

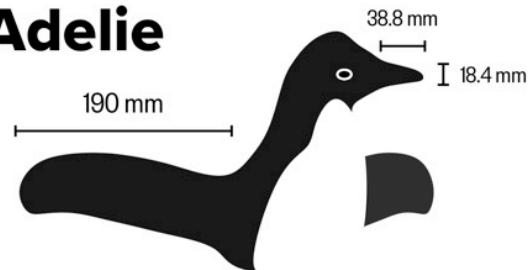
# **FROM IDEA TO CODE TO IMAGE: CREATIVE DATA VISUALIZATIONS IN R**

**GEORGIOS KARAMANIS**

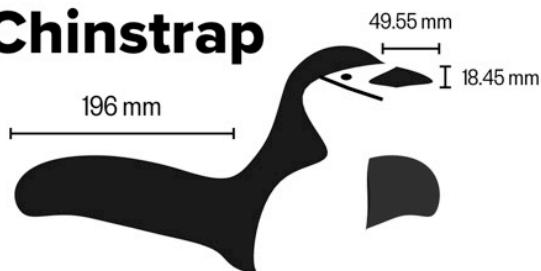
# Palmer Penguins

Median length of flipper, length and depth of bill,  
of 342 penguins recorded between 2007 and 2009

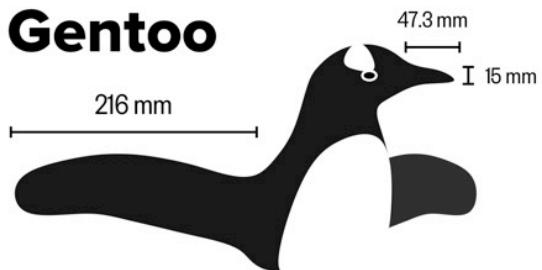
## Adelie



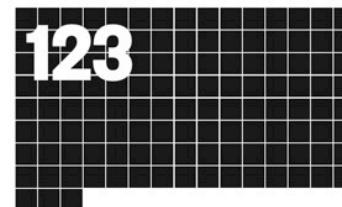
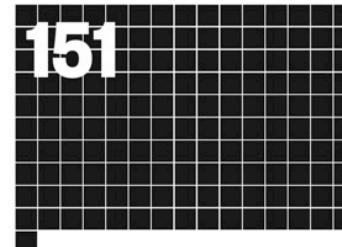
## Chinstrap



## Gentoo

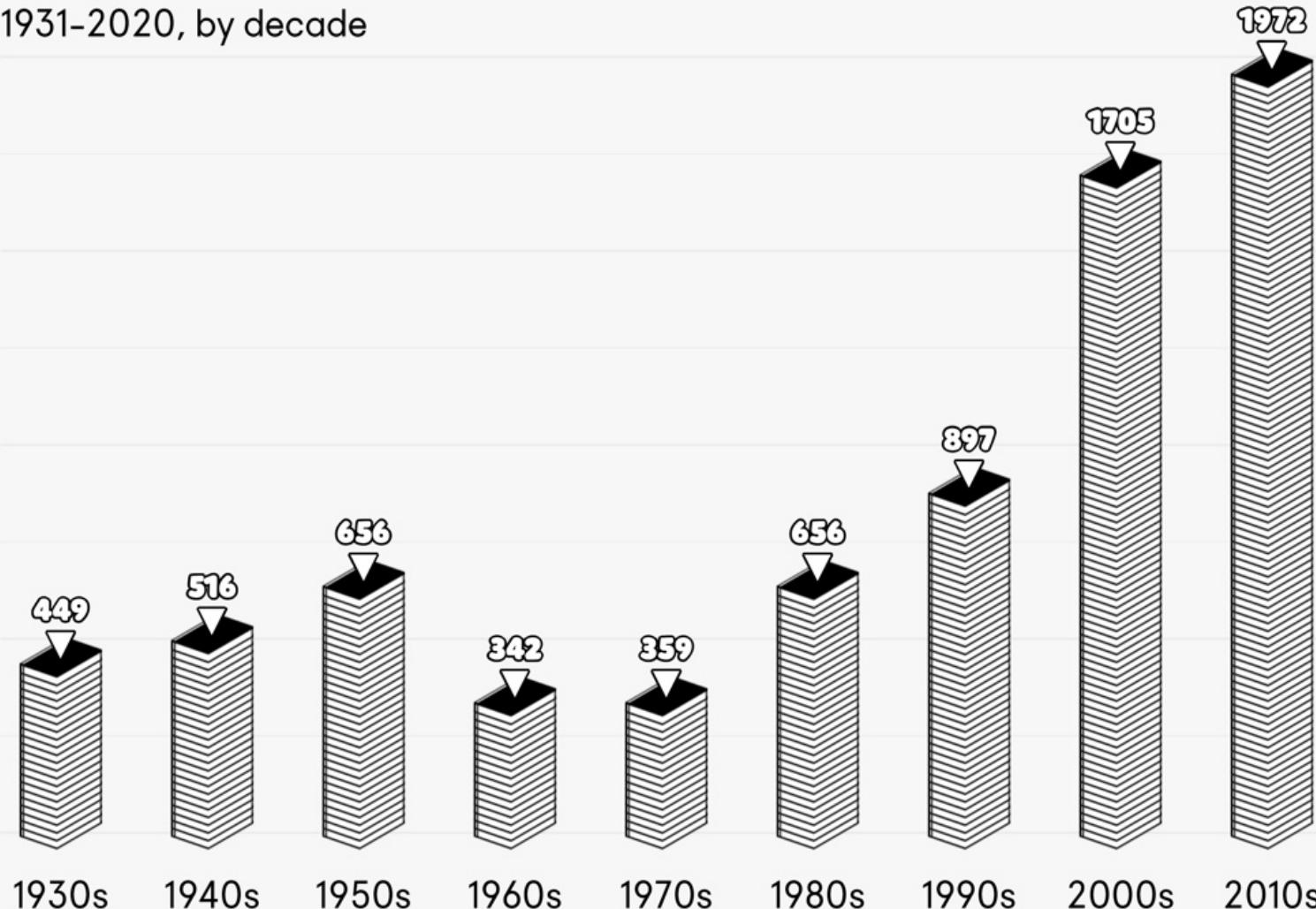


Recorded penguins by species

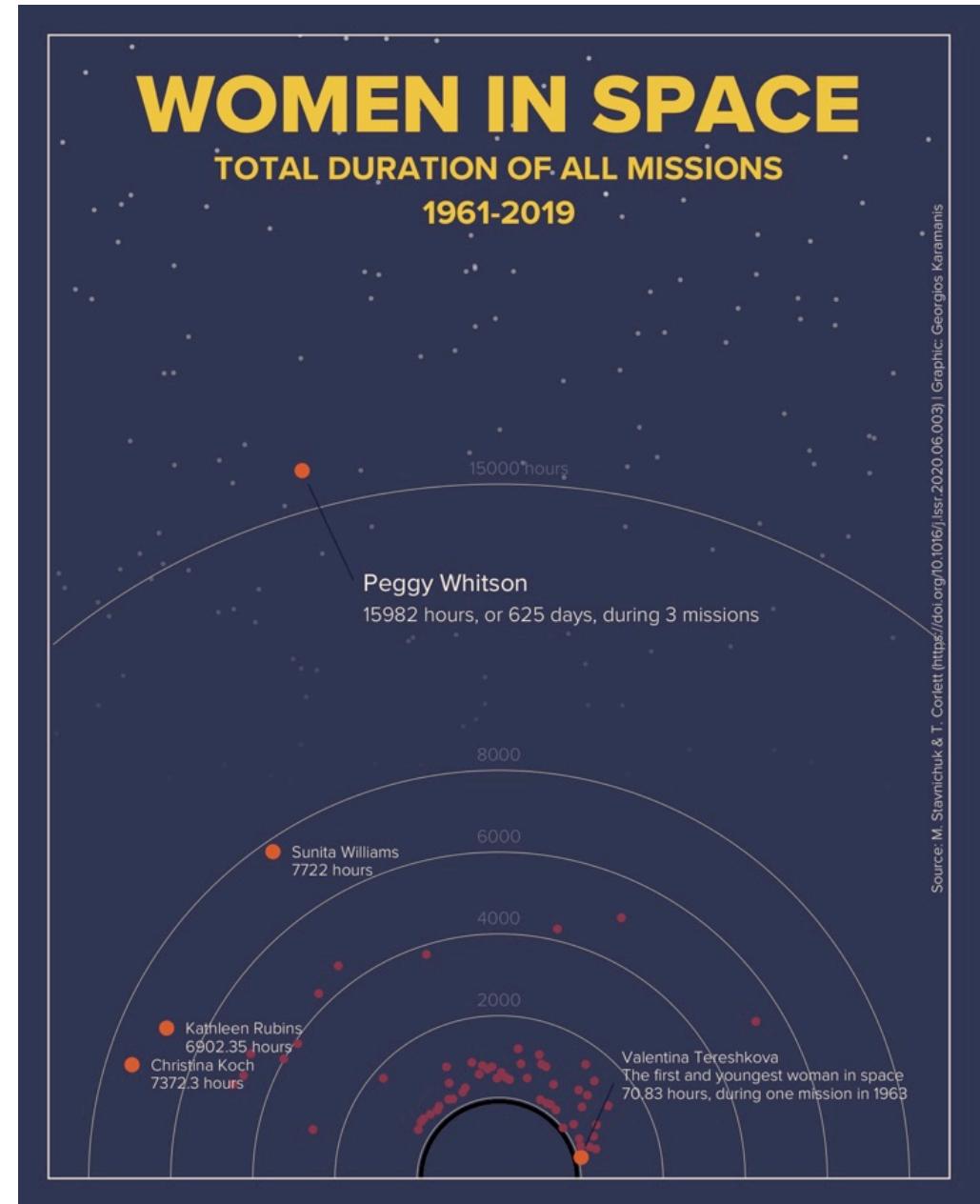
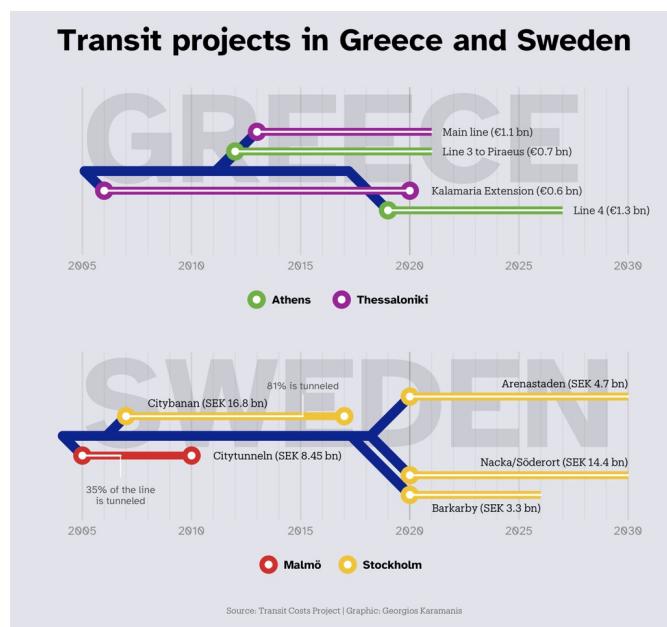
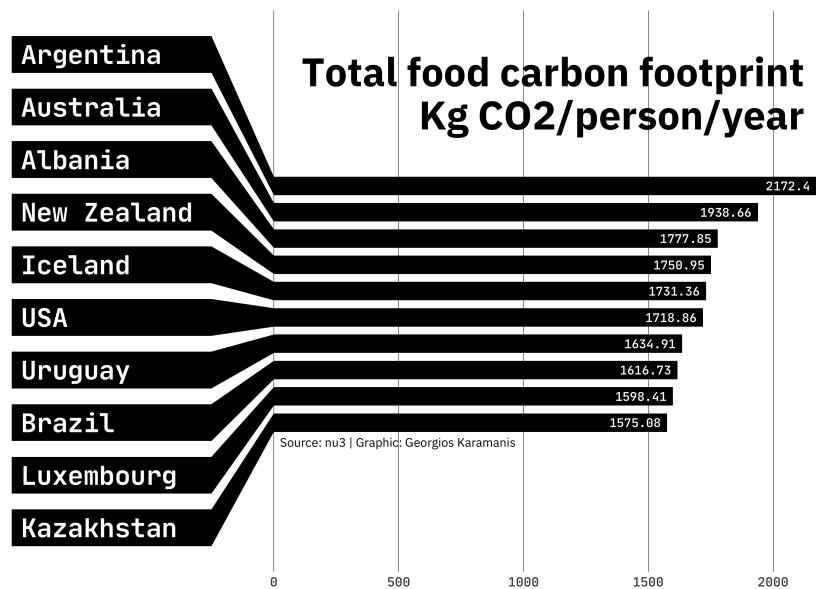


# Number of books featured in The New York Times Hardcover Fiction Bestsellers

1931-2020, by decade



Source: Post45 Data Collective · Graphic: Georgios Karamanis



# WHY?

**Creative visualizations stand out**

**Emotional connection, engagement**

**Better and more clear communication**

---

**WHY?**

**Self-expression**

# CREATIVITY

Novelty

Useful solutions

Transform or synthesize

Connecting seemingly  
unrelated concepts

*Mass vacillation: a week of Covid turmoil*

A week in the life of the world | Global edition  
26 MARCH 2021 | VOL. 204 No.14 | £4.50 | €6.95\*

The  
**Guardian Weekly**

Mount Etna Inside its control room » Serious green Wall Street ditches carbon »  
A toxic prejudice The Atlanta shootings » Sinai miracle Creating life in the desert »  
Winston Churchill Why can't Britain handle the truth? »

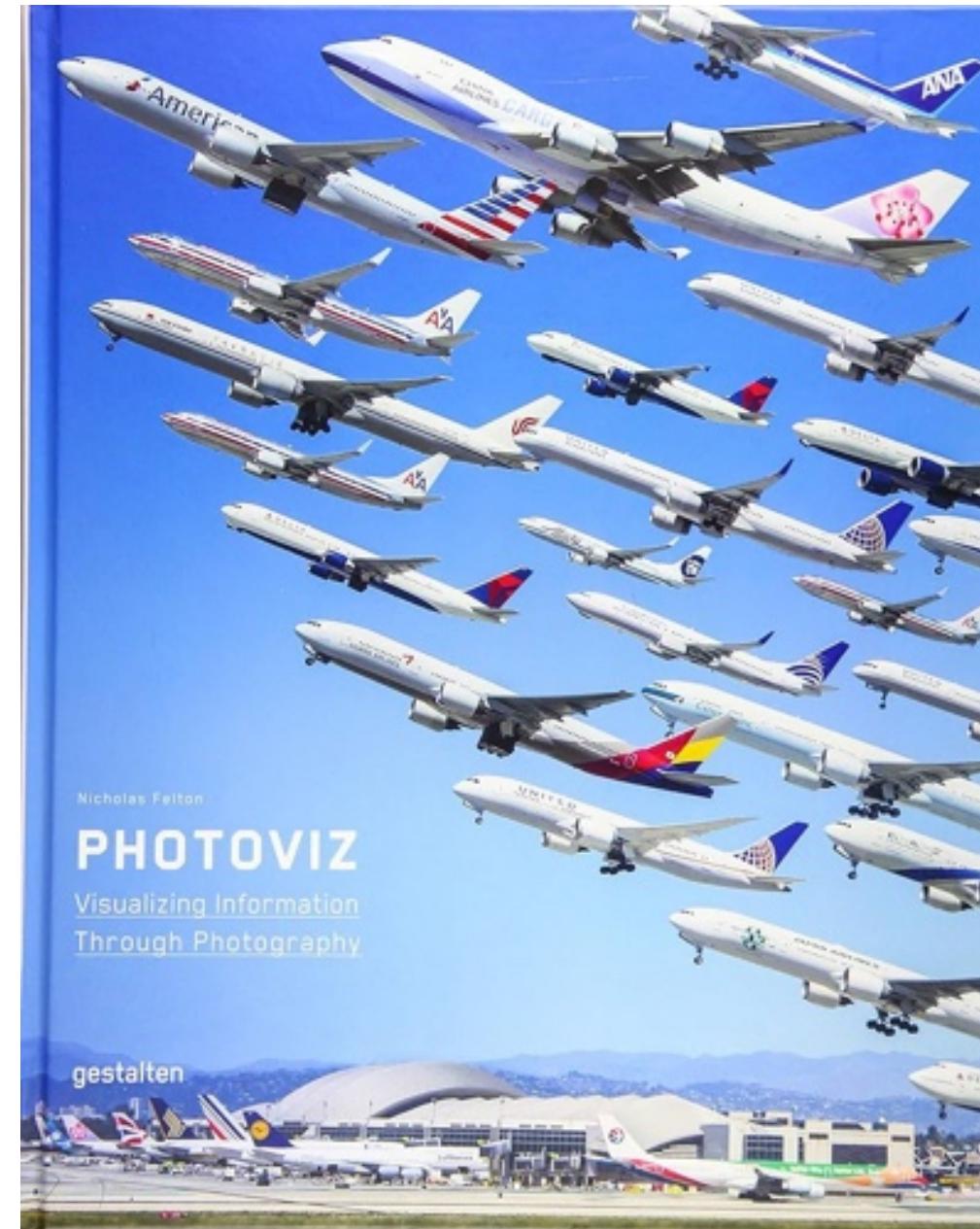
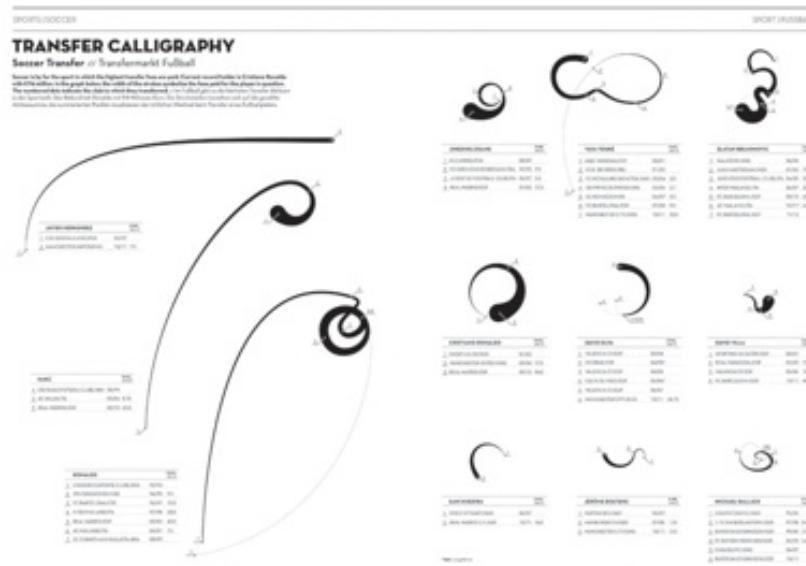
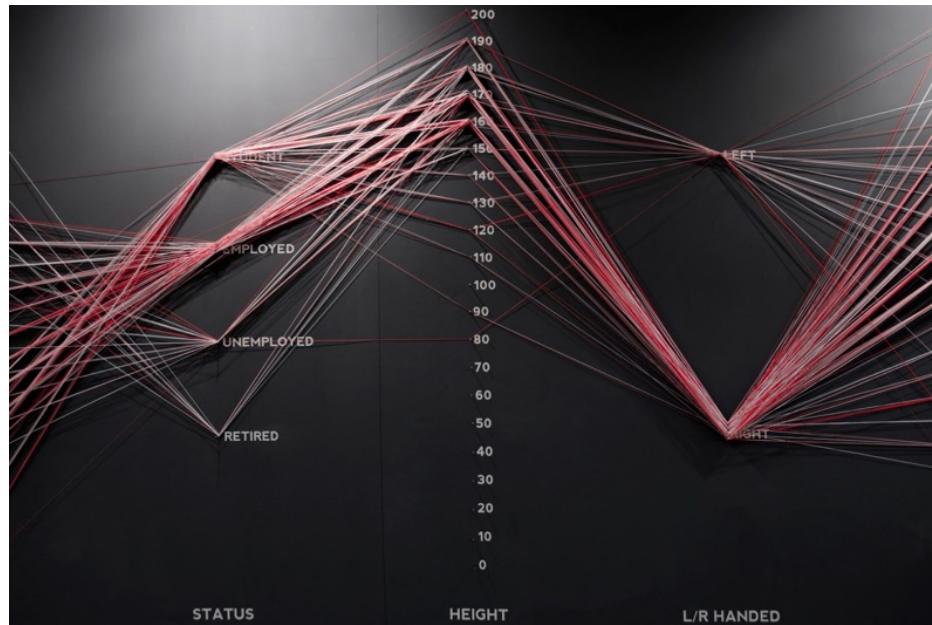
The  
clown  
King

Making sense  
of Boris Johnson  
By Edward Docx



Golden Section Graphics: Transfer calligraphy

Domestic Data Streamers: Data Strings



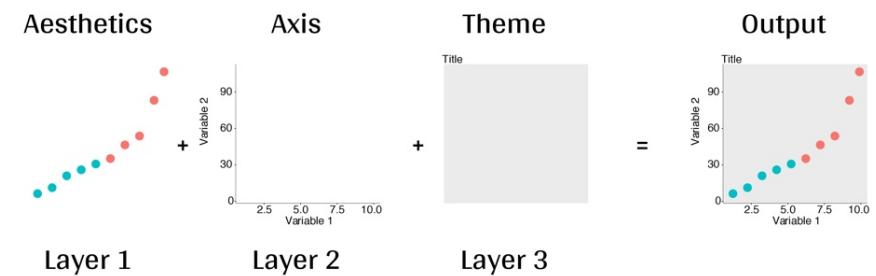
# R AND GGPLOT2

**Programming language**

**Grammar of Graphics**

**Flexible and customizable**

**ggplot2 extensions**



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**Finding inspiration**

**Getting creative with code**

**Making it personal**

# FINDING INSPIRATION



# **FINDING INSPIRATION**

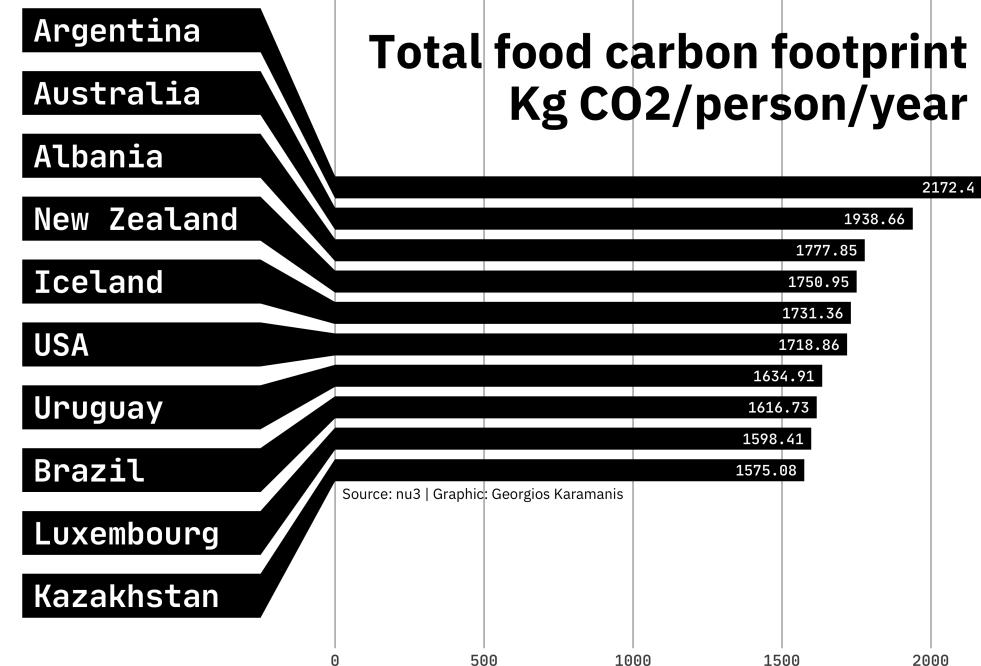
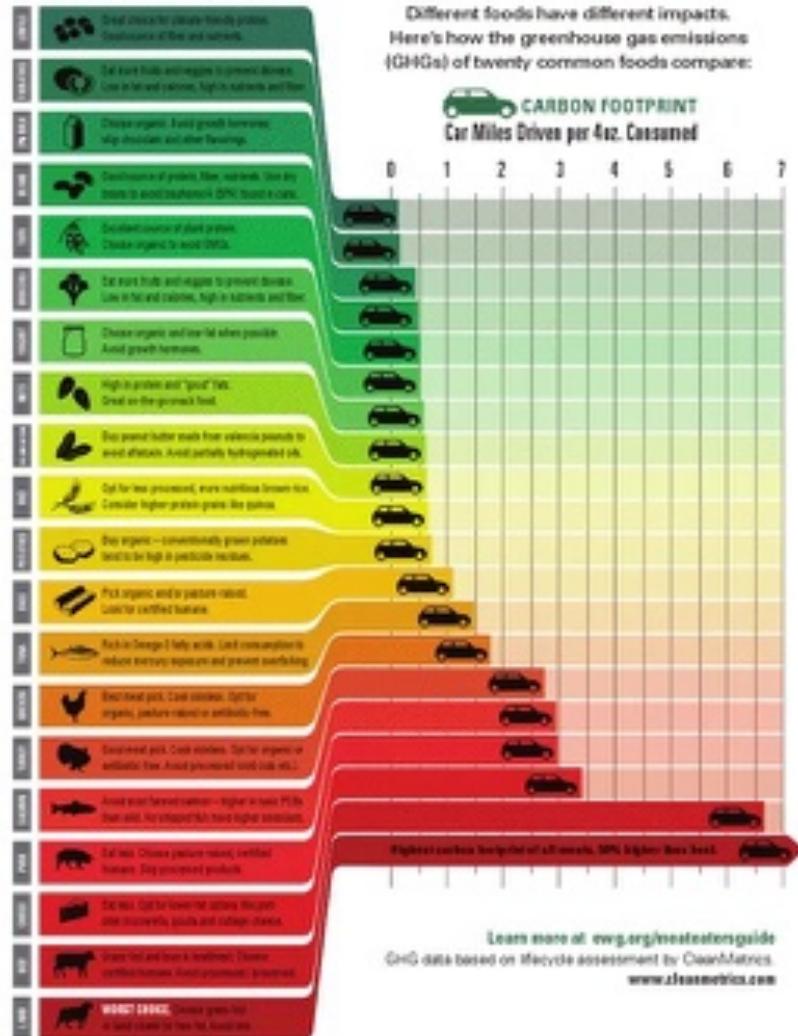
**Look at other people's work**

**Dissect their choices**

**Imitate style or techniques**

**Remix**

## EAT SMART. YOUR FOOD CHOICES AFFECT THE CLIMATE.

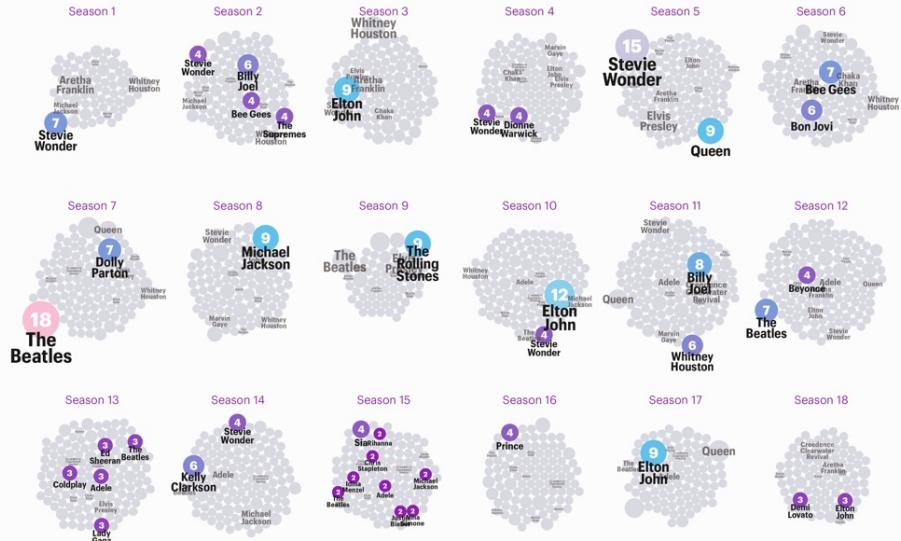


# FINDING INSPIRATION

Try out new packages

## American Idol's most popular artists

Circle size represents the number of times an artist's songs were performed, based on unique artist-song combinations. Featuring the names of the most popular artists, with colors indicating the top 1% of artists for each season.



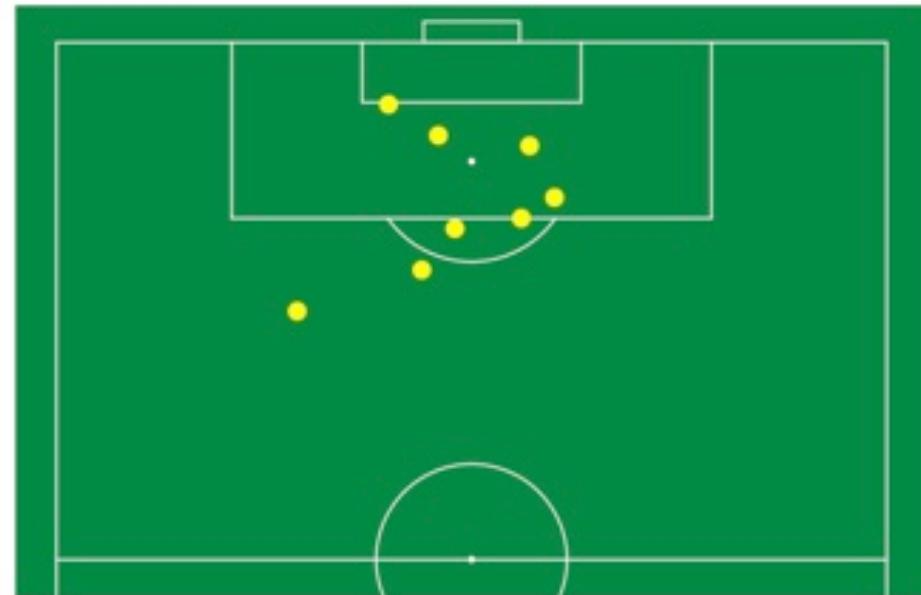
Source: Wikipedia (via kkakey) · Source: Georgios Karamanis

<https://github.com/EvaMaeRey/ggcirclepack>

# FINDING INSPIRATION

**Look into charts typically used in other fields**

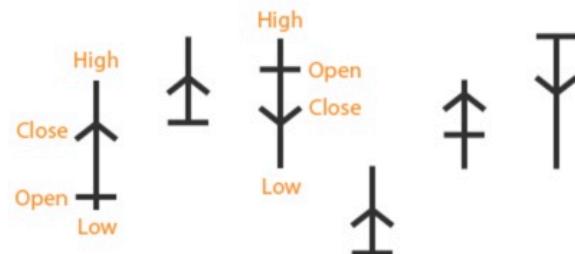
Simple shotmap  
ggsoccer example



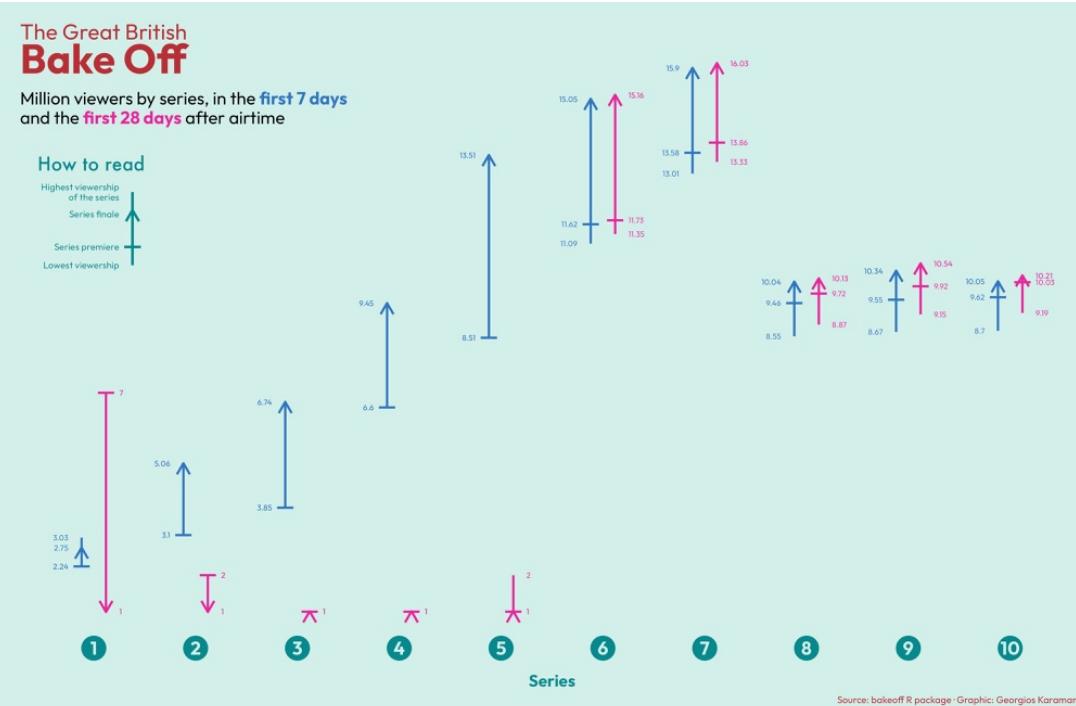
<https://torvaney.github.io/ggsoccer/>

## The Anchor Chart

This visualisation is considered the predecessor to the Candlestick Chart, but not too much is known about it.

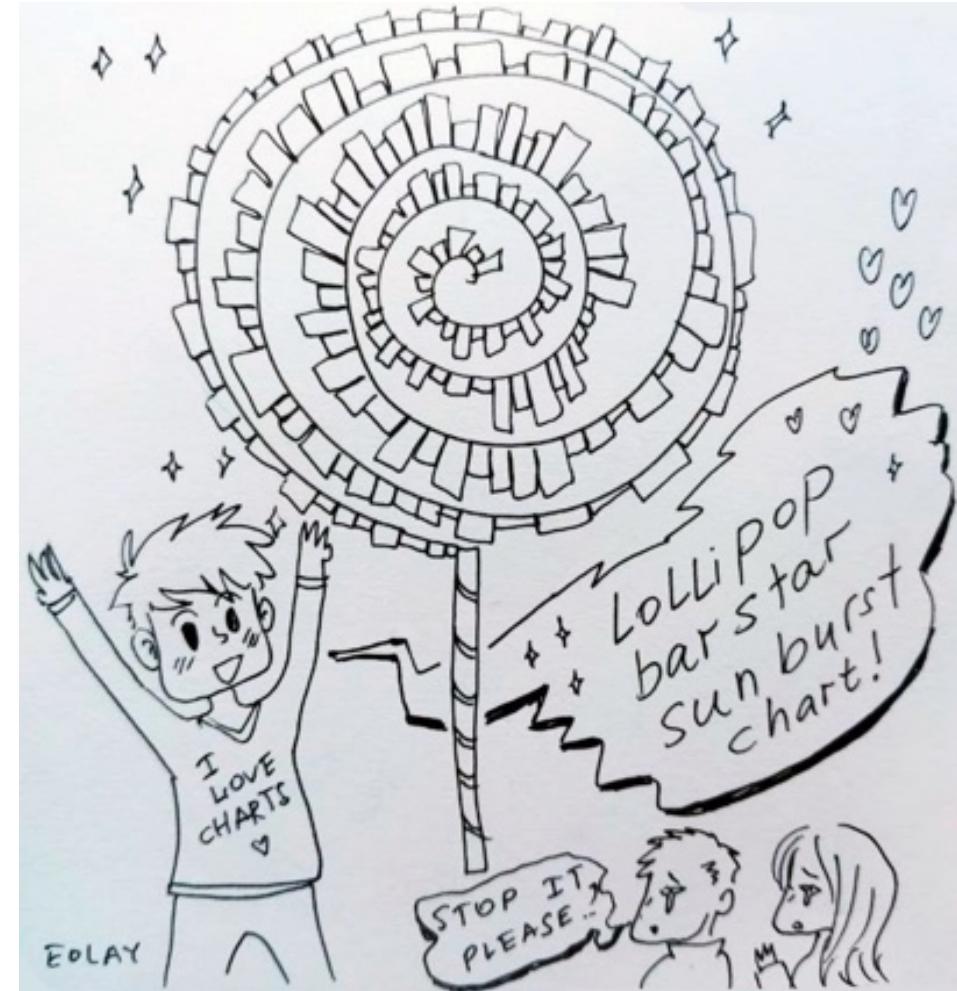


Nison gives some background on Anchor Charts and explains their construction:



# FINDING INSPIRATION

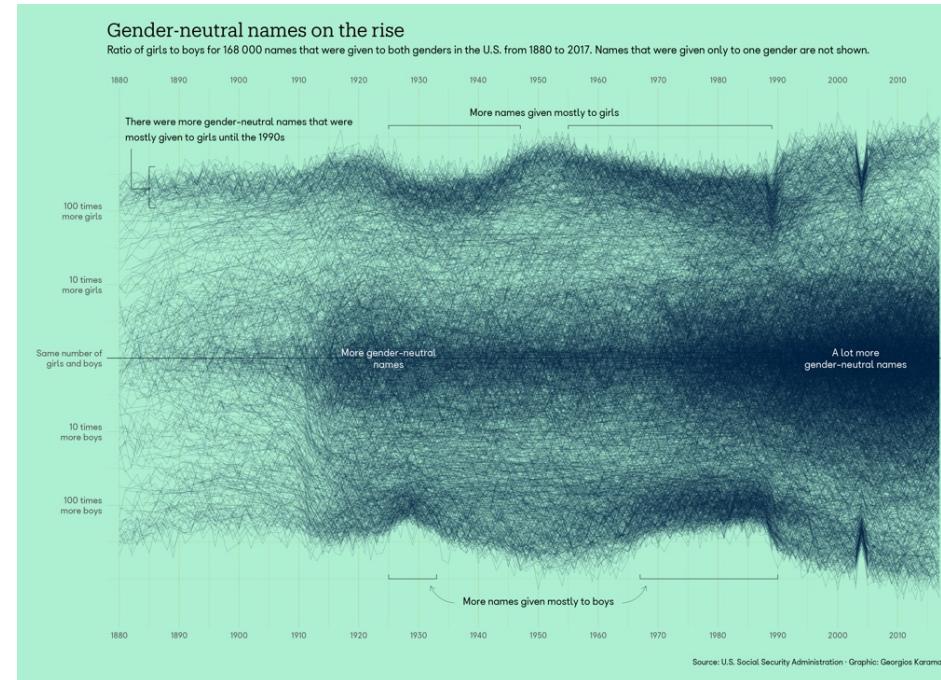
**Sketch before coding**



Natalia Kiseleva

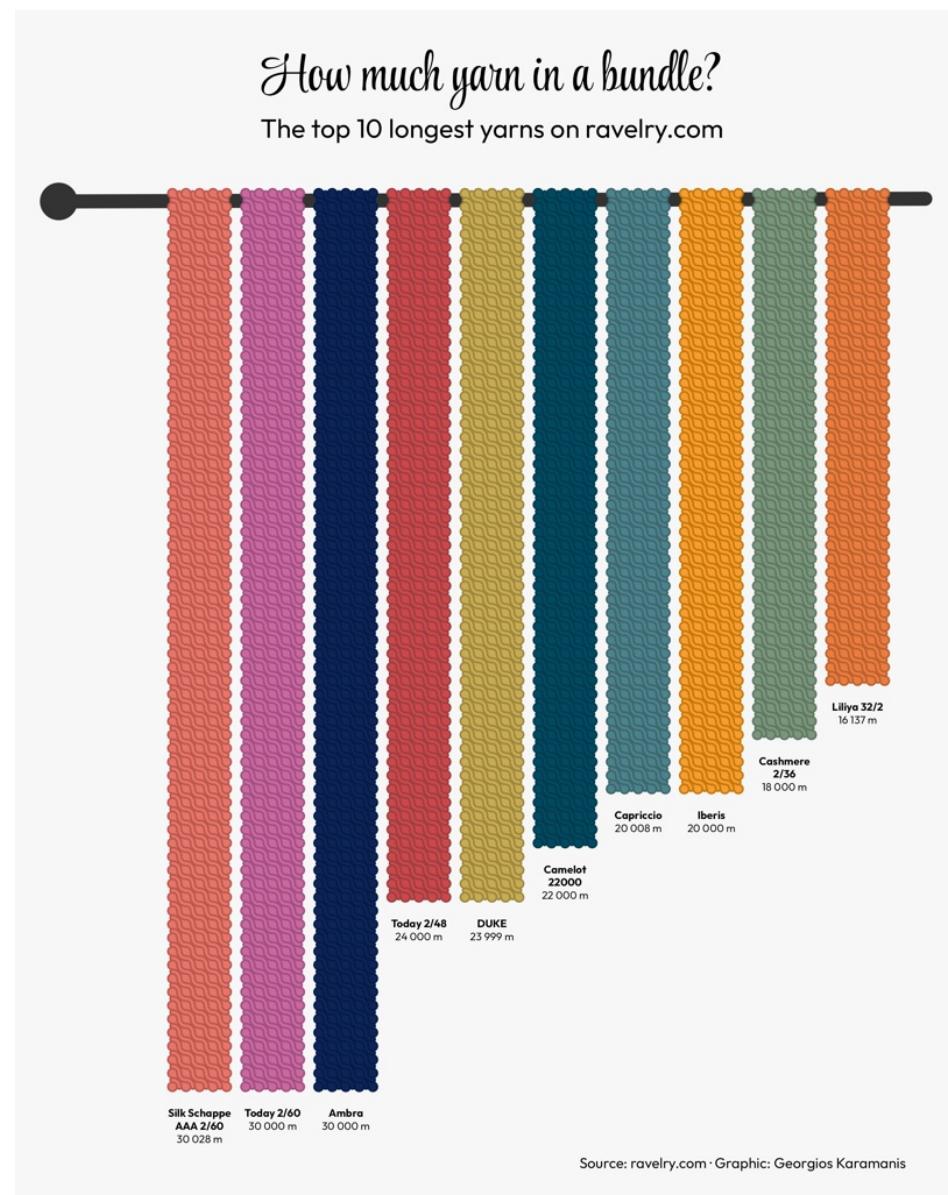
# FINDING INSPIRATION

**Break the rules**



# FINDING INSPIRATION

Try data art



# FINDING INSPIRATION

## Ask a LLM

DA

You

Give me 10 creative ideas for a data visualization



ChatGPT

Creating engaging and insightful data visualizations of the data you're working with. Here are 10 creative i

1. **Interactive Timeline:** Design an interactive timeline over time. Users can click on specific points or periods to view more details. This is particularly effective for historical data or project timelines.
2. **Geographic Heat Map:** Use a geographic heat map to visualize data across different regions. This is excellent for visualizing demographic trends, sales distribution across countries or states, or environmental data.
3. **Comparative Bubble Chart:** Develop a bubble chart where the size, position, and color of bubbles represent different data dimensions. This can be used to compare statistics, or survey results across various categories and sub-categories.
4. **3D Data Sculptures:** Create 3D visual representations of data that can be viewed from different angles. This approach can make complex data more intuitive and visually appealing.

# GETTING CREATIVE WITH YOUR CODE



# GETTING CREATIVE WITH YOUR CODE

**Look at other people's code**

The screenshot shows a GitHub repository page for 'TidyTuesday'. At the top, it displays the repository name 'TidyTuesday' (Public), a 'Watch' button (78), and a 'Code' dropdown. Below this, there are tabs for 'main' (selected), 'Branch' (1 Branch), and 'Tags' (0 Tags). A search bar and a 'Go to file' dropdown are also present. The main content area shows a list of commits from user 'z3tt' for 'Update LinkedIn Handle'. The commits are as follows:

Commit	Description	Date
rm DS_Store		last year
week 2022/12		2 years ago
Week 2021/09 U.S. Employments		3 years ago
making-of		2 years ago
updates Juneteenth contribution		last year
add _old.Rmd's to gitignore		2 years ago
Update LinkedIn Handle		last year
TidyTuesday.Rproj		2019/17

Below the commits, there is a 'README' section with a link to the file. Further down, a section titled '#TidyTuesday Contributions' features social media sharing icons for GitHub, LinkedIn, Twitter, and others. A yellow button labeled 'Buy me a coffee' with a coffee cup icon is also visible. A disclaimer at the bottom states: 'DISCLAIMER: ✎ no Illustrator or Photoshop was harmed during the making of these visualizations. ☀ certified ggplot quality.'

<https://github.com/z3tt/TidyTuesday>

## FINDING CREATIVE INSPIRATION

**Recreate data visualizations  
made with other tools**

01	Ukraine	631
02	United Kingdom	466
03	Spain	459
04	Sweden	438
05	Serbia	312
06	Italy	268
07	Moldova	253
08	Greece	215
09	Portugal	207
10	Norway	182
11	Netherlands	171
12	Poland	151
13	Estonia	141
14	Lithuania	128
15	Australia	125
16	Azerbaijan	106
17	Switzerland	78
18	Romania	65
19	Belgium	64
20	Armenia	61
21	Finland	38
22	Czech Republic	38
23	Iceland	20
24	France	17
25	Germany	6

## Eurovision 2022 Results

01	Ukraine	631
02	United Kingdom	466
03	Spain	459
04	Sweden	438
05	Serbia	312
06	Italy	268
07	Moldova	253
08	Greece	215
09	Portugal	207
10	Norway	182
11	Netherlands	171
12	Poland	151
13	Estonia	141
14	Lithuania	128
15	Australia	125
16	Azerbaijan	106
17	Switzerland	78
18	Romania	65
19	Belgium	64
20	Armenia	61
21	Finland	38
22	Czech Republic	38
23	Iceland	20
24	France	17
25	Germany	6

Source: Eurovision · Graphic: Georgios Karamanis

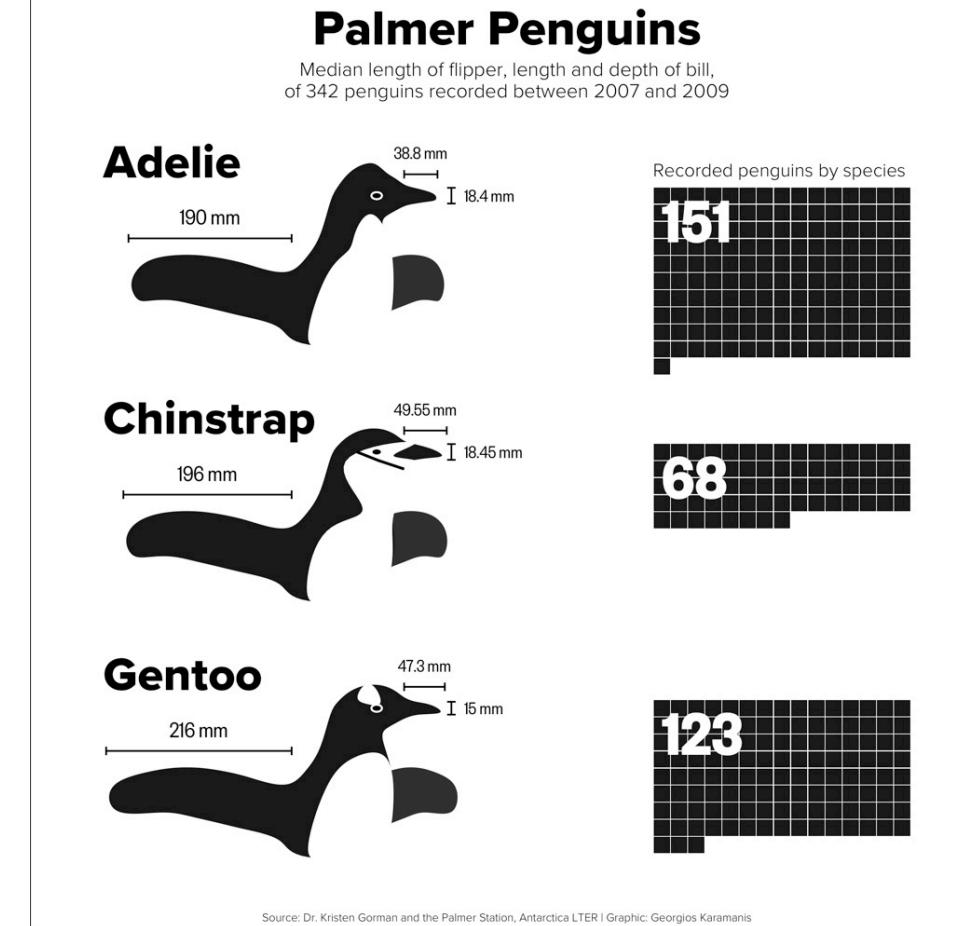
## **GETTING CREATIVE WITH YOUR CODE**

**Try out different options in  
ggplot2 functions**

**Try to break things**

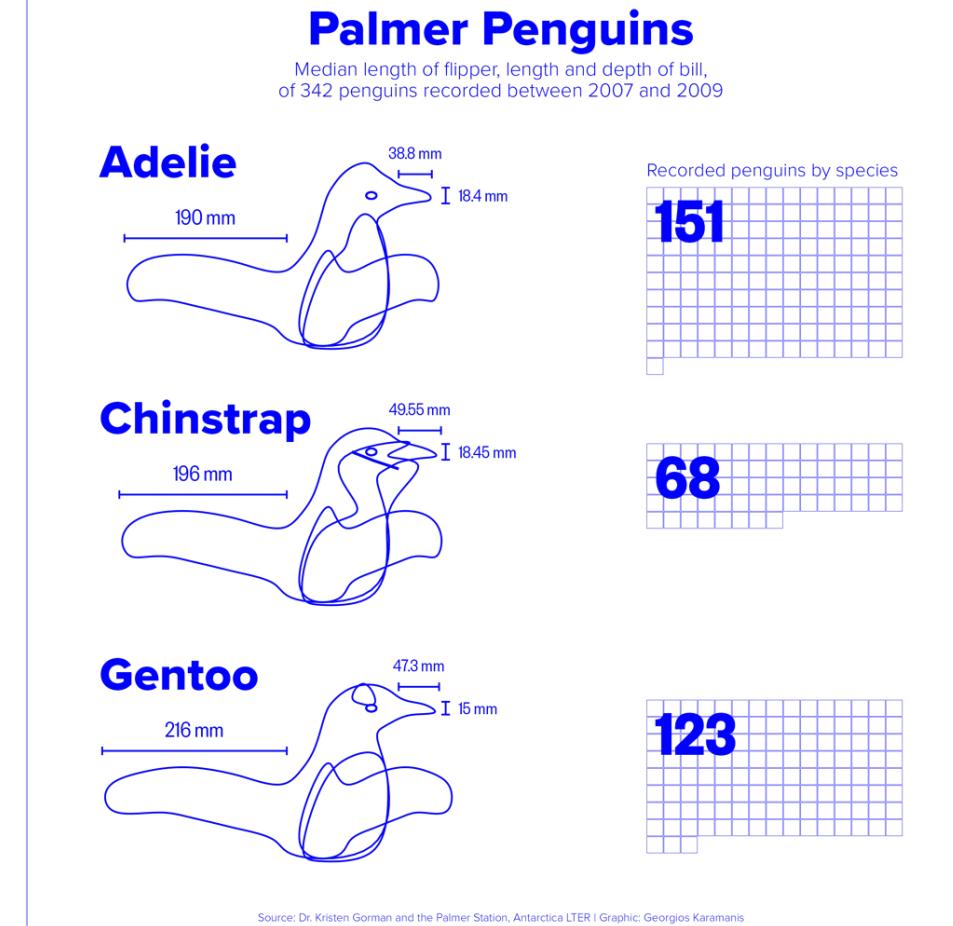
# GETTING CREATIVE WITH YOUR CODE

## Creative use of geoms



# GETTING CREATIVE WITH YOUR CODE

**geom\_bspline\_closed()**  
**from ggforce**



# GETTING CREATIVE WITH YOUR CODE

Use `geom_text()`

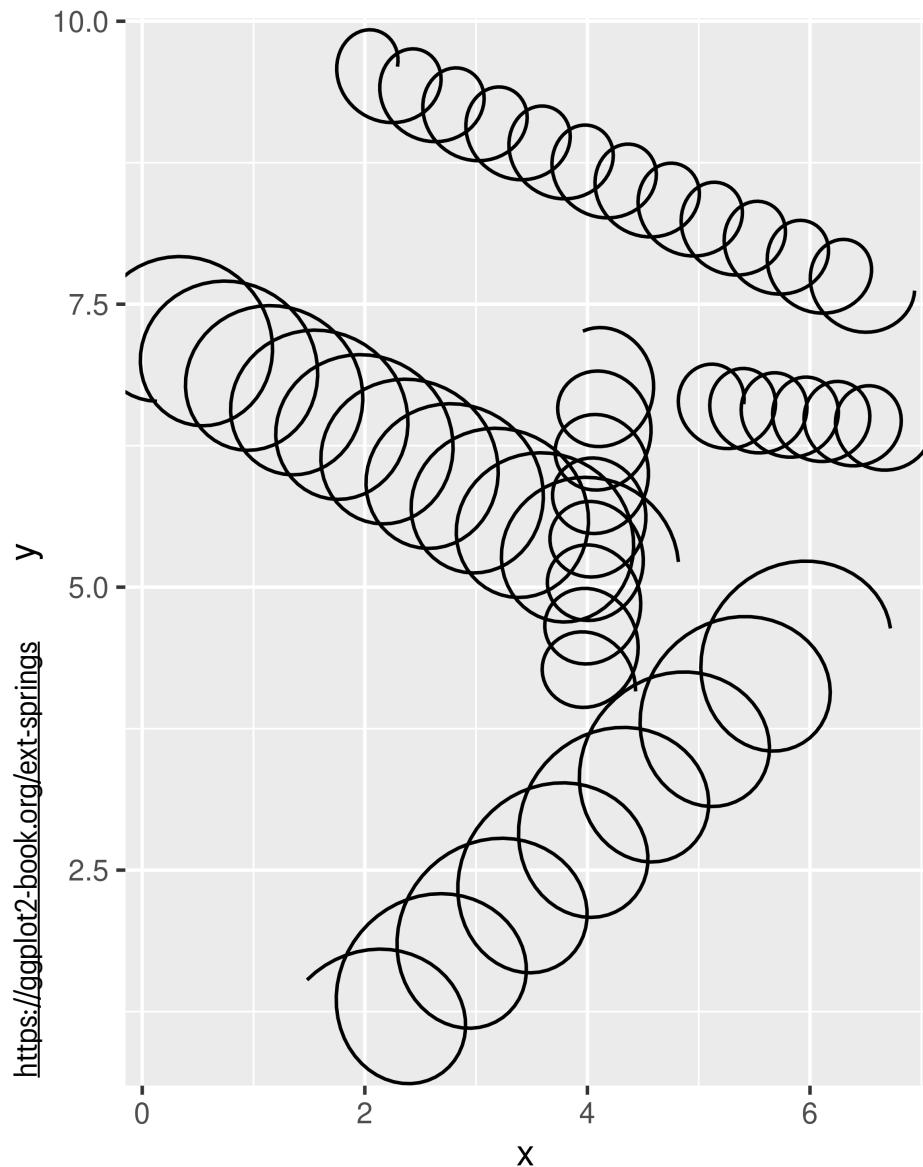
## SEX RATIO BY INDUSTRY, 2020



Source: BLS | Graphic: Georgios Karamanis

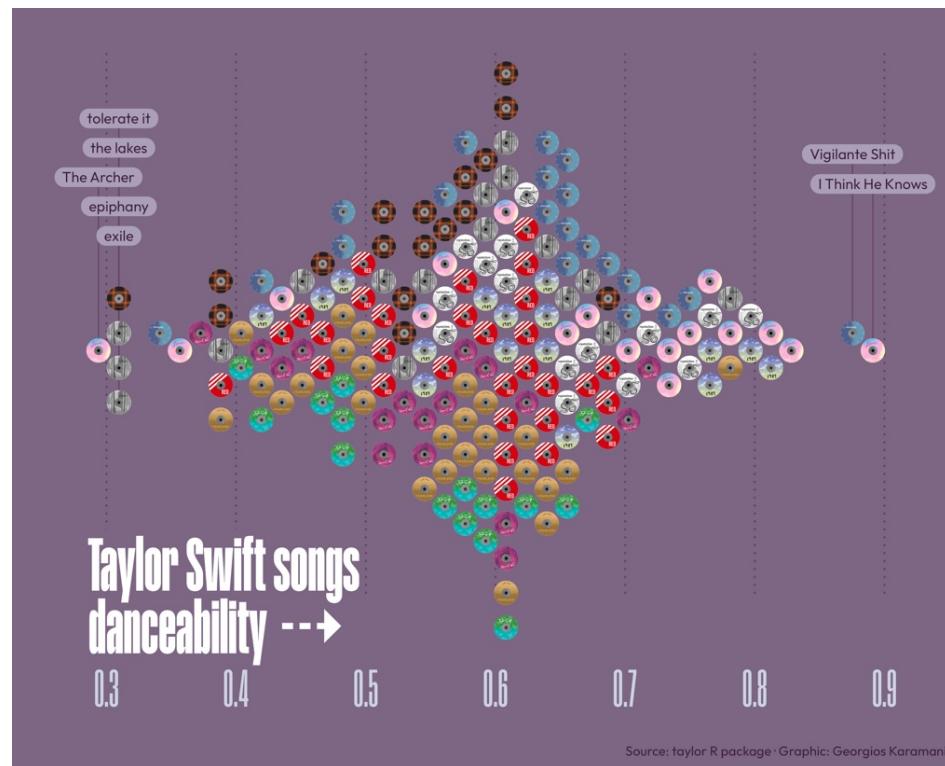
# GETTING CREATIVE WITH YOUR CODE

**Create your own geoms**

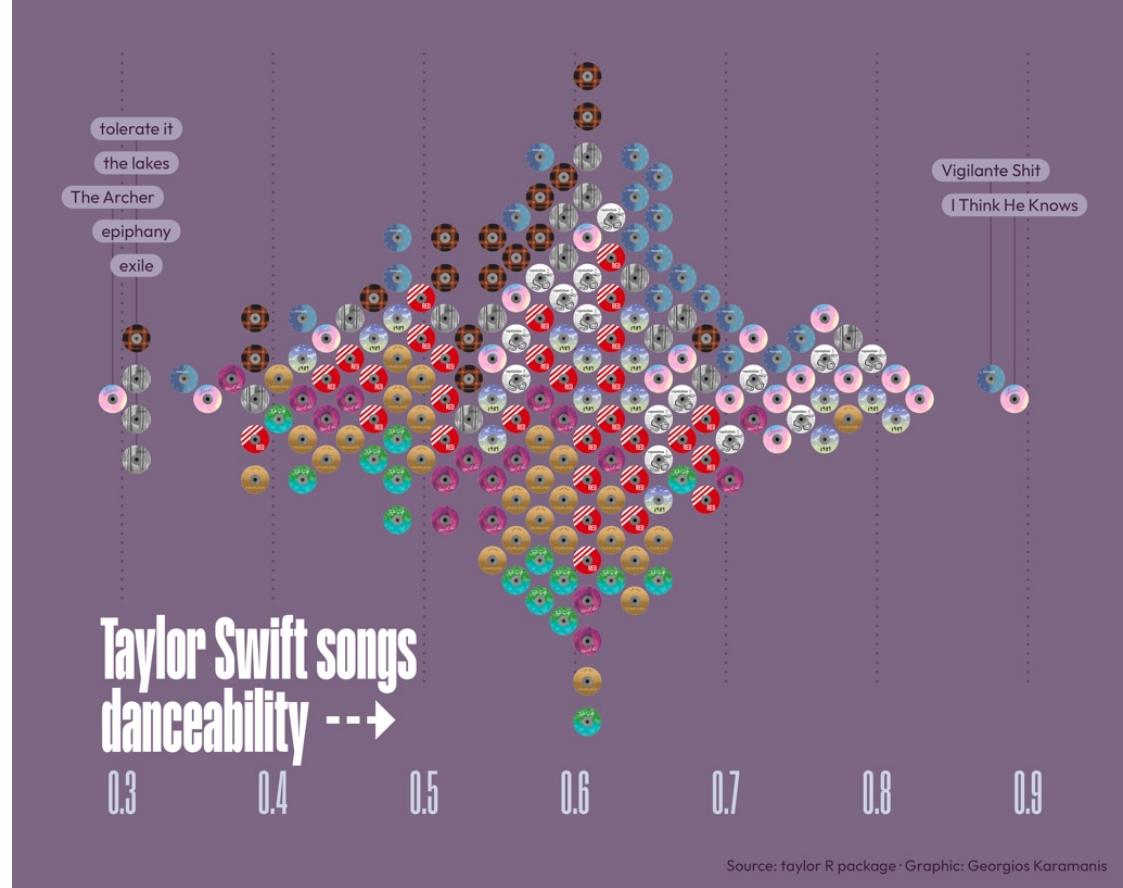
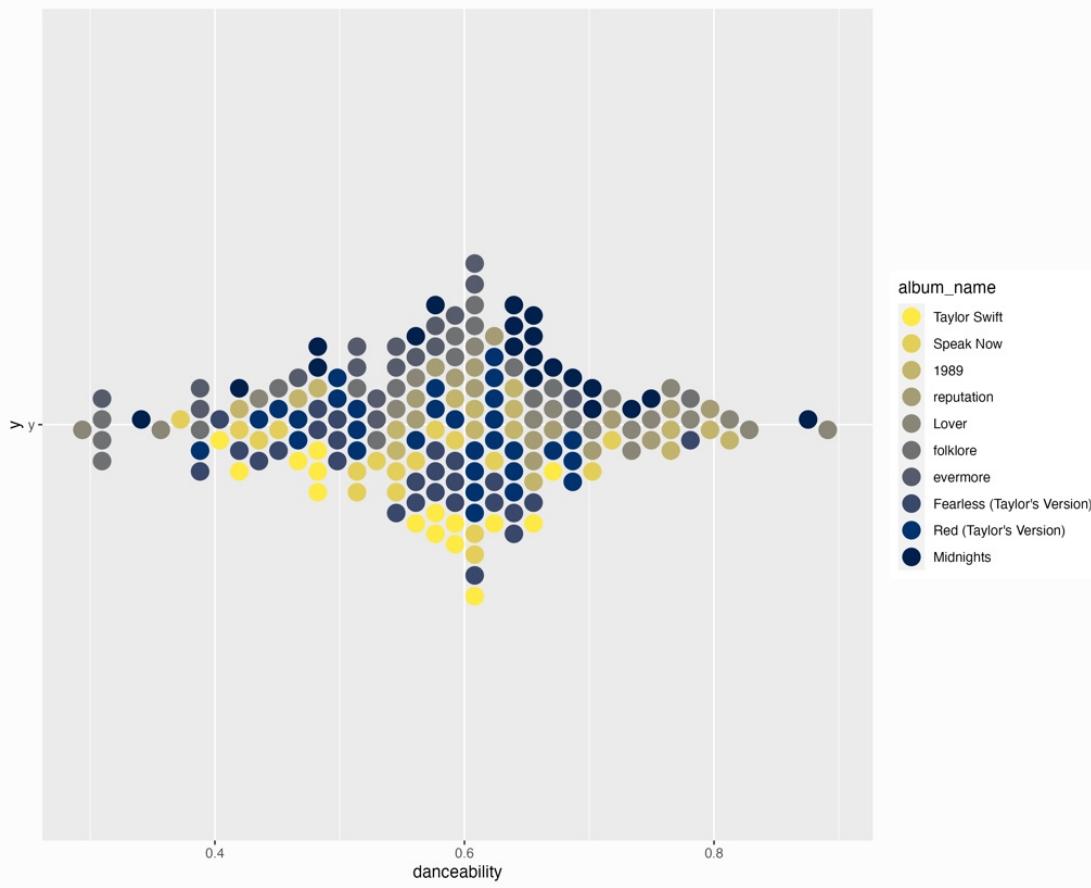


# GETTING CREATIVE WITH YOUR CODE

Use ggplot\_build()



Source: taylor R package · Graphic: Georgios Karamanis



# GETTING CREATIVE WITH YOUR CODE

**Participate in challenges:**

**Experiment**

**Learn**

**Get feedback**



<https://github.com/rfordatascience/tidytuesday/tree/master>

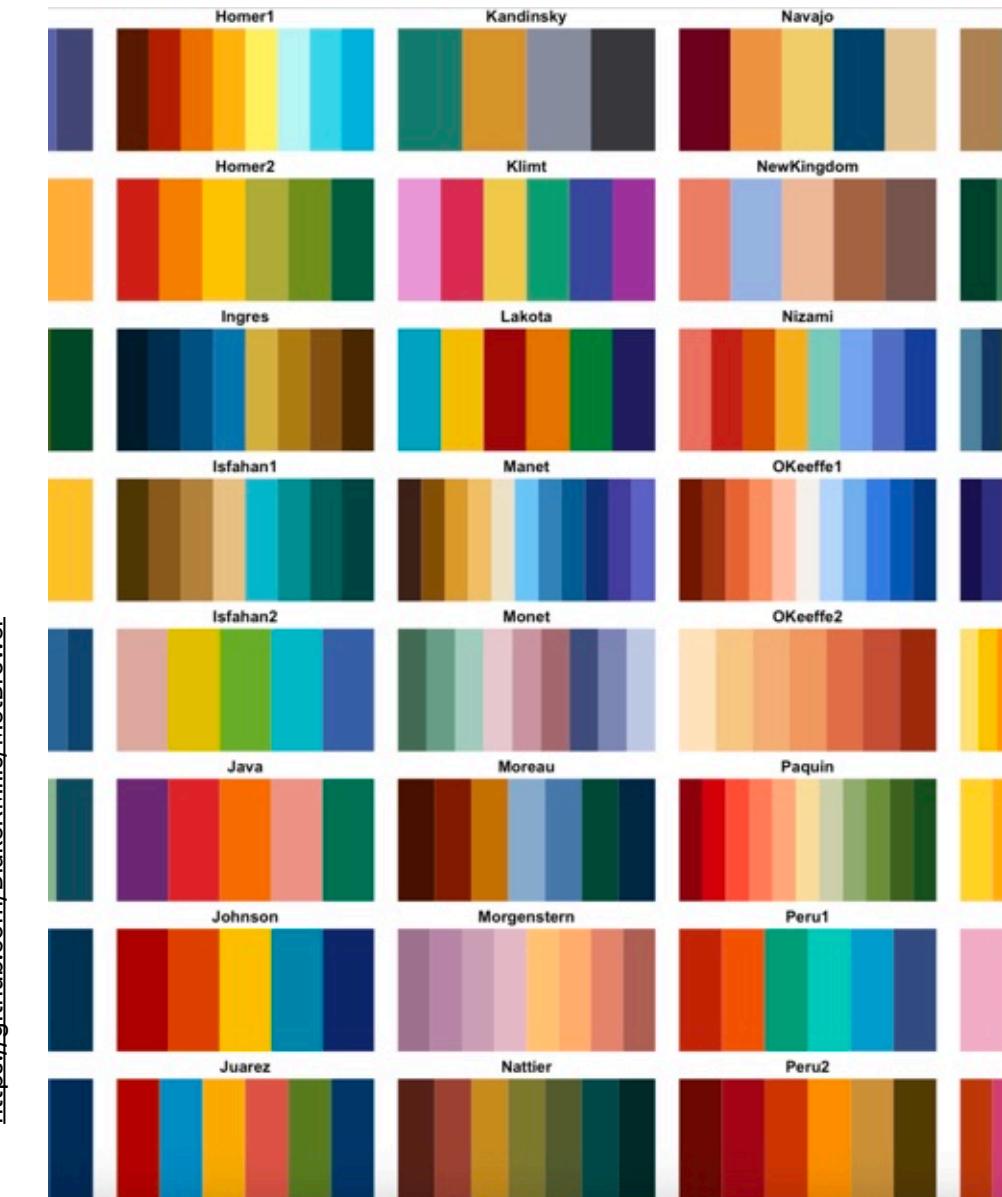
# MAKING IT PERSONAL



# MAKING IT PERSONAL

**Don't use the defaults  
(colors, fonts, etc.)**

**Remember accessibility!**



<https://github.com/BlakerMills/MetBrewer>

## MAKING IT PERSONAL

**When in doubt, subtract**

**Simplicity in design  
can be highly creative**

UN roll call votes by issue

**1092**

ARMS CONTROL AND DISARMAMENT

**957**

COLONIALISM

**765**

ECONOMIC DEVELOPMENT

**1015**

HUMAN RIGHTS

**855**

NUCLEAR WEAPONS AND NUCLEAR MATERIAL

**1061**

PALESTINIAN CONFLICT

Source: Harvard's Dataverse · Graphic: Georgios Karamanis

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# **MAKING IT PERSONAL**

**Try new techniques**

**Step out of comfort zones**

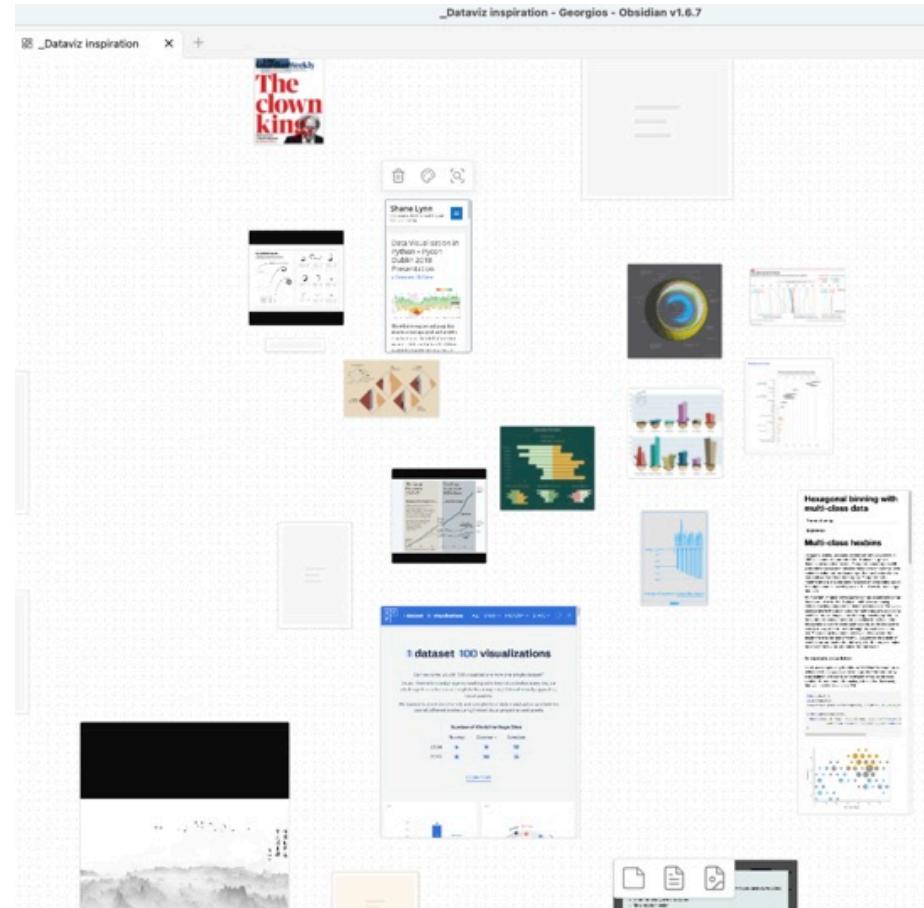
## **MAKING IT PERSONAL**

**Choose subjects that  
resonate with you**

**Blend your interests,  
hobbies, knowledge**

**Keep a list of ideas,  
packages, code snippets,  
etc.**

**Don't wait for inspiration**



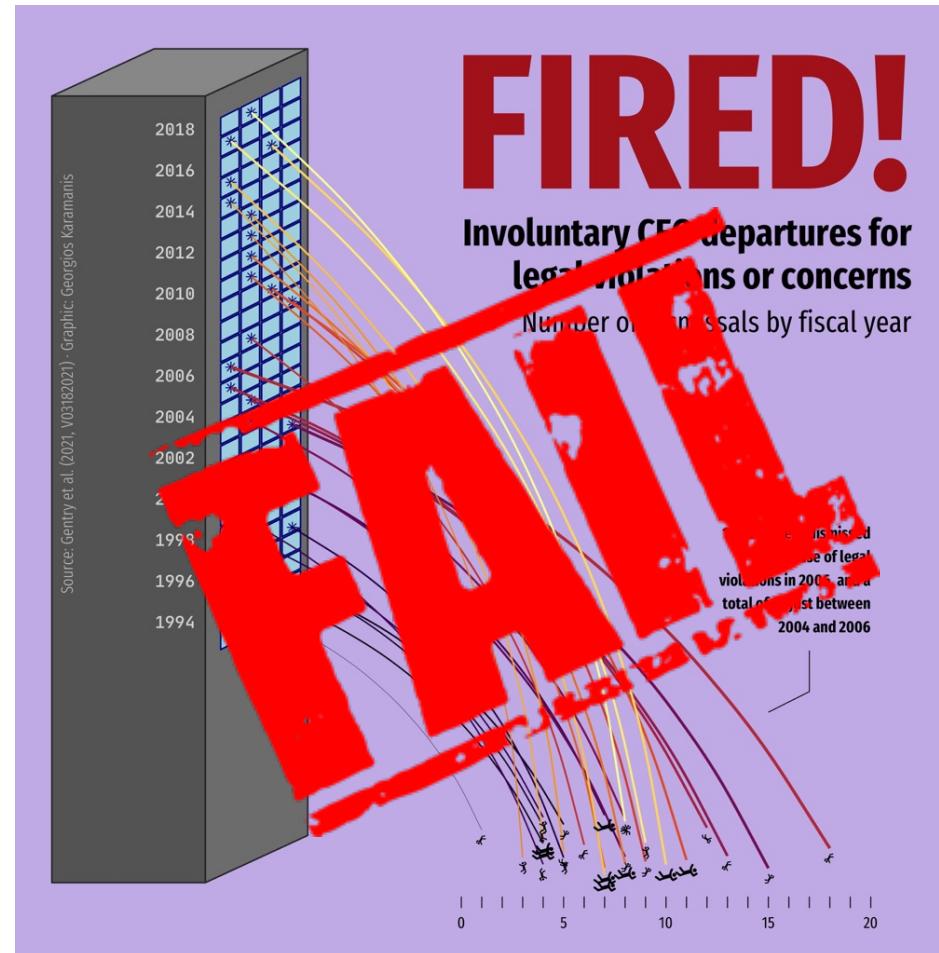
**Always give credit!**

⑧ BE NICE.  
(THE WORLD IS A  
SMALL TOWN.)

[Austin Kleon: Steal Like an Artist](#)

**Just do it, creativity  
shouldn't be the goal**

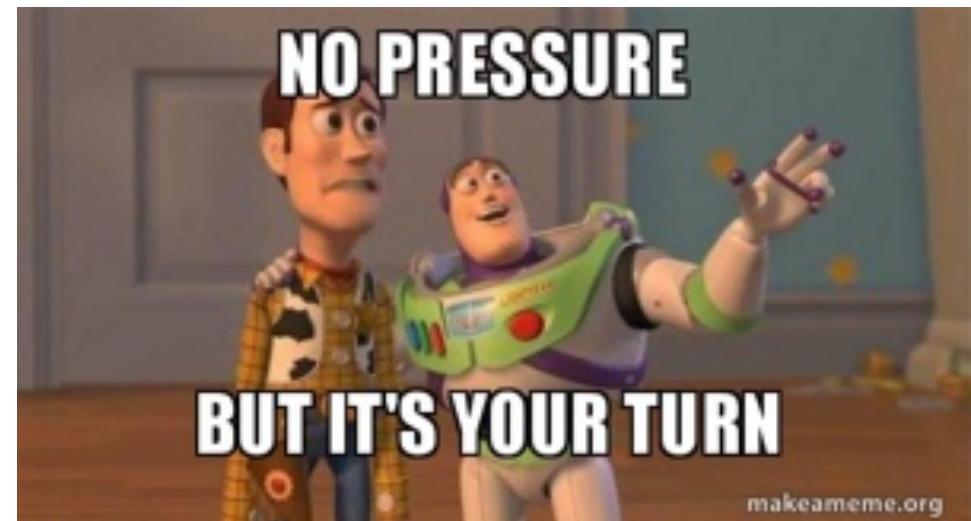
**You can't be creative  
all the time**



**Practice regularly**

**Make lots of visualizations**

**Share and get feedback**





**Slides and  
resources**

---

**THANK YOU!**



**Slides and  
resources**