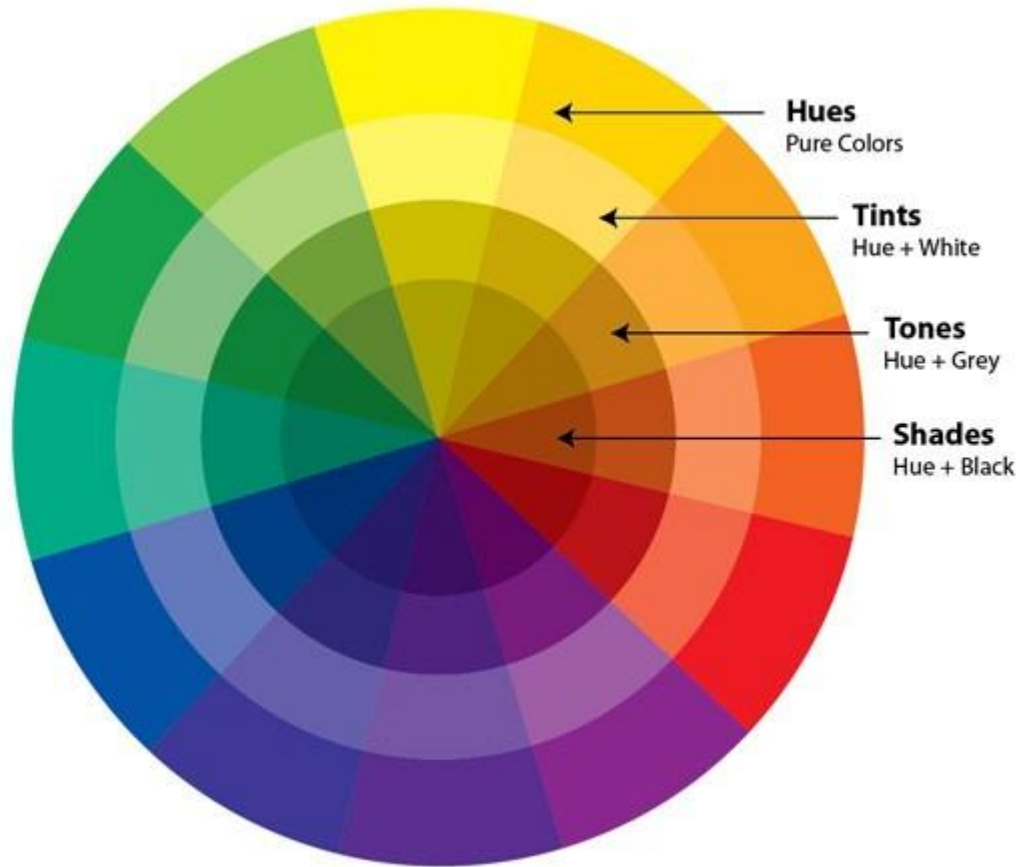




Which one looks better?

A 5x9 grid of 45 squares, each a different shade of gray, arranged in a gradient from black in the top-left to white in the bottom-right. The squares are separated by thin white lines.

6. Color Shades

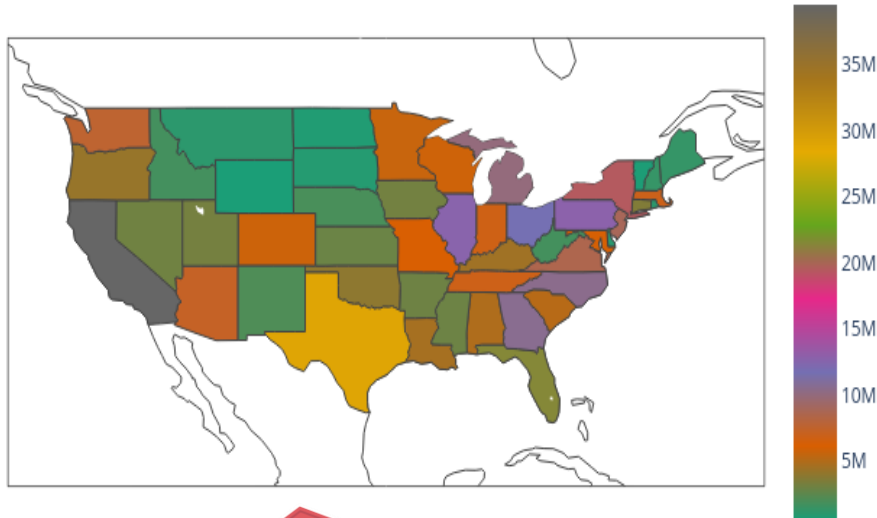


Color Shades

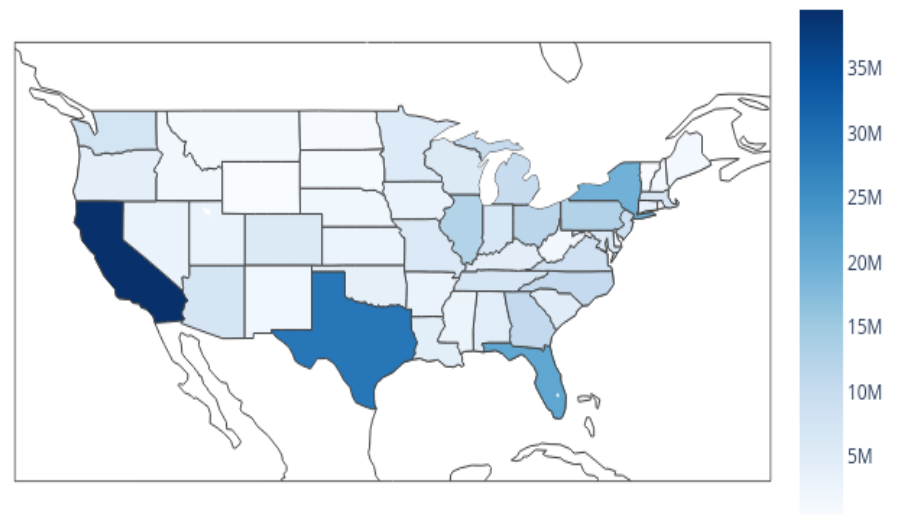
- **Darker** shades are **associated with “more”** or higher quantities while **lighter shades imply “less”** or lower quantities.
- Using shades of the same color is a **great way to highlight the difference in numeric values**.
- Before you ever introduce a new color to your chart ask yourself if, instead, you can introduce a different shade of an already used color.

Example

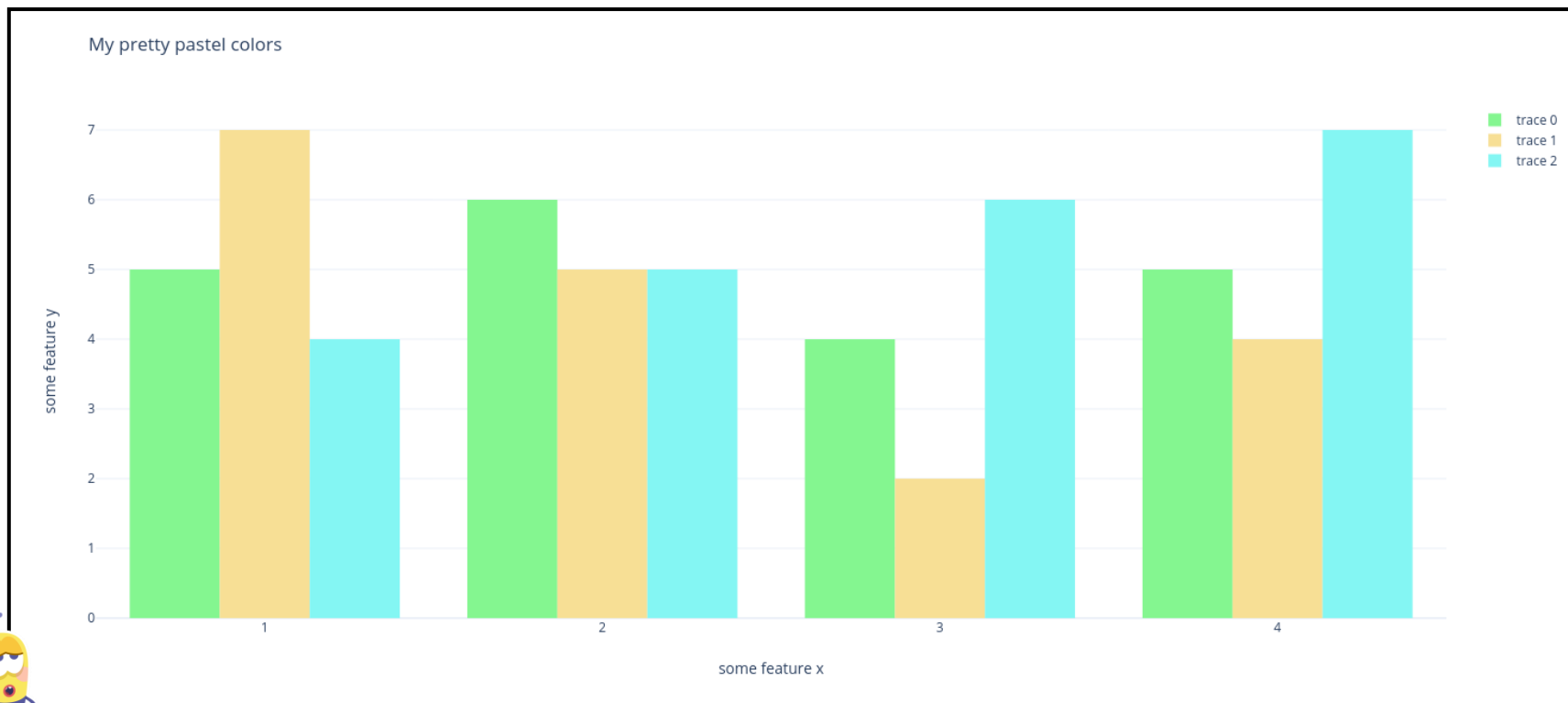
Categorical colors



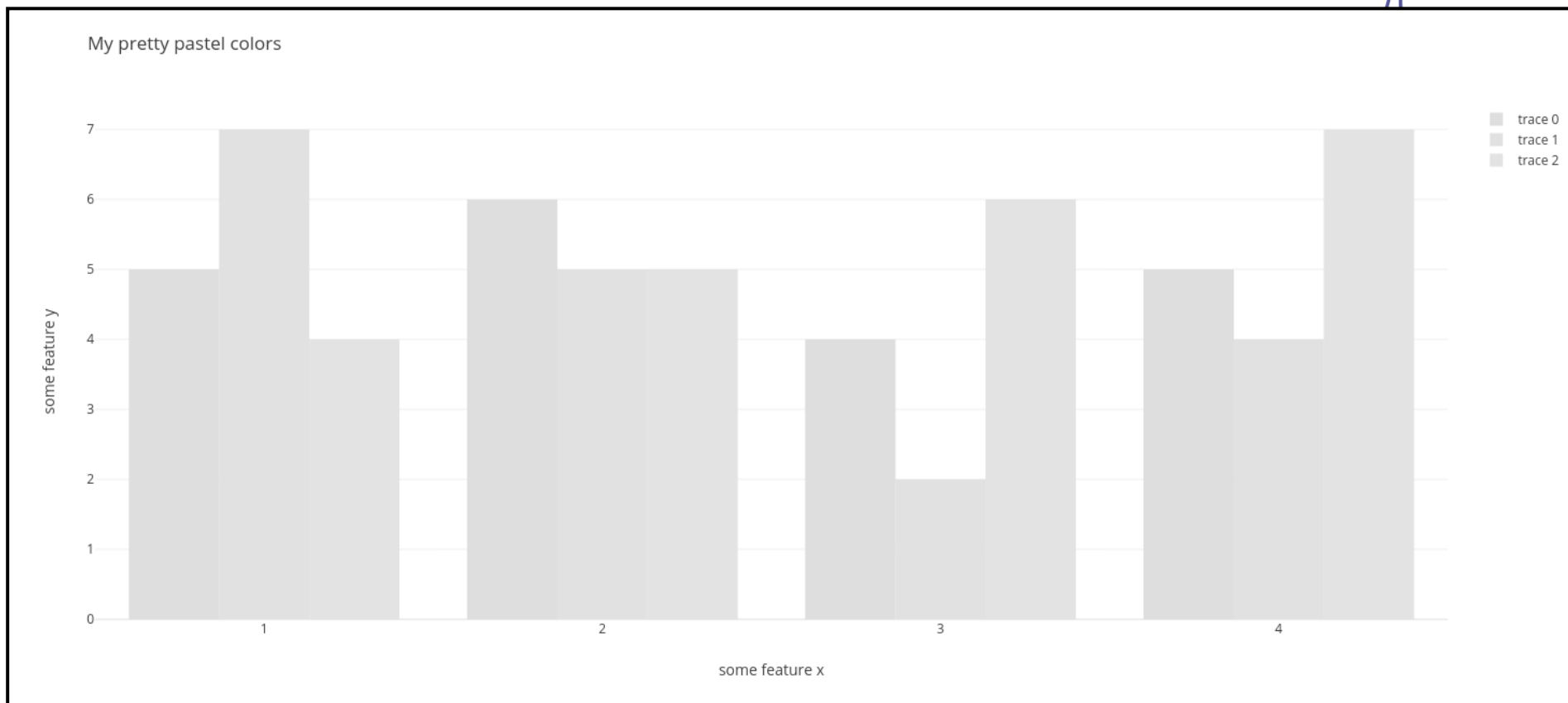
Sequential colors



7. Printing to Black and White



Printing to Black and White

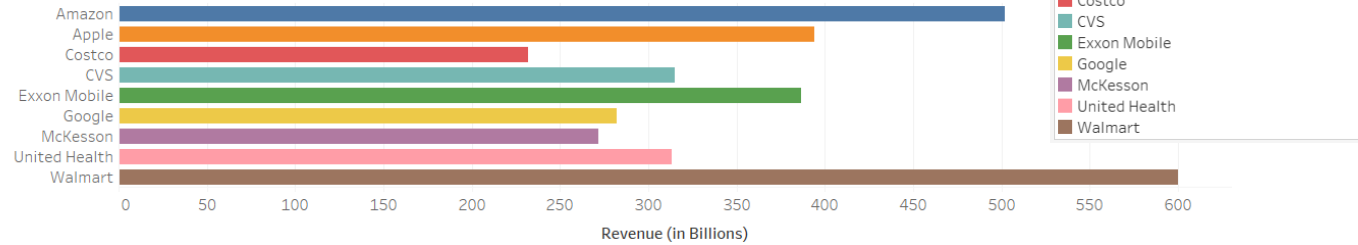


Color Palettes

- **Categorical**

(different color hues
for different categories)

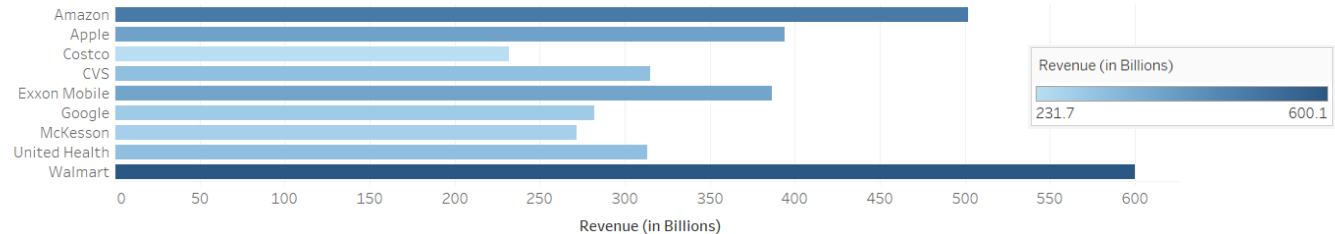
Company Revenue



- **Sequential**

(colors are associated
With numeric values
dark color = high value
Light color = low value)

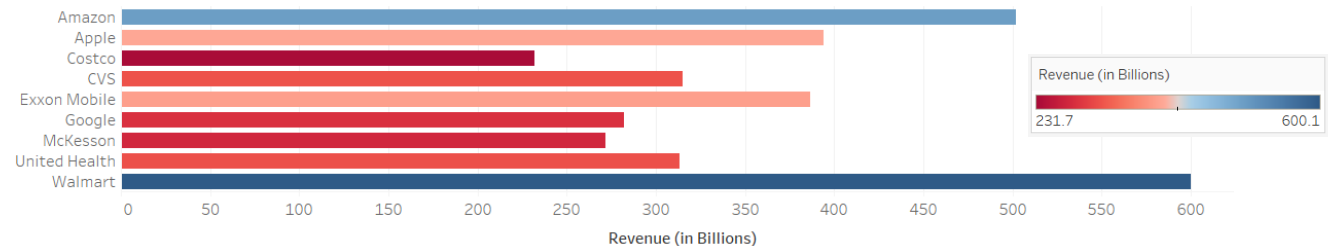
Company Revenue



- **Diverging**

(similar to sequential but uses
shades of 2 different hues and
**implies a meaningful middle
value**)

Company Revenue



Diverging colors example

Heat Map

Comparison: **Overall**

Breakout: **Department** ▾

Comparison: **Overall**

Breakout: **Department** ▾

		Overall	Engineering	Finance	Human Resources	Marketing	Operations	Sales	Support
I feel proud to tell people where I work	54%	-9	-2	-11	-15	+18	+6	-19	
This company is good at directing resources (hum...ial or other) to the right places when necessary	72%	-4	+5	+9	+2	-4	+4	-7	
There are enough people to do the work on my team	56%	-1	+9	-9	-5	+2	+9	-11	
I have the tools / equipment / technology I need to do my job	76%	-14	+7	+12	-1	-2	+8	-2	
I have a good understanding of this company's strategy and goals	78%	+2	+3	-4	-7	+2	+3	-10	
I agree with the strategy and goals of this company	68%	-2	+17	+1	+1	+7	-5	+16	

To do

Watch the video below and complete Quiz 1:

<https://www.youtube.com/watch?v=AiD6etOB6qI>

(the video is from the book author)

Read:

1. [https://help.tableau.com/current/pro/desktop/en-us/viewparts marks markproperties color.htm](https://help.tableau.com/current/pro/desktop/en-us/viewparts_marks_markproperties_color.htm)
2. <https://blog.datawrapper.de/diverging-vs-sequential-color-scales/>