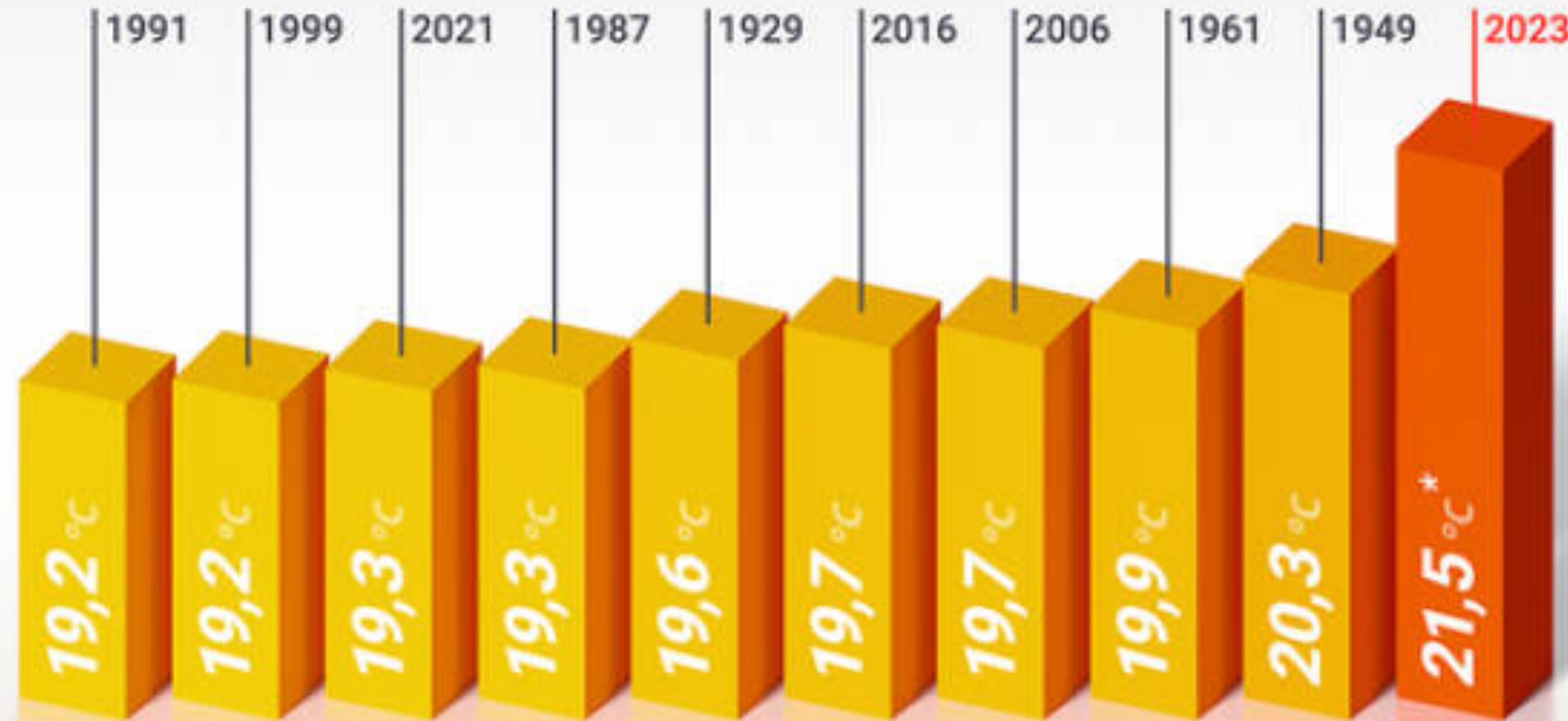


# Focused visualisations

## LES 10 MOIS DE SEPTEMBRE LES PLUS CHAUDS EN FRANCE DEPUIS 1900



\* pour septembre 2023 : valeur provisoire au 25 septembre

METEO FRANCE

## Image filters and effects performance

 M3 MacBook Pro (14-inch)

 M2 MacBook Pro (13-inch)

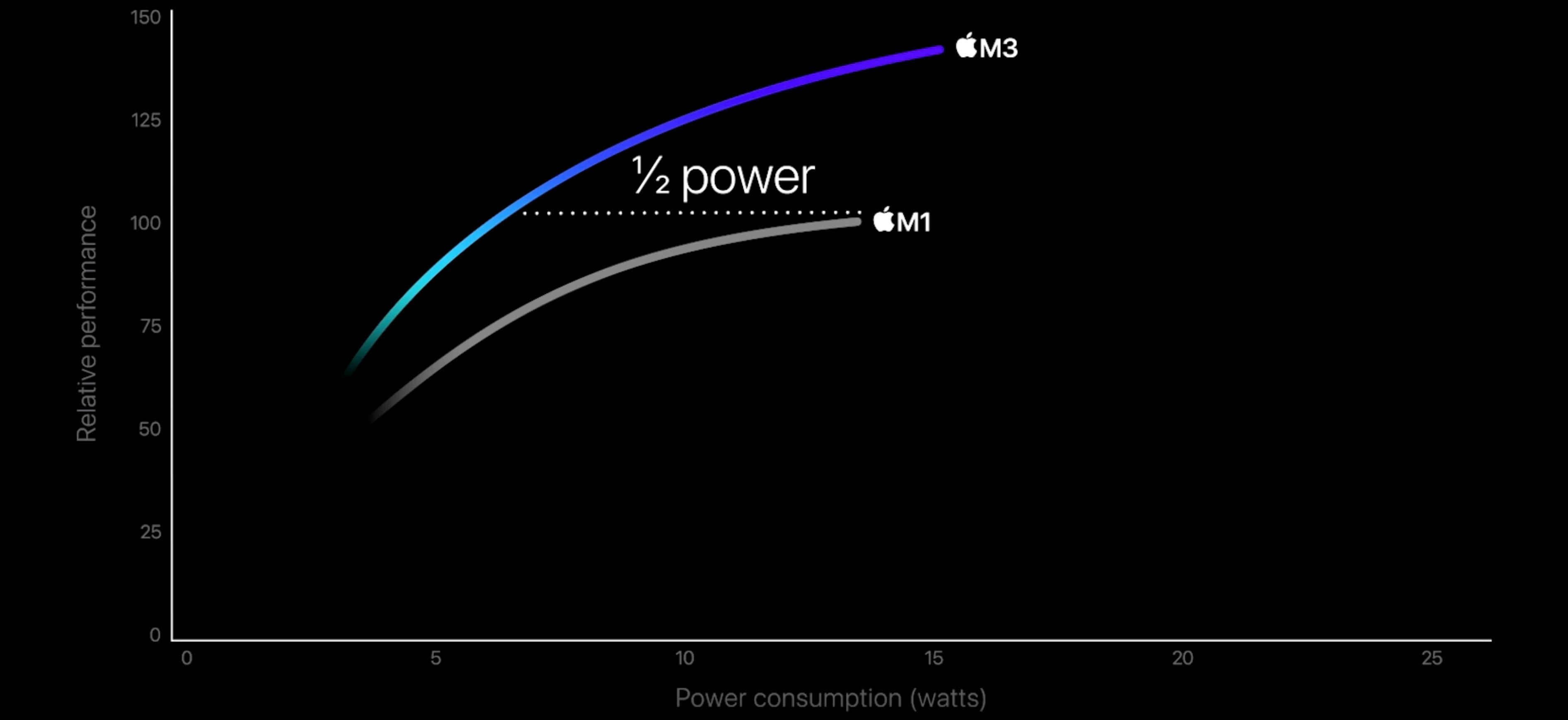
40% faster

 M1 MacBook Pro (13-inch)

60% faster

source: Apple

# M3 CPU performance



# Cognitive load

Cognitive load can be thought of as the mental effort that's required to learn new information.

Humans' brains have a finite amount of this mental processing power. We want to be smart about how we use our audience's brain power.

In general, think about minimizing the perceived cognitive load for your audience.

# Clutter

Clutter can make something feel more complicated than it actually is.

Remember that we choose the graph that is easiest for your audience to understand

# Clutter

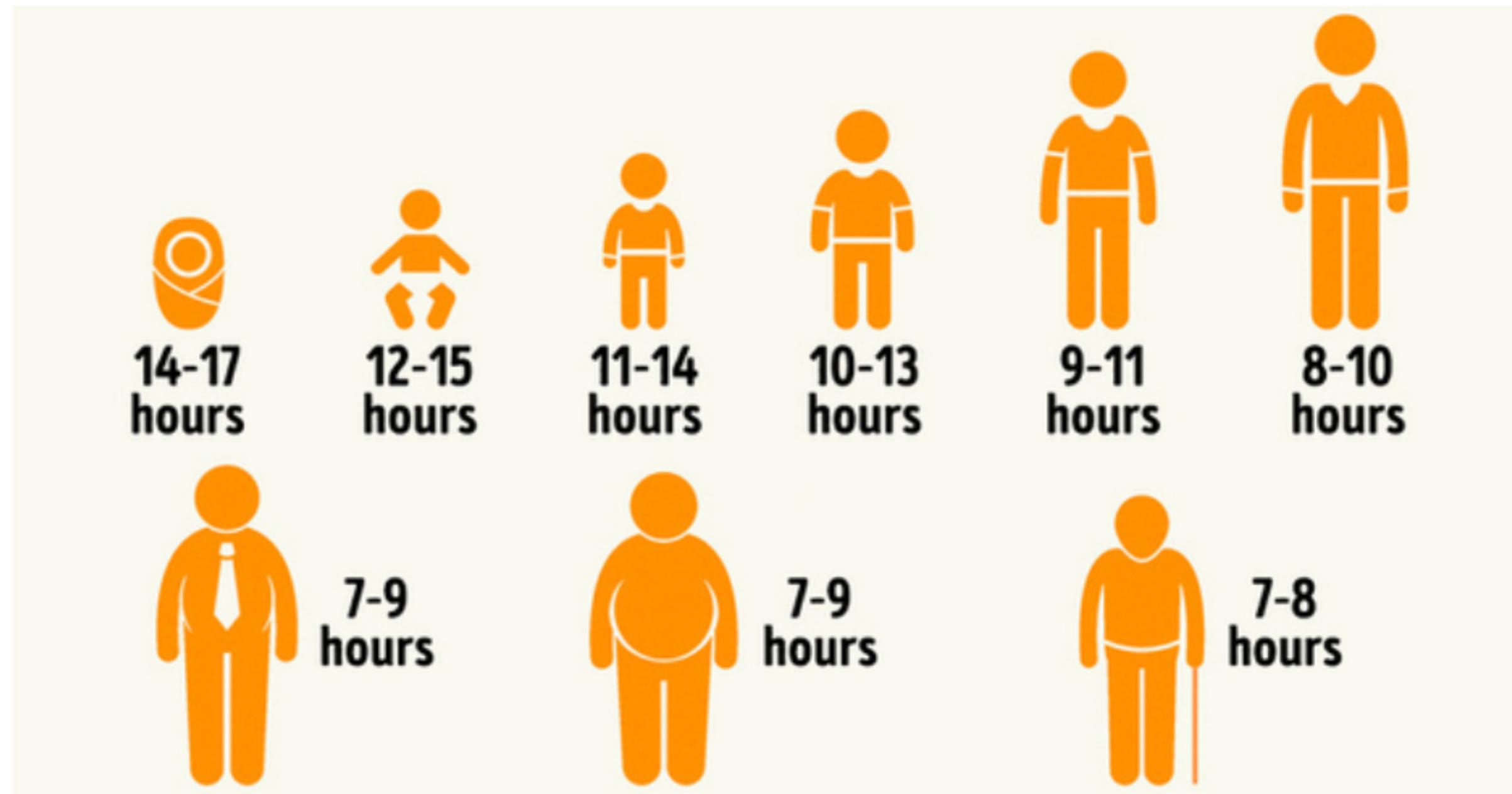
What is your brain doing in the following visualisations?

Try notice and describe how it is trying to decode the graph

## HOW MUCH SLEEP WE NEED AT EACH AGE:



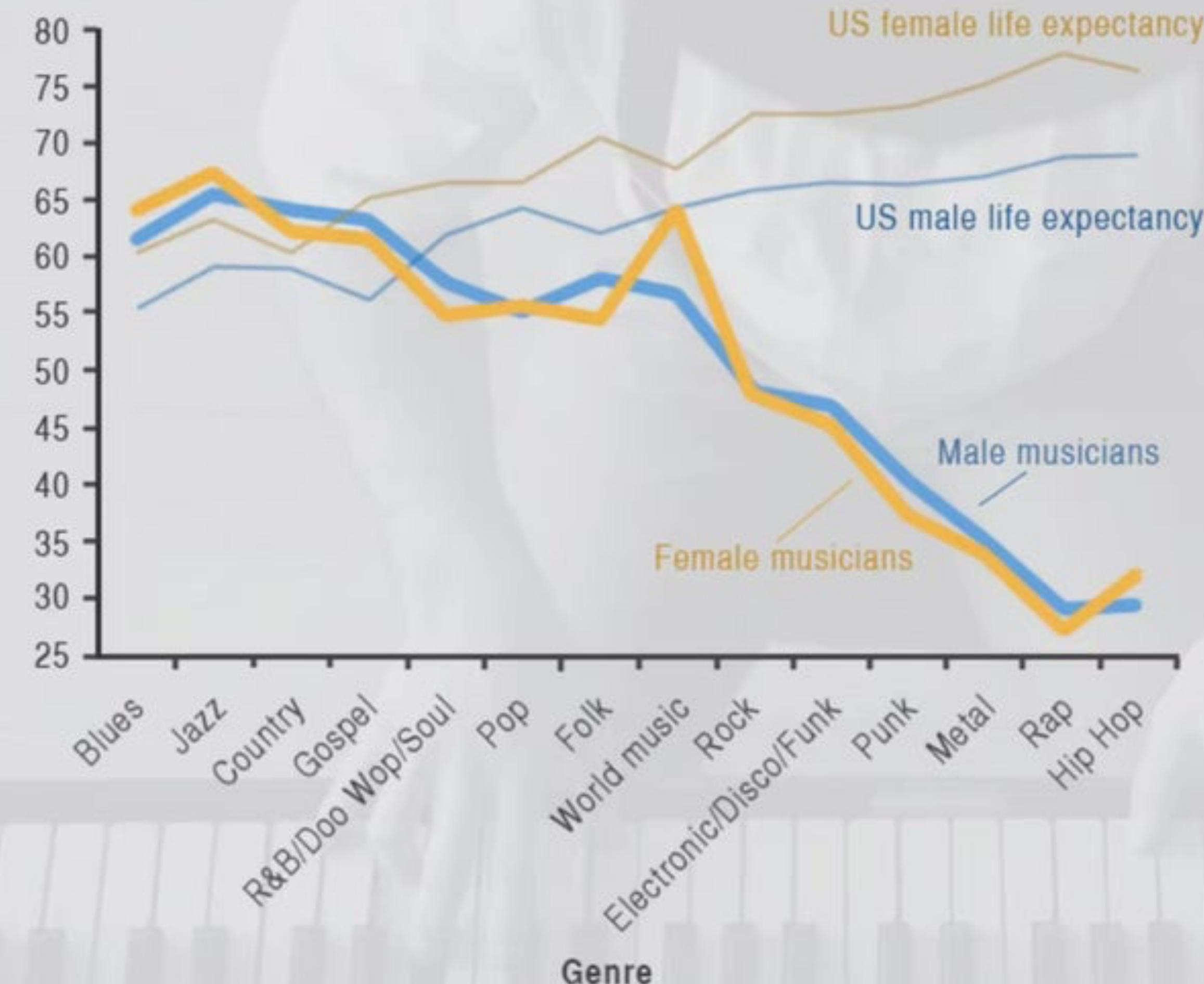
© BRIGHTSIDE



# Age of death and musical genre

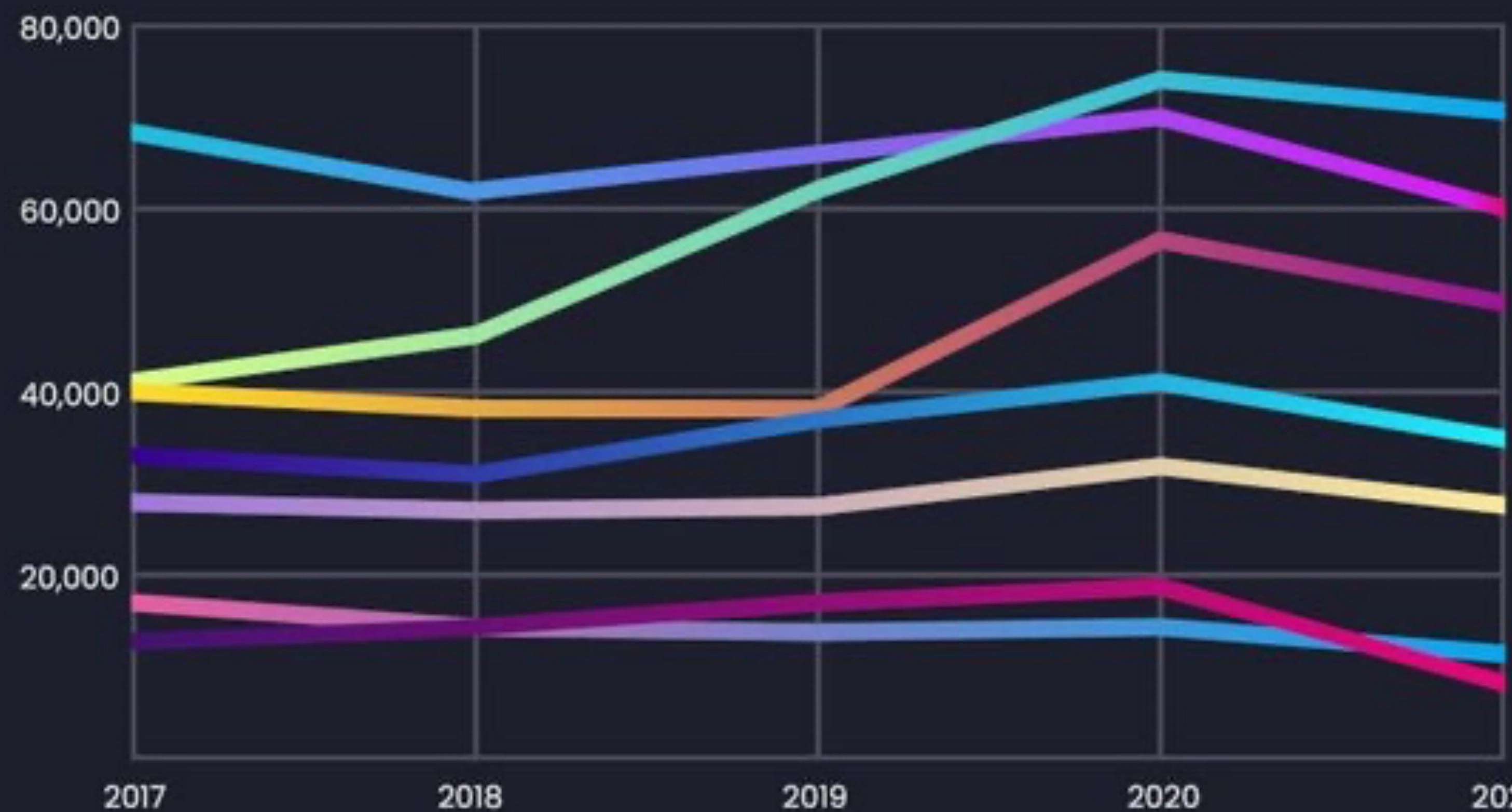
Average age of death for popular musicians by genre and sex

Average age at death



Life expectancy data from: <http://demog.berkeley.edu/~andrew/1918/figure2.html>

## Number of Java jobs for grabs



Java



Python



JavaScript



C++



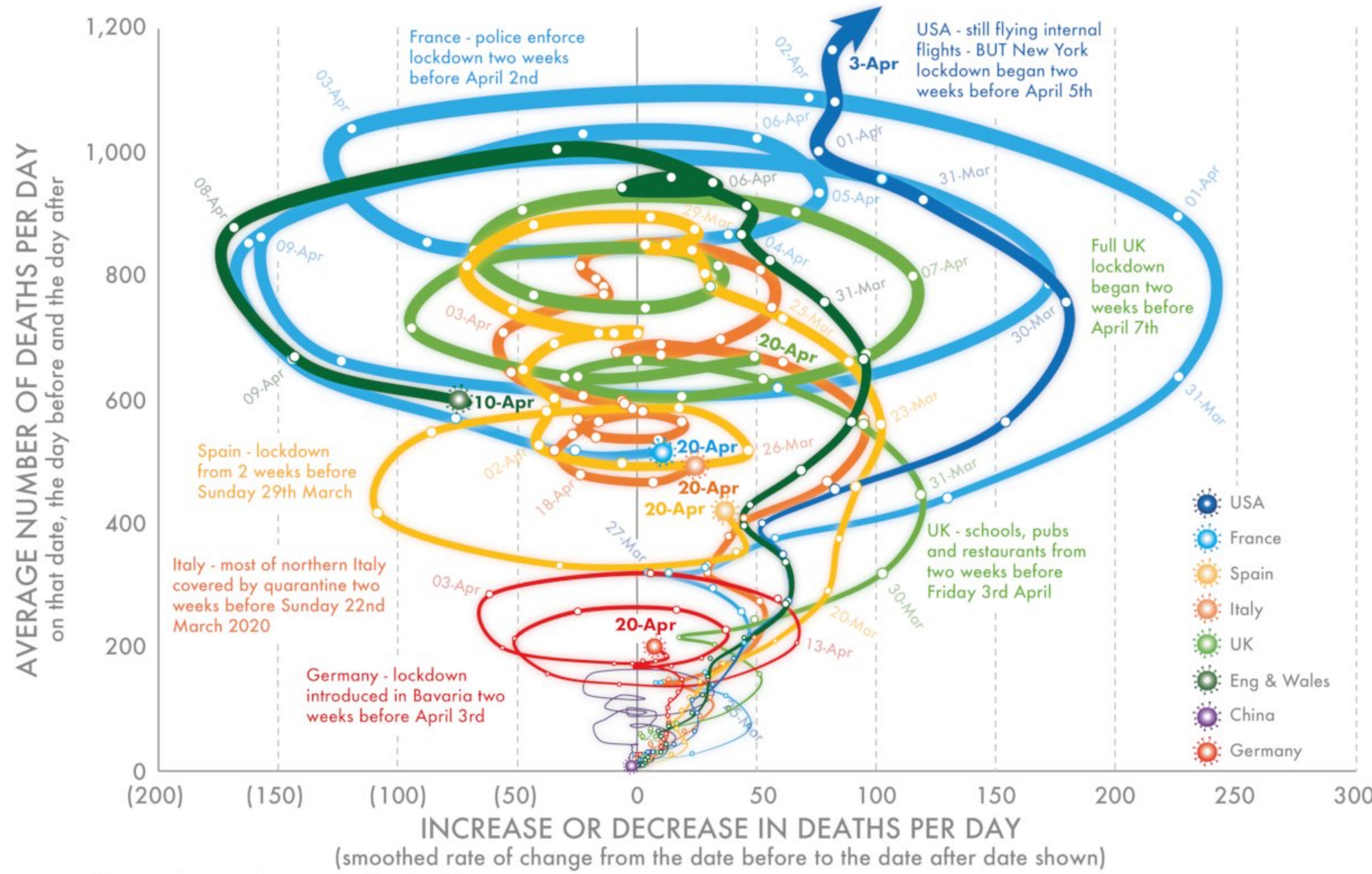
C#



Perl



PHP



# Clutter

Notice that feeling when looking at a data vis

When you feel like that something in your graph or another graph is not so good

(The same feeling applies to code actually)

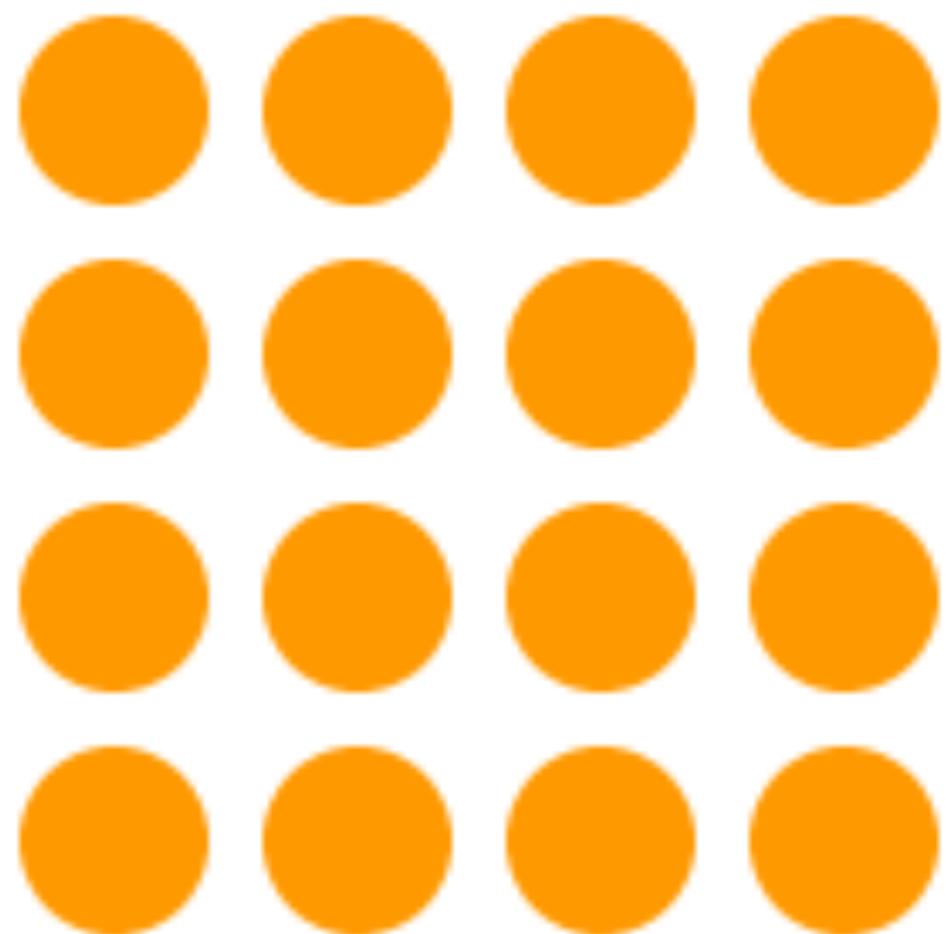
# Gestalt laws

In the 1920s, a group of German psychologists developed theories around how people perceive the world around them, called Gestalt principles.

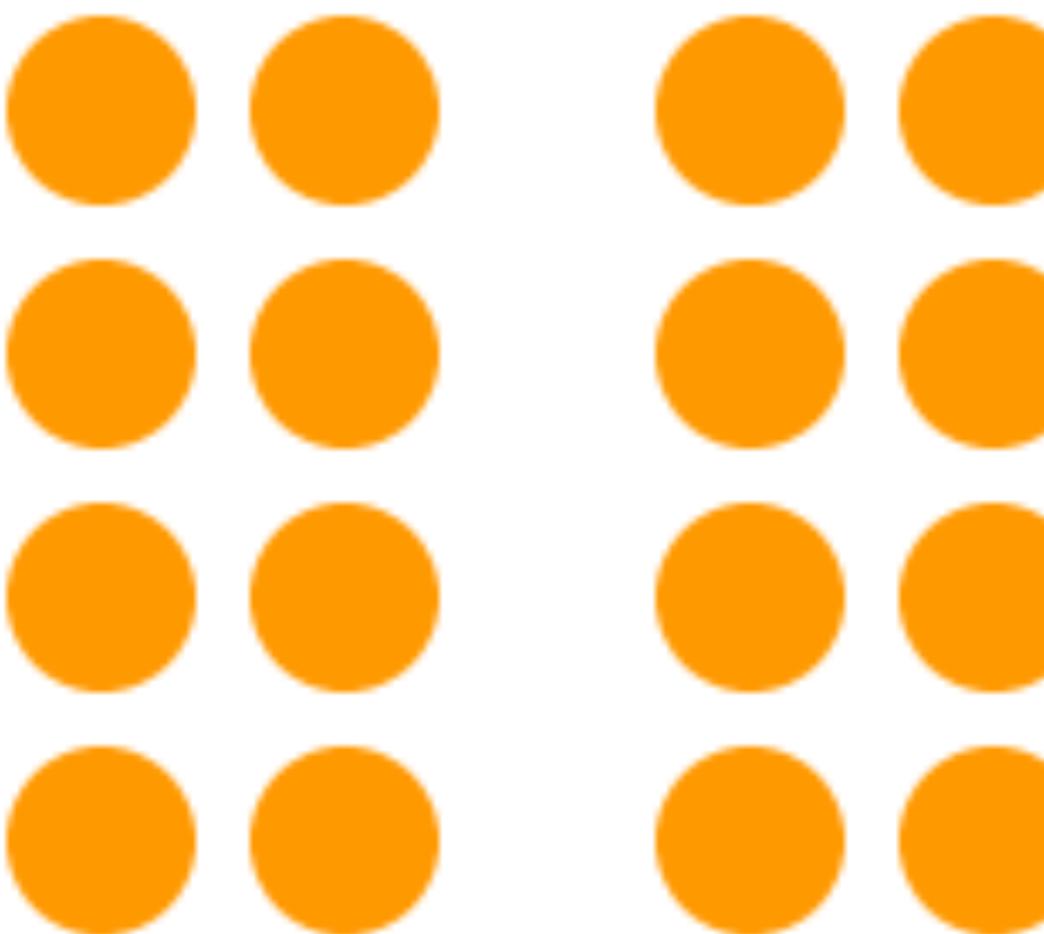
Detail how our brains create structure by default

# Proximity

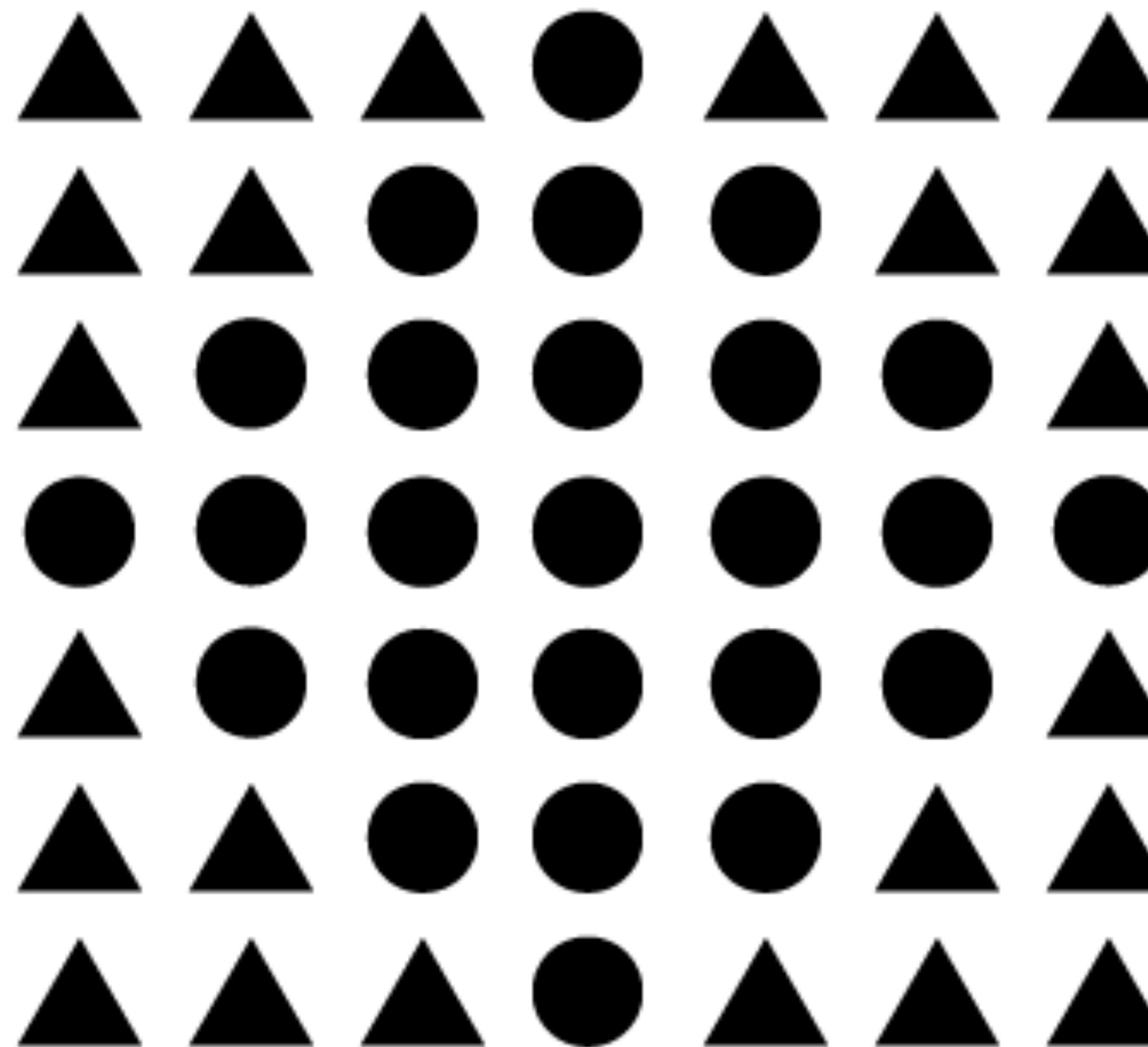
This is perceived to be one group and the components somehow related to each other.



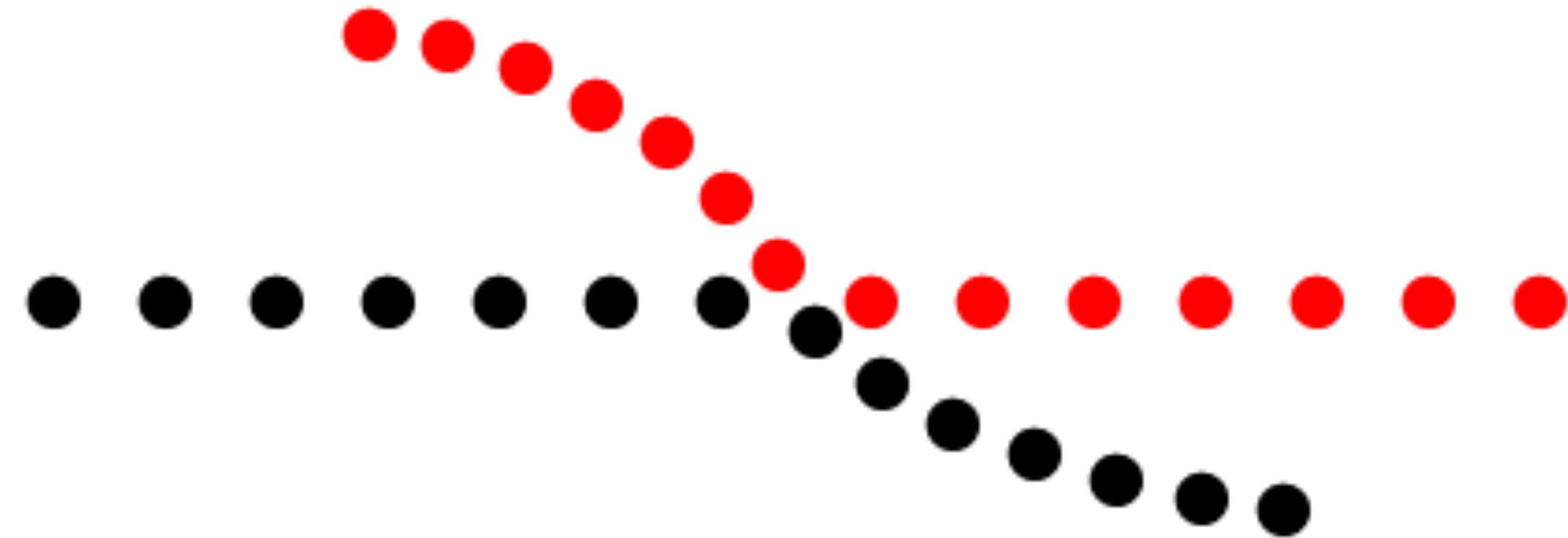
We perceive two groups here, and understand that there are differences between them.



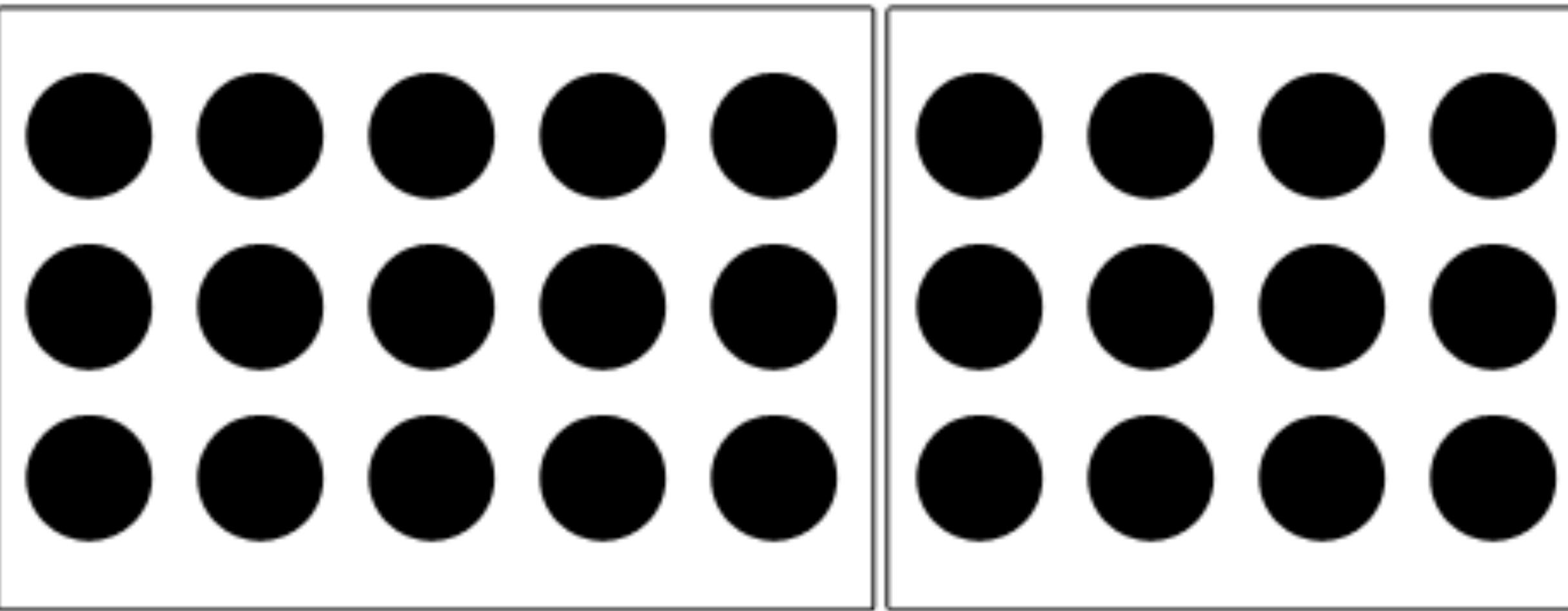
# Similarity



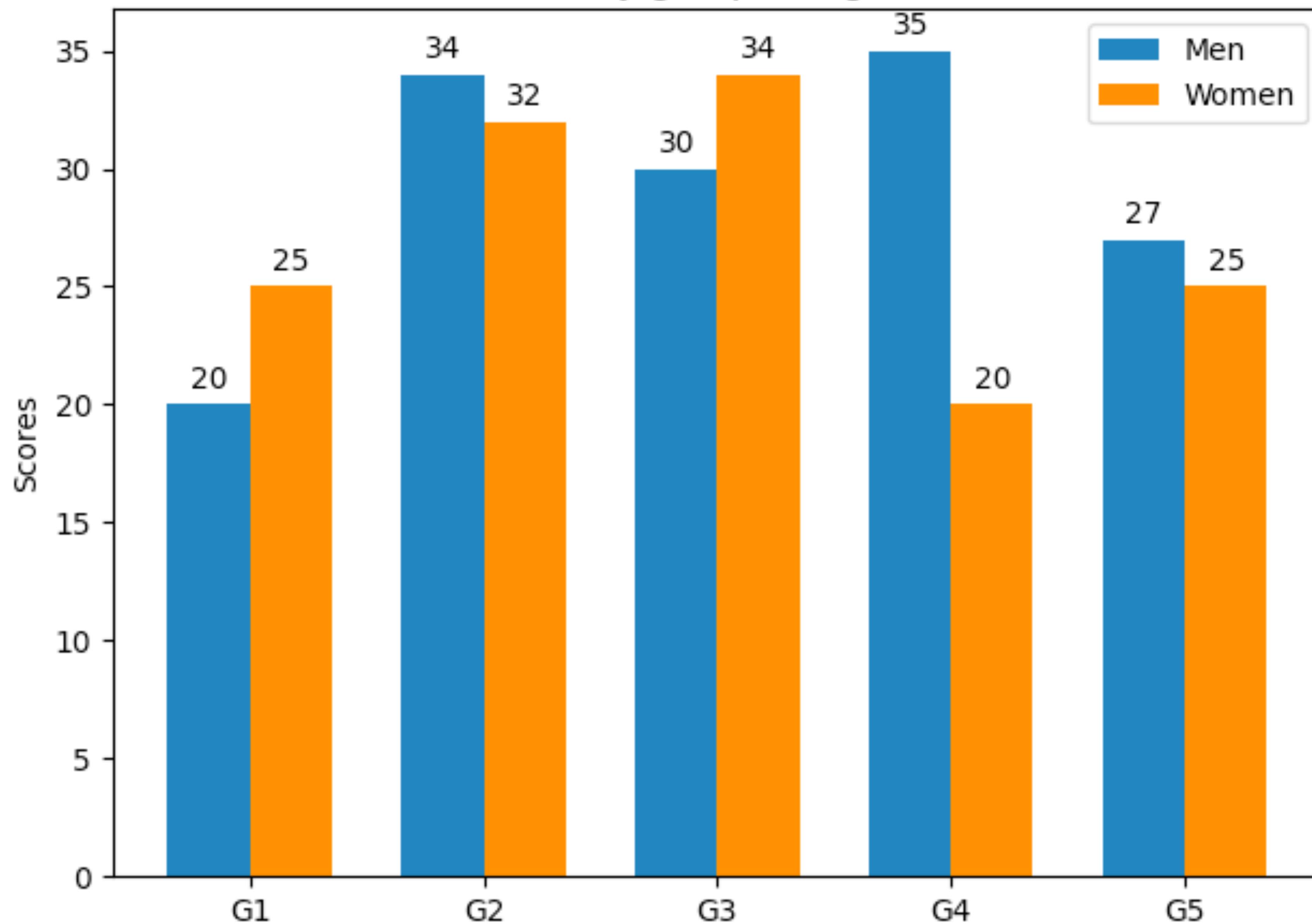
# Continuity



# Enclosure (Common region)



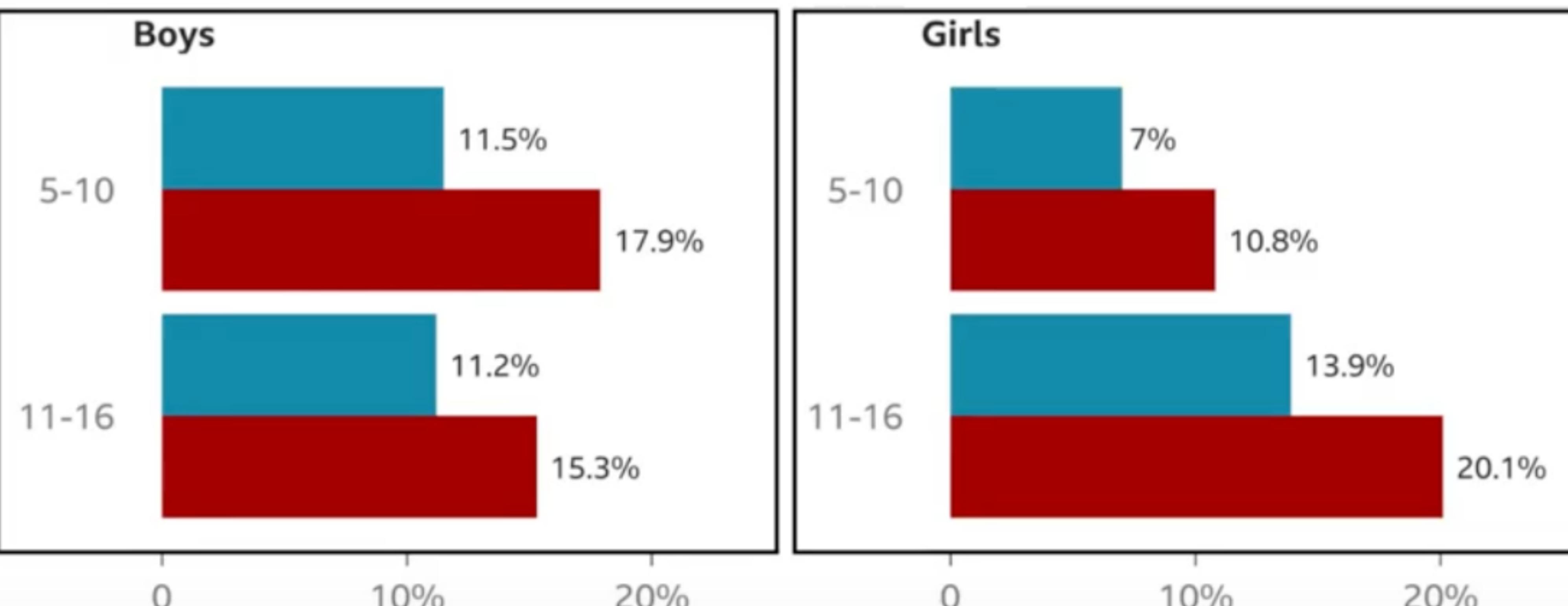
### Scores by group and gender



# Mental health in children has worsened

% of children with probable mental health problems by age-group, England

■ 2017 ■ 2020



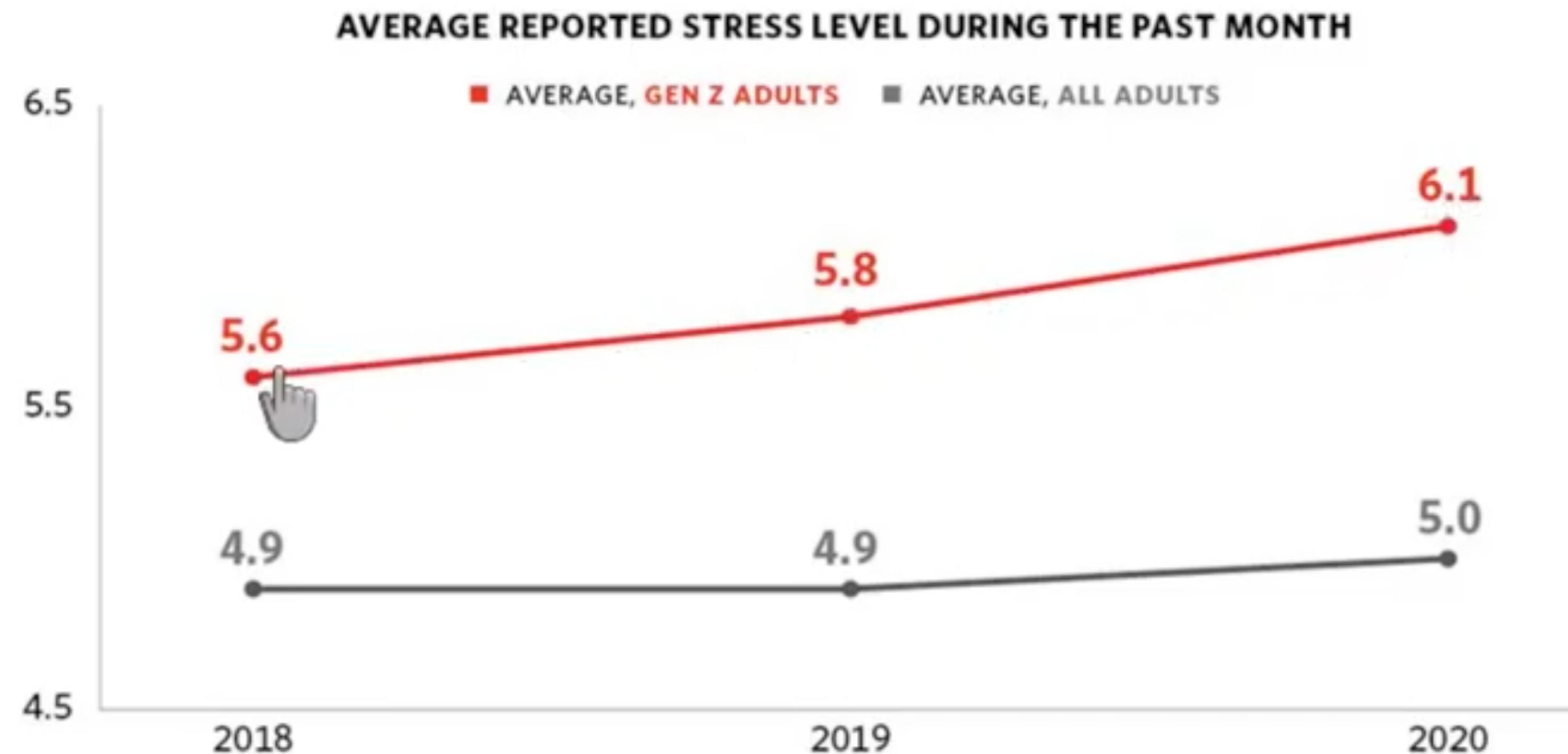
Source: NHS Digital

BBC

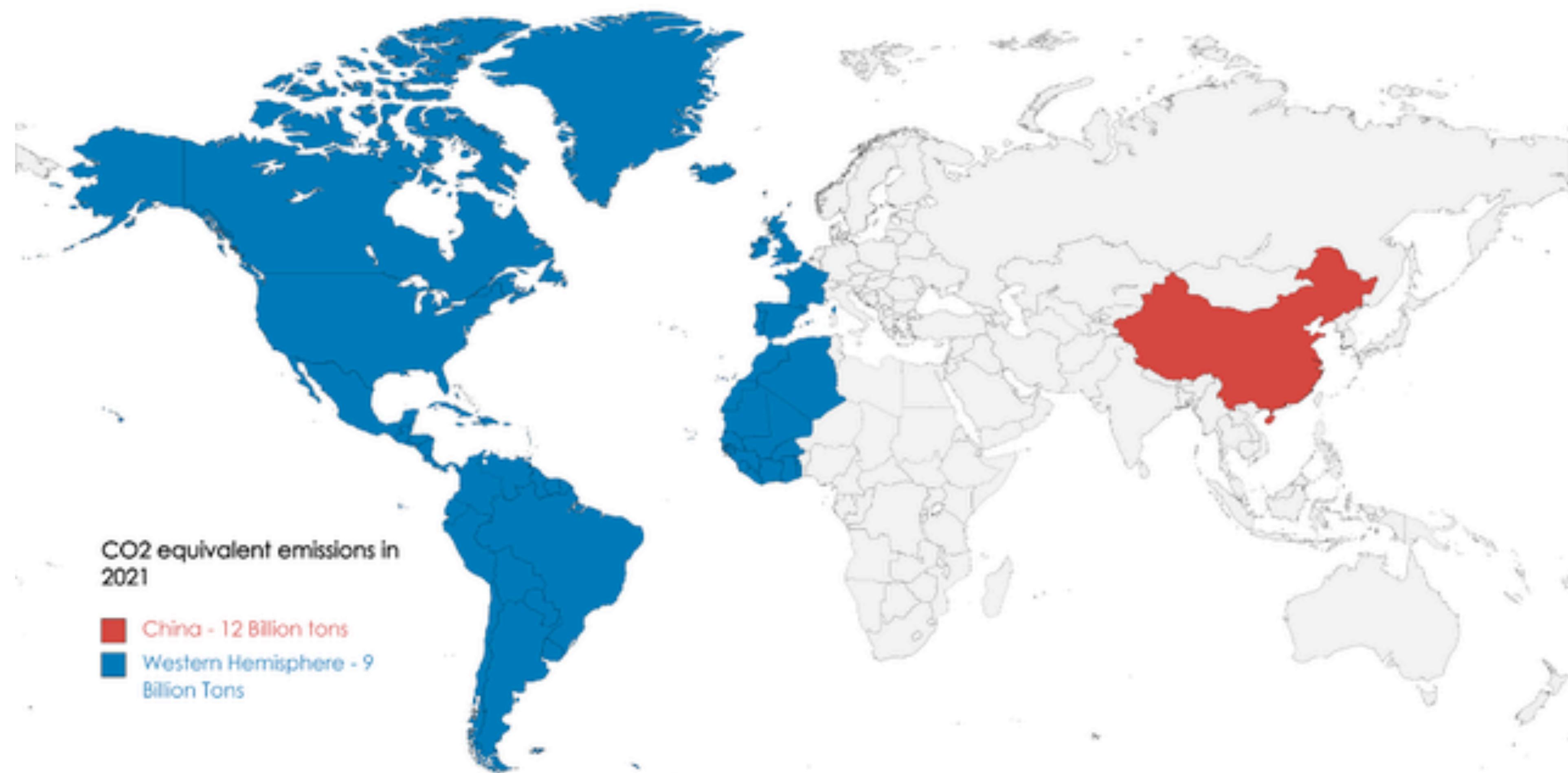
# Lets take some examples

STRESS IN AMERICA 2020: A NATIONAL MENTAL HEALTH CRISIS

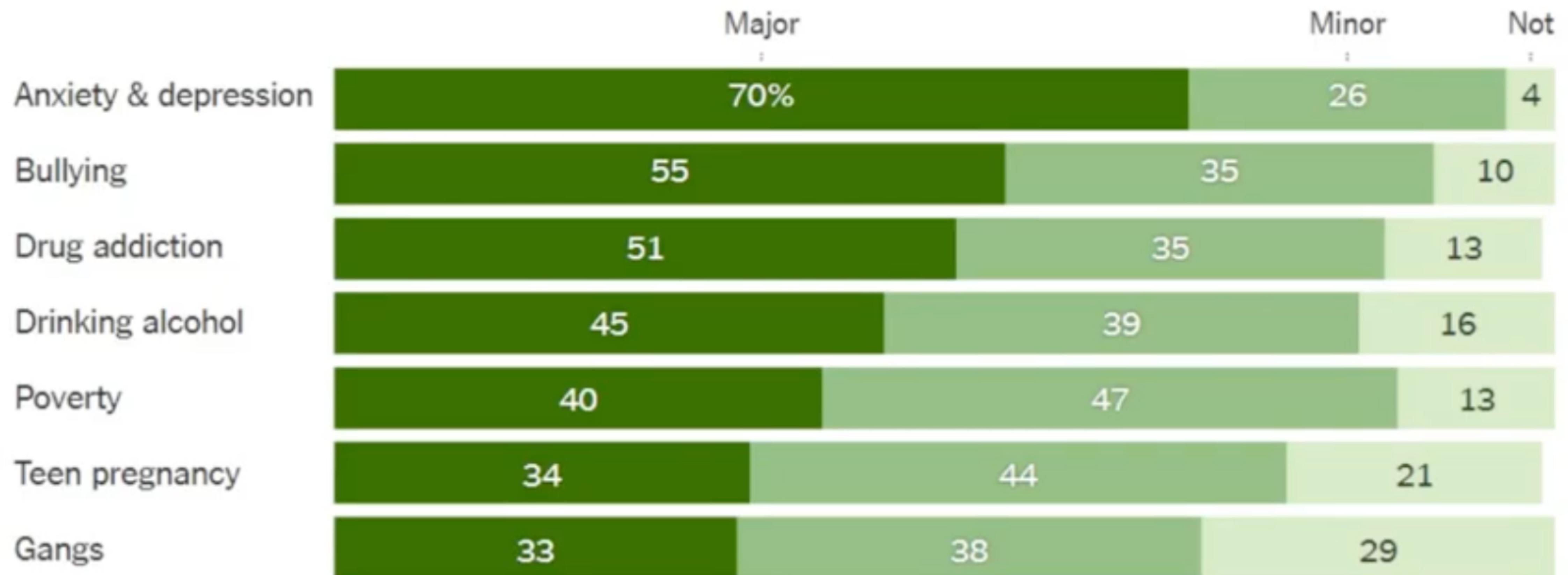
## Gen Z Adults: Generation Stress



# China emits more CO<sub>2</sub> than the entire Western hemisphere



*Countries spanning both Western and Eastern hemispheres are included  
China and the Western hemisphere each have a total population of about 1.4 billion*



Source: <https://www.nytimes.com/2020/03/12/learning/whats-going-on-in-this-graph-mental-health-of-teenagers.html>

# Recipe for cleaning datavis

1. Remove chart border
2. Remove gridlines
3. Remove datamarker
4. Clean up axis labels
5. Label data directly
6. Use consistent colors

# Recipy for cleaning datavis

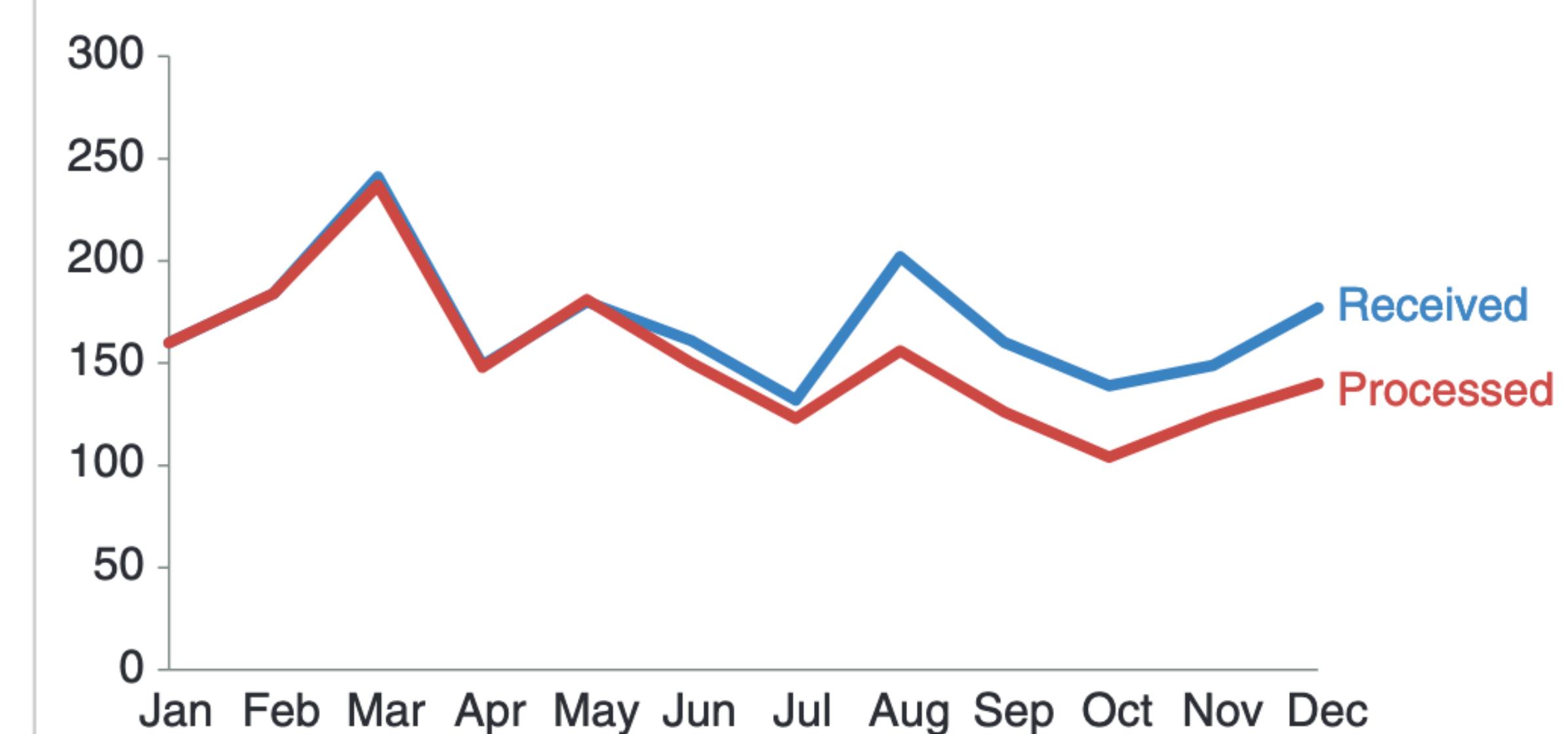
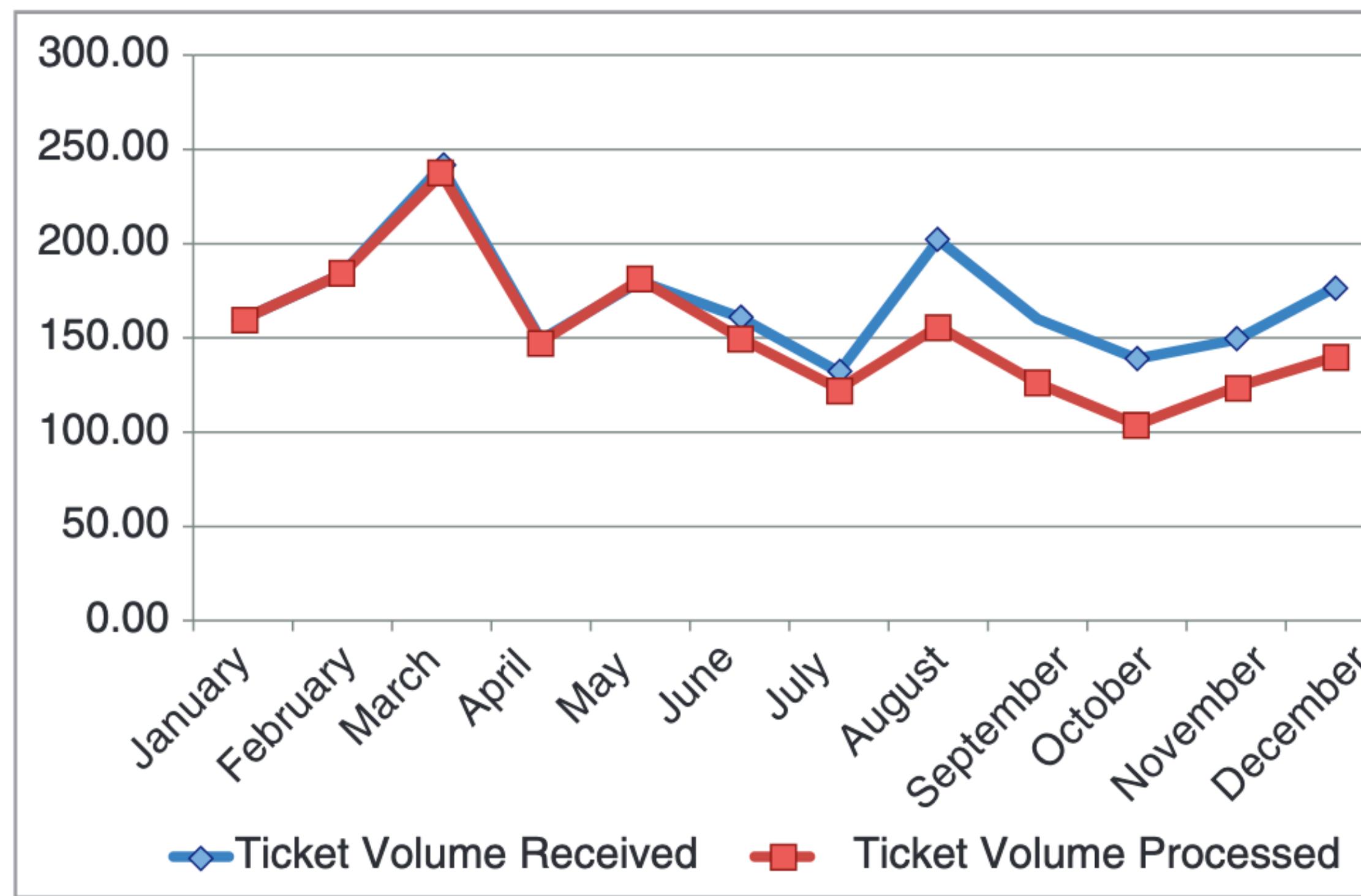
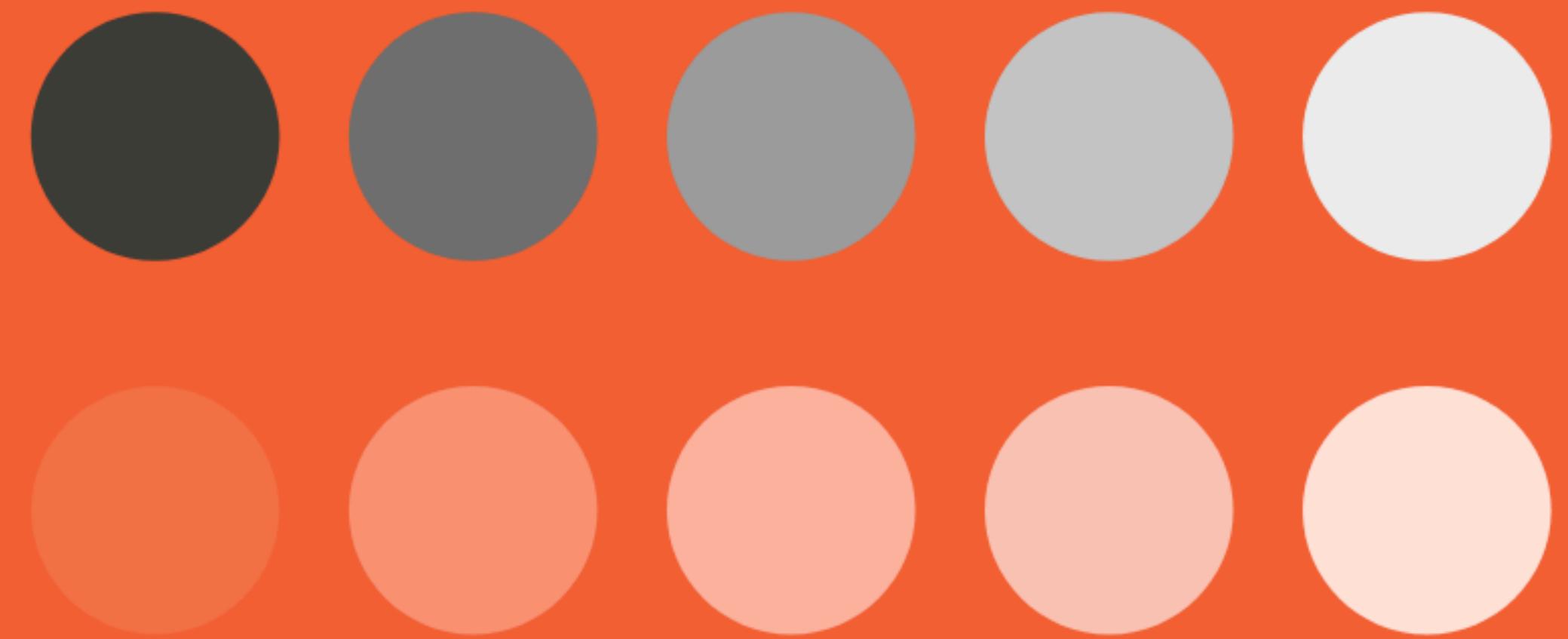


FIGURE 3.24 Before-and-after

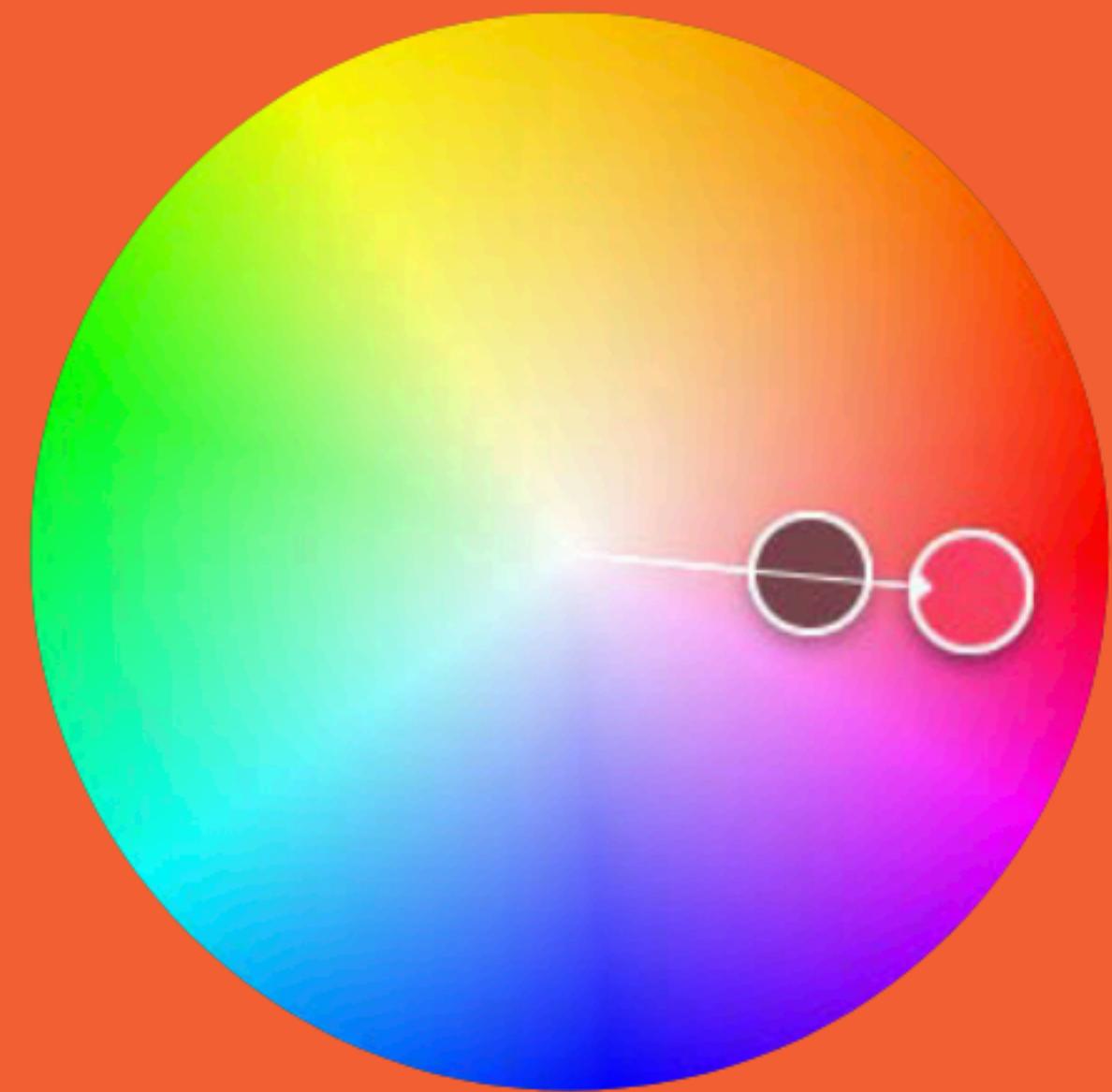
# Farver

Keep it simple, stupid

# Skala



# Adobe color-wheel



# Tilgængelighed

[webaim.org/resources/contrastchecker/](https://webaim.org/resources/contrastchecker/)

**Contrast Checker**

Home > Resources > Contrast Checker

Foreground Color: #0000FF      Background Color: #FFFFFF

Lightness (sliders)

Contrast Ratio: **8.59:1**

[permalink](#)

**Normal Text**

WCAG AA: **Pass**      WCAG AAA: **Pass**

The five boxing wizards jump quickly.

**Large Text**

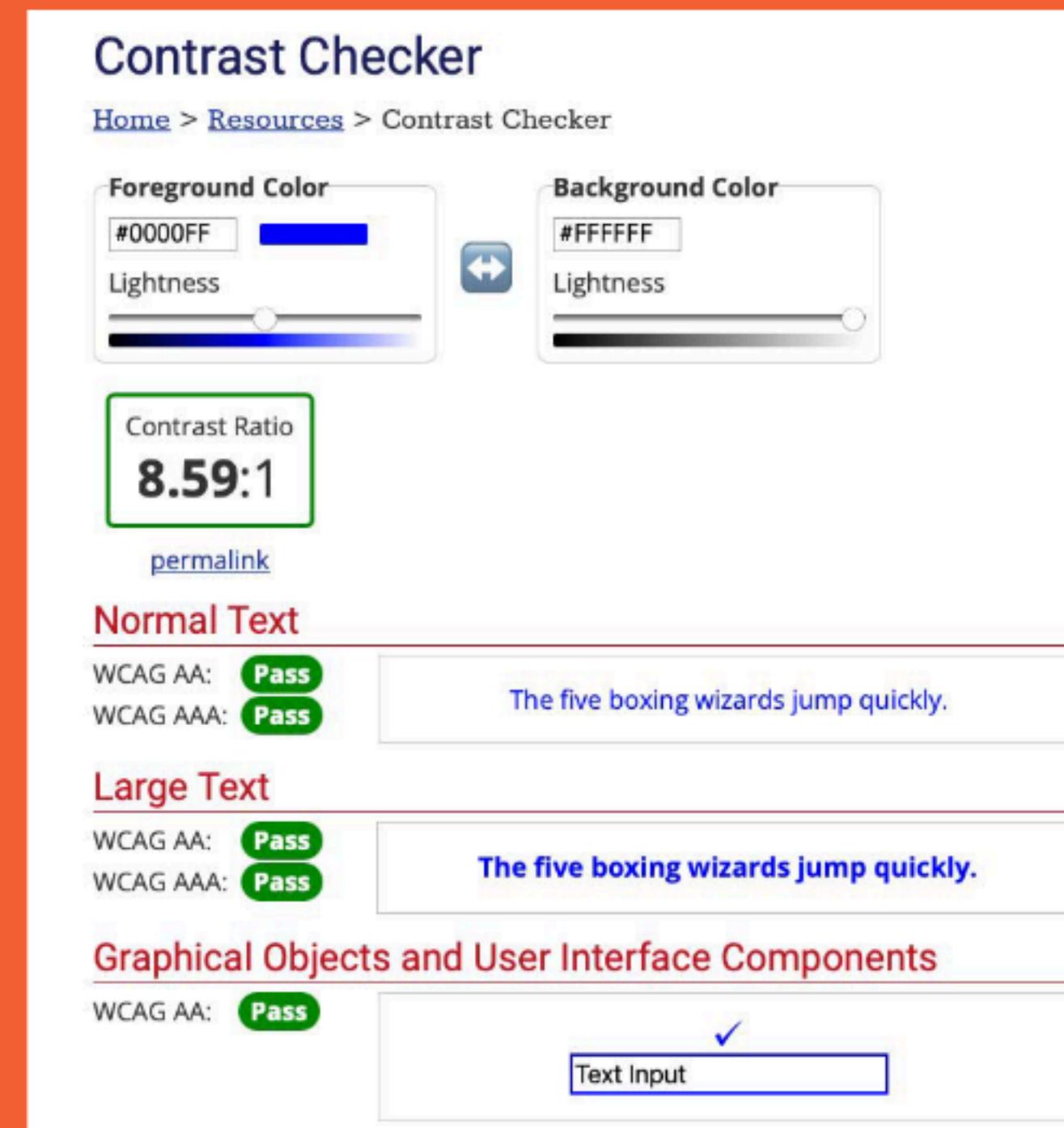
WCAG AA: **Pass**      WCAG AAA: **Pass**

The five boxing wizards jump quickly.

**Graphical Objects and User Interface Components**

WCAG AA: **Pass**

Text Input ✓



# Typografi

Google er din ven

Serif

# Klassisk Formel Dekorativ



Accessories and interior pieces we want to inspire you with and add to your life. That's what Home Société does. We believe in personal development.

**HOME SOCIÉTÉ**

HOME SOCIÉTÉ

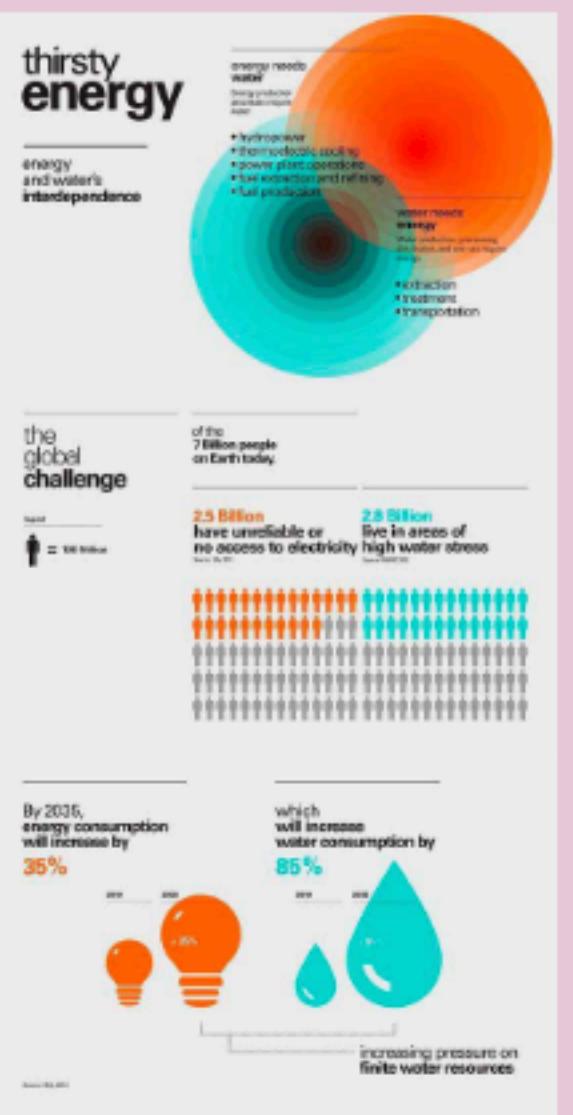
I AM MANY THINGS

We are Home Société. We draw on decades of design expertise while seeking beauty and inspiration in things. We live and breathe exceptional local and international design for the home, inside and out. We love the slick feel of leather and metal's industrial edge but have a soft spot for noble fabrics like velvet too. We believe in having the freedom to explore a variety of styles and aesthetics. We are diverse and inclusive. We are many things.

We are a collective of individuals who share a passion for design and a desire to bring it into their homes. Our products range from furniture to accessories, all designed to reflect our unique style and personality. A bit unusual, a bit eccentric, a bit quirky. And that's what makes us special. We believe in individuality and self-expression, and that's why we're here.

Sans Serif

# Minimalistisk Moderne Neutral



Regular

*Italic*

**Bold**

minuskler

MAJUSKLER

# Google fonts

Roboto Mono  
Christian Robertson

Variable

Whereas  
recognition of  
the inherent  
dignity

Raleway  
Matt McInerney, Pablo Impallari, Rodrigo Fuenzalida

Variable

Whereas recognition  
of the inherent dignity

Noto Sans  
Google

18 styles

Whereas recognition  
of the inherent dignity

# Memory

- Iconic memory - Super fast, extremely short-term
- Short-term memory - 7 +- 2 elementer i hjernen
- Long-term memory - When memory leaves short-term memory it either disappears or goes into long-term memory

Why does this matter for us data vis creators?

# **Memory**

<https://brainconnection.brainhq.com/brain-games/word-list-recall/>

# Focusing your audiences attention

When telling a story with data we want to control where our users are pointing their attention

We can do that with **pre attentive attributes**

# Preattentive attributes

Information we can process visually almost immediately, before sending the information to the attention processing parts of our brain

It means that, if we use preattentive attributes strategically, they can help us enable our audience to see what we want them to see before they even know they're seeing it!



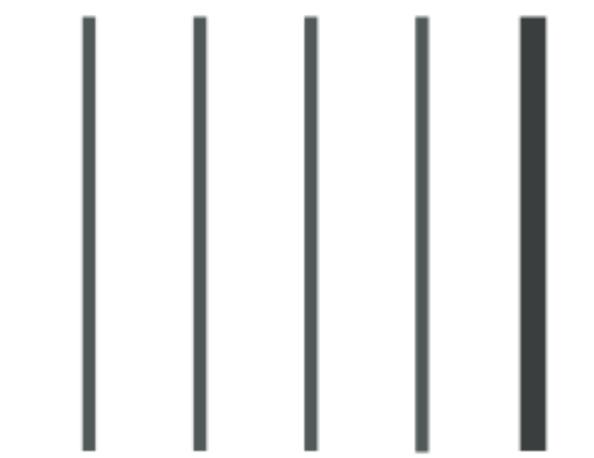
Orientation



Shape



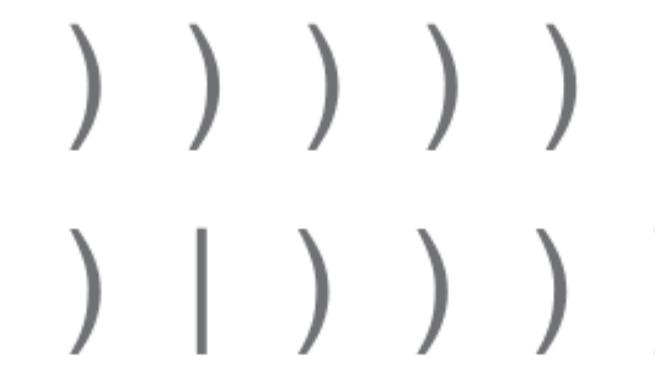
Line length



Line width



Size



Curvature



Added marks



Enclosure



Hue



Intensity



Spatial position



Motion

**FIGURE 4.4** Preattentive attributes

Source: Adapted from Stephen Few's *Show Me the Numbers*, 2004.

## No preattentive attributes

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Color

What are we doing well? Great Products. **These products are clearly the best in their class.**

Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Bold

**What are we doing well?** Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Italics

What are we doing well? Great Products. These products are clearly the best in their class. *Replacement parts are shipped when needed.* You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Size

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent gaskets **without me having to ask.** Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours. You have a great company – keep up the good work!

## Outline (enclosure)

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The **account manager even called to check in** after normal business hours.

You have a great company – keep up the good work!

## Separate spatially

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours. You have a great company – keep up the good work!

## Underline (added marks)

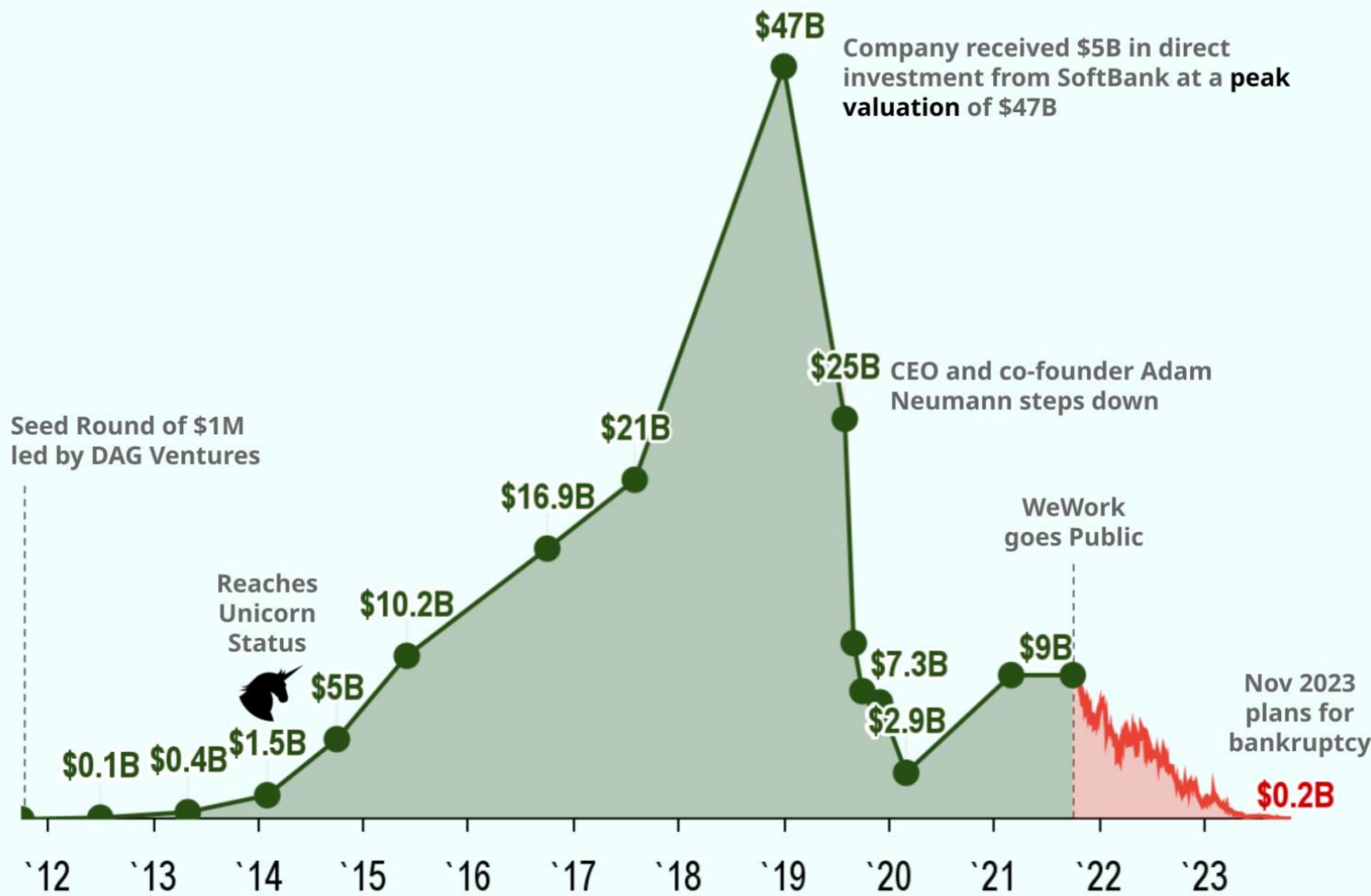
What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

# wework

## wecrashed

The Rise & Fall of the flexible office space provider with an astronomical valuation

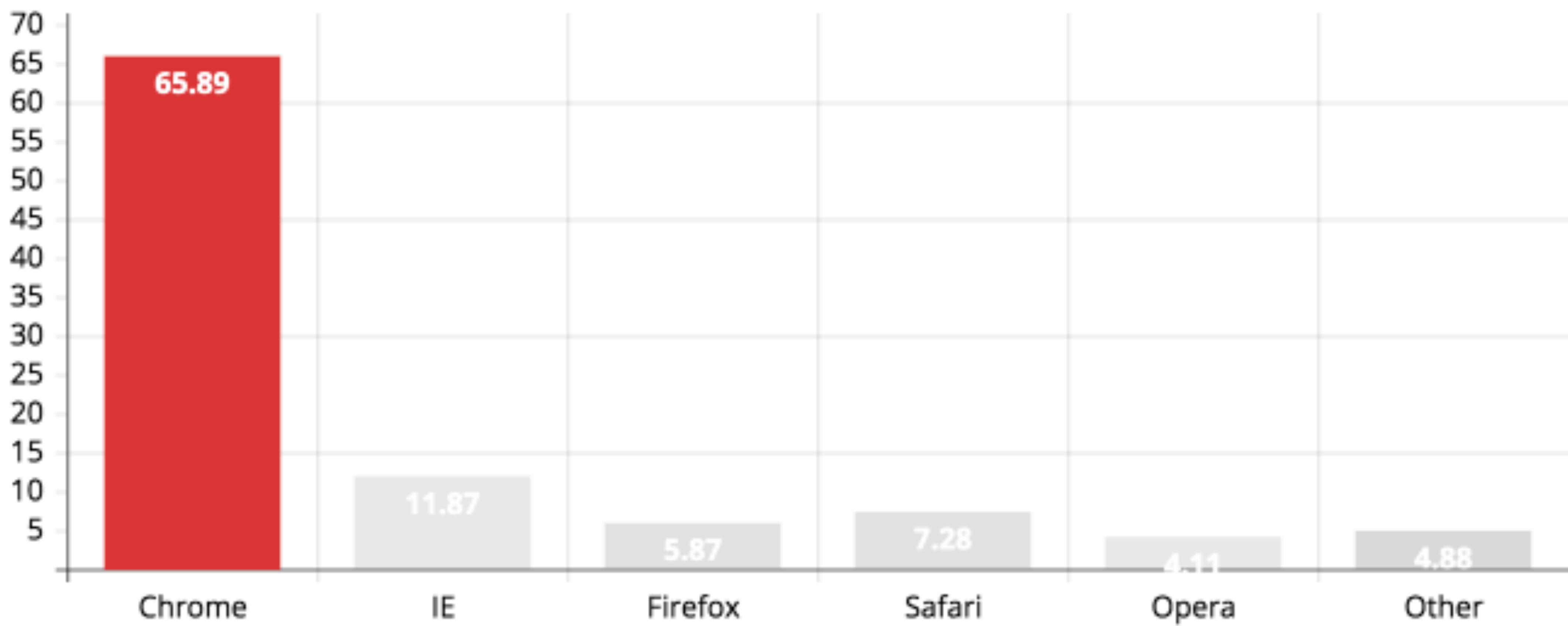


Source: Visual Capitalist and Google Finance



# Chrome is the best browser

The statistics says it all



# Colorblind colors

- <https://colorbrewer2.org/>
- Be aware of cultural colors
- Test your visualisation here: <https://www.color-blindness.com/coblis-color-blindness-simulator/>

# Takeaway

- Make clear visualisations with minimal clutter
- Use Gestalt laws to group elements together
- Think about the number of points you want to communicate
- Use preattentive attributes to guide a users focus

# Exercise time

Work with the “Most Streamed Spotify Songs 2024.csv” found on Fronter.

1. Open the dataset in Tableau
2. Find an interesting question/questions to ask the dataset. When you have that think about
3. Who do you want to communicate to? Målgruppe
4. What do you want to say to them? Budskab
5. Create a Data visualisation. Think about
  1. What colors and fonts?
  2. How can you use Gestalt Laws to improve your visualisation?
  3. Use preattentive attributes to control your audiences attention
  4. What graph type
6. The visualisation should be presented for the class. Important! Reflect on the choices you took