

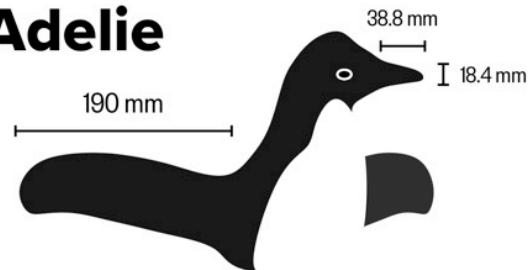
FROM IDEA TO CODE TO IMAGE: CREATIVE DATA VISUALIZATIONS IN R

GEORGIOS KARAMANIS

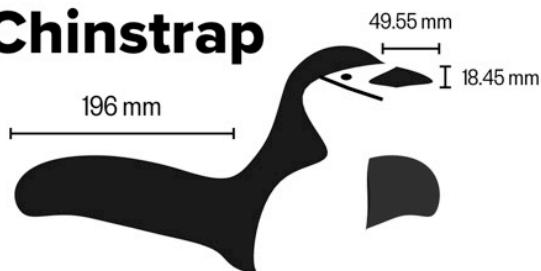
Palmer Penguins

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

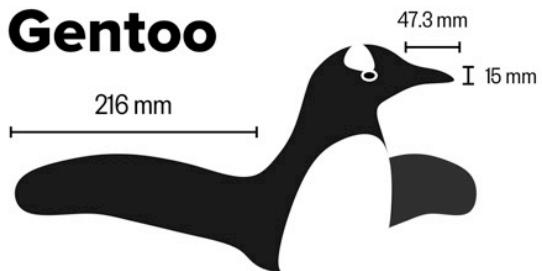
Adelie



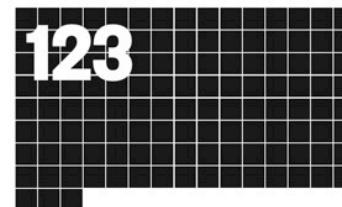
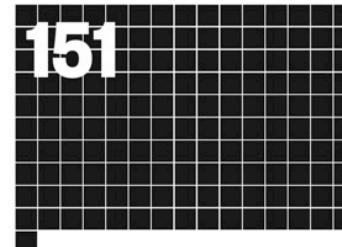
Chinstrap



Gentoo

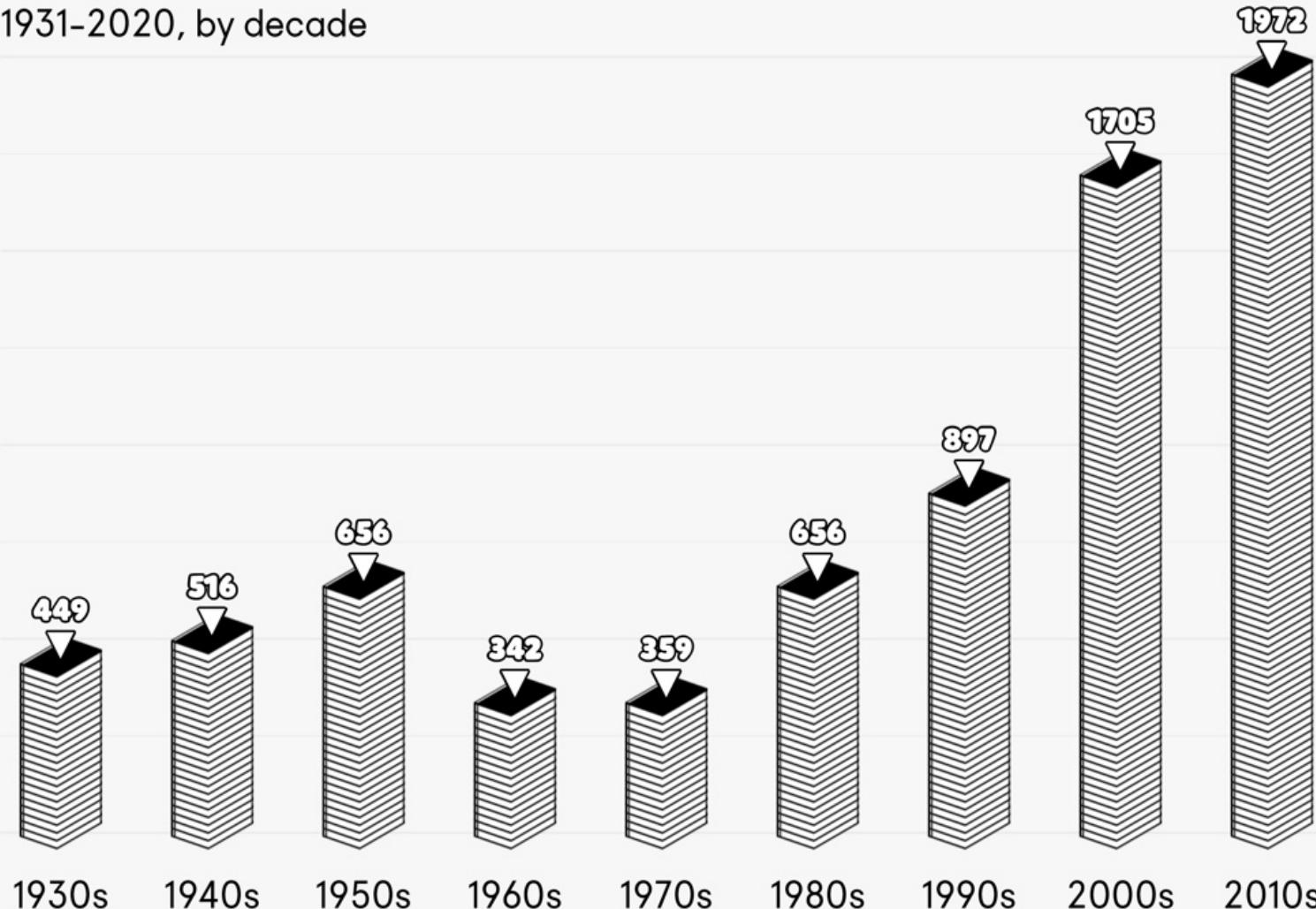


Recorded penguins by species

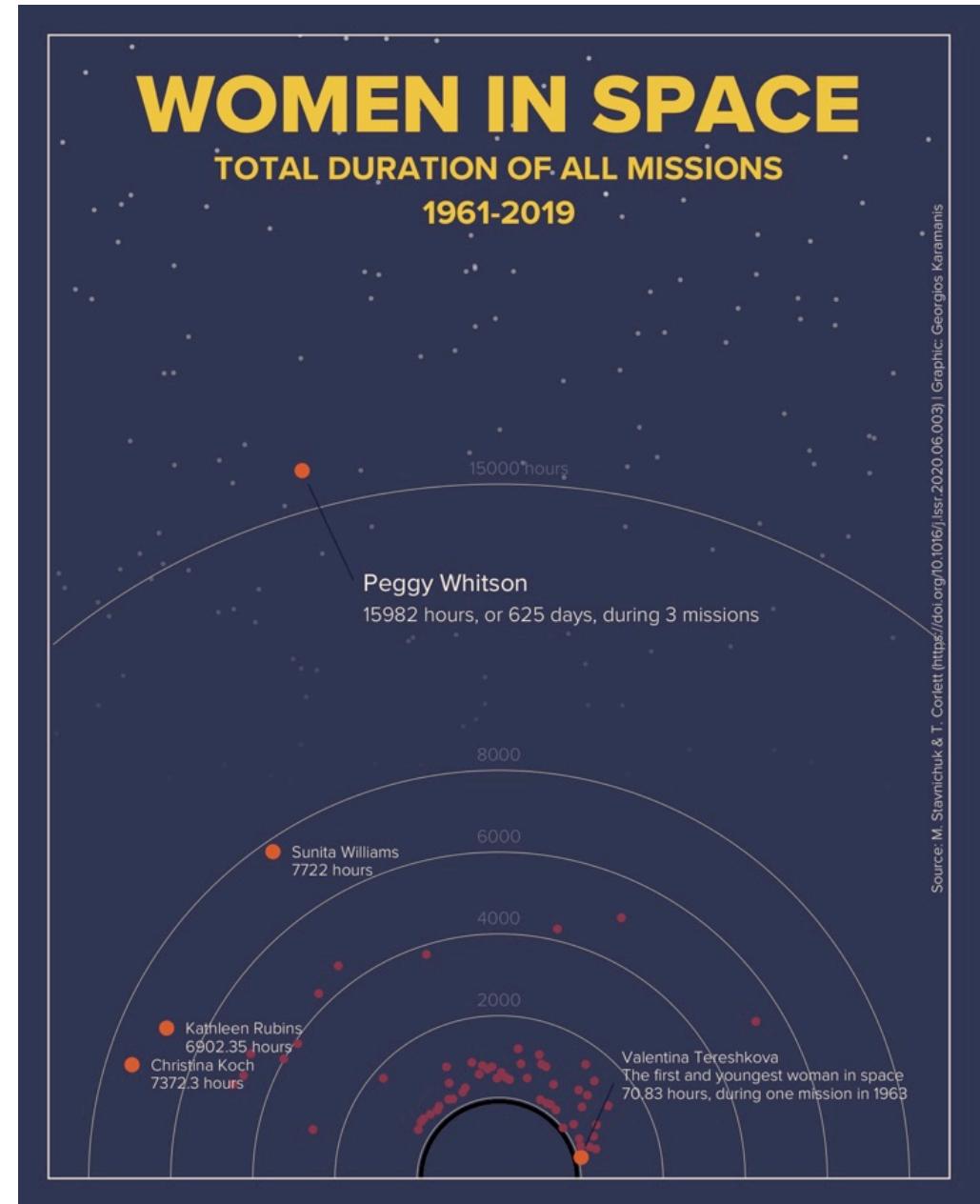
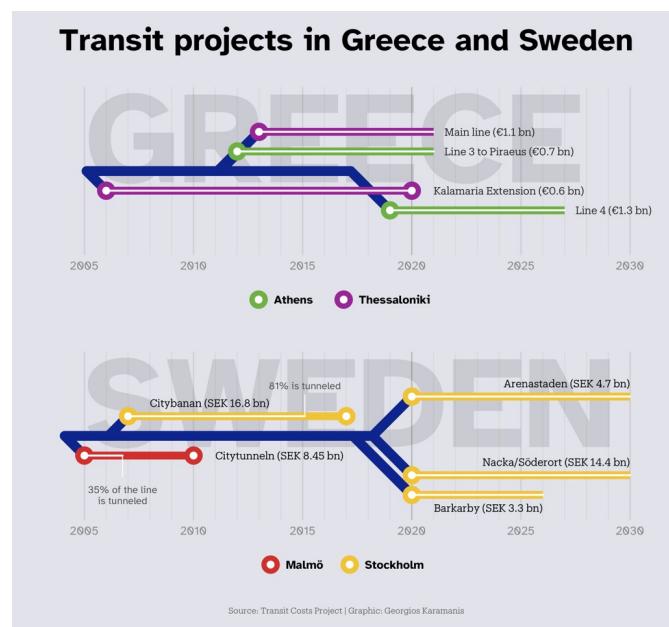
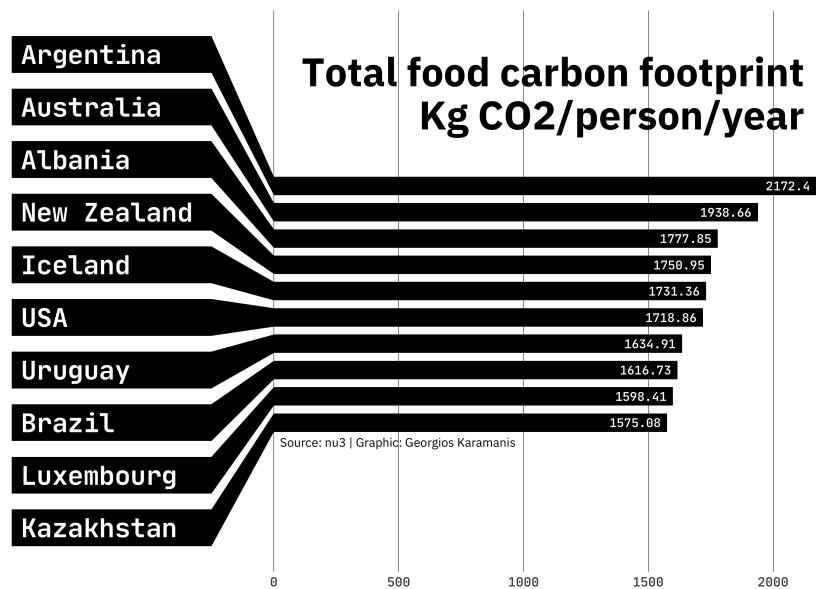


Number of books featured in The New York Times Hardcover Fiction Bestsellers

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

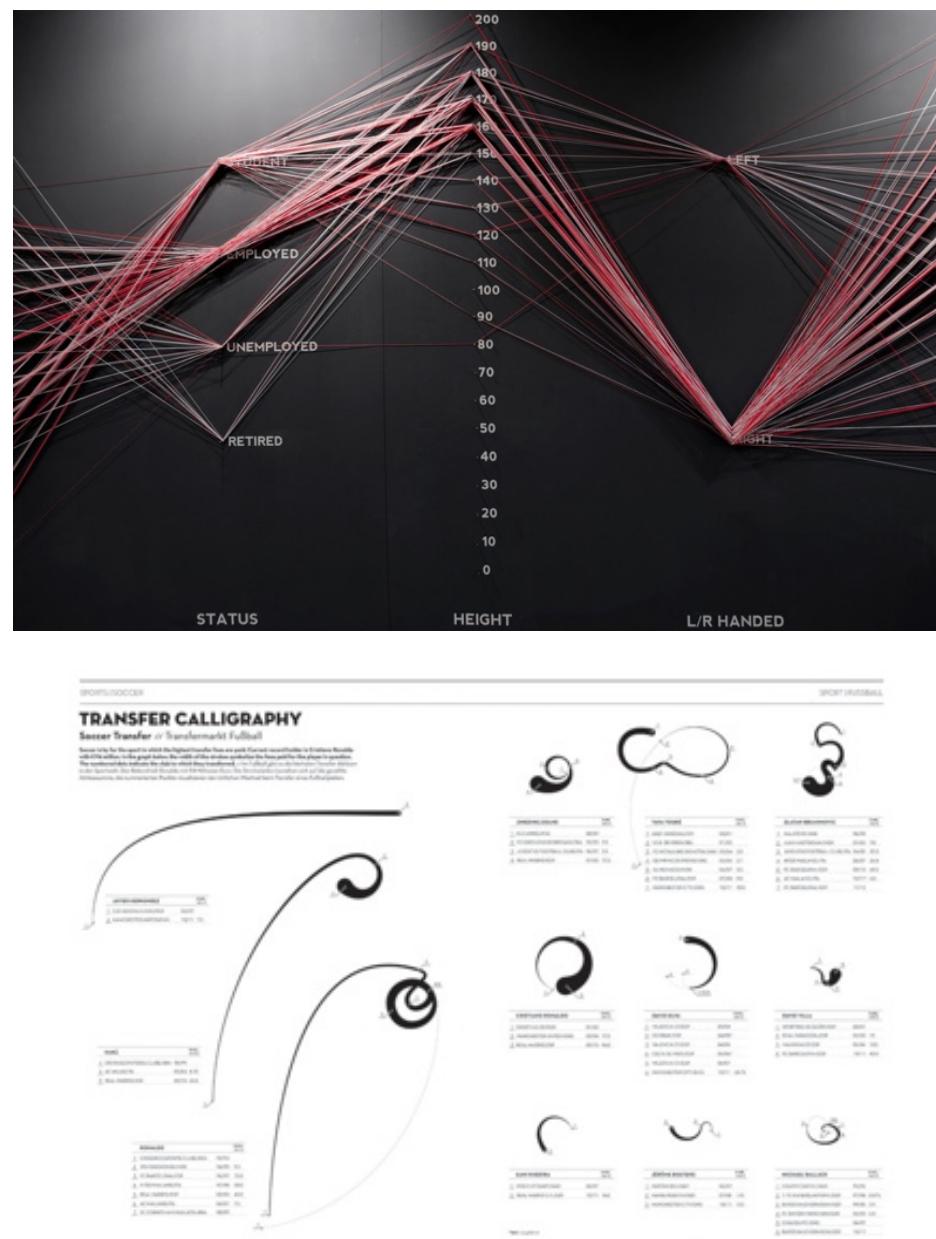
Mount Etna Inside its control room ■ Serious green Wall Street ditches carbon ■
A toxic prejudice The Atlanta shootings ■ Sinai miracle Creating life in the desert ■
Winston Churchill Why can't Britain handle the truth? ■

**The
clown
King**

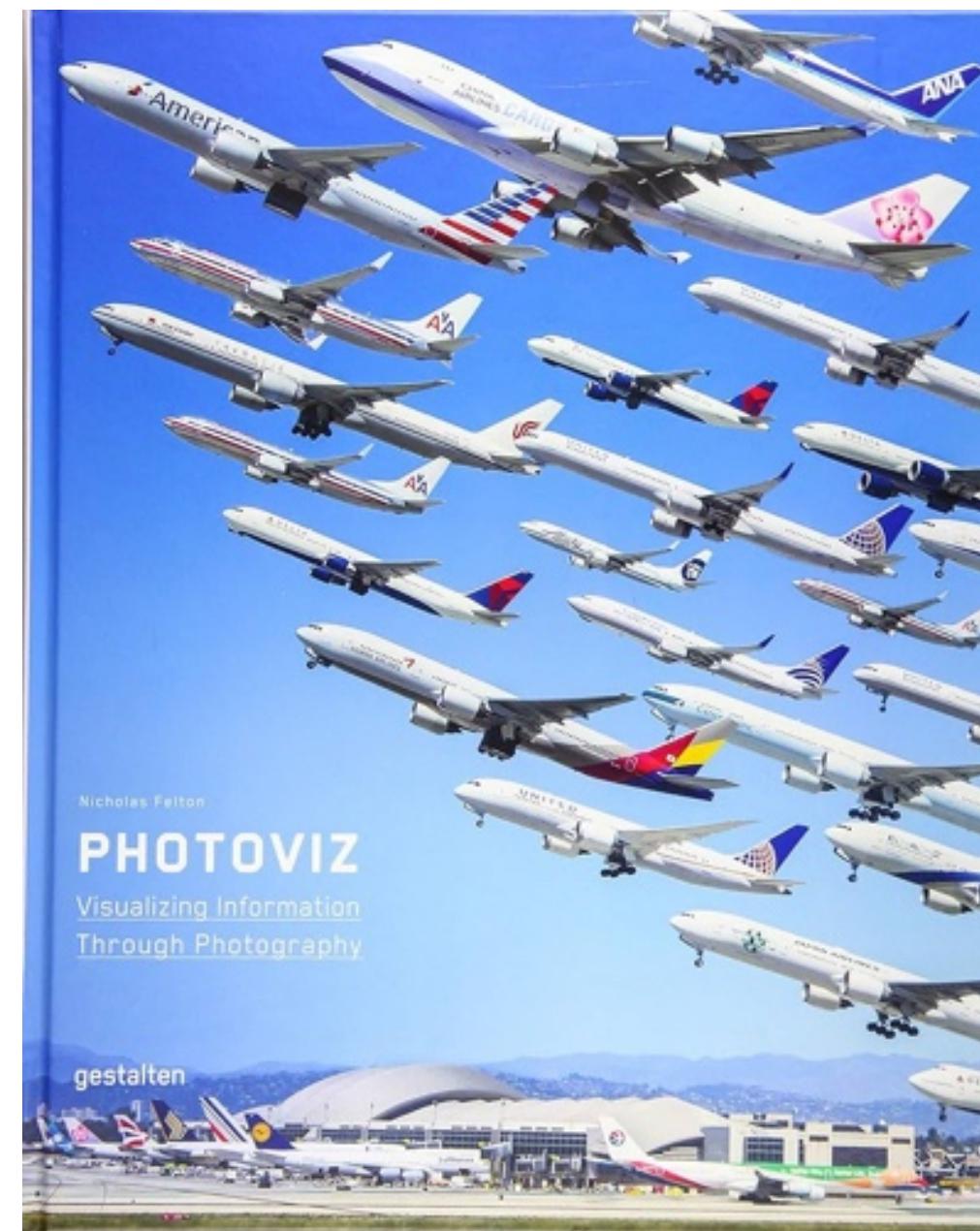
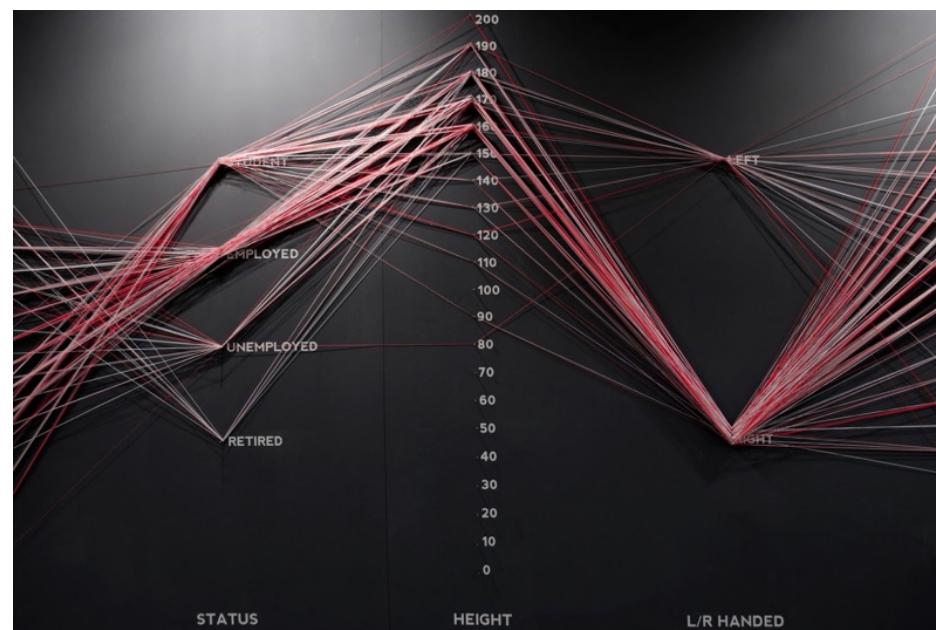
Making sense
of Boris Johnson
By Edward Docx



Golden Section Graphics: Transfer calligraphy



Domestic Data Streamers: Data Strings



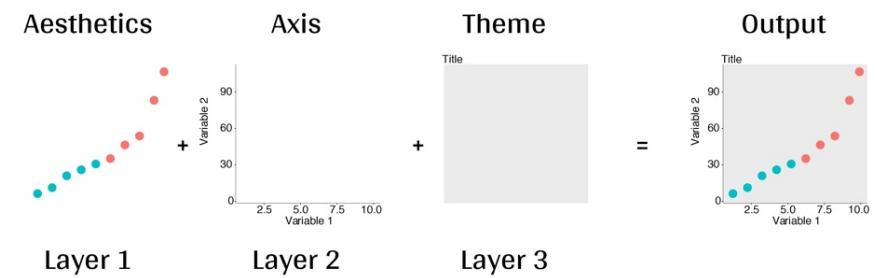
R AND GGPLOT2

Programming language

Grammar of Graphics

Flexible and customizable

ggplot2 extensions



Finding inspiration

Getting creative with code

Making it personal

FINDING INSPIRATION



FINDING INSPIRATION

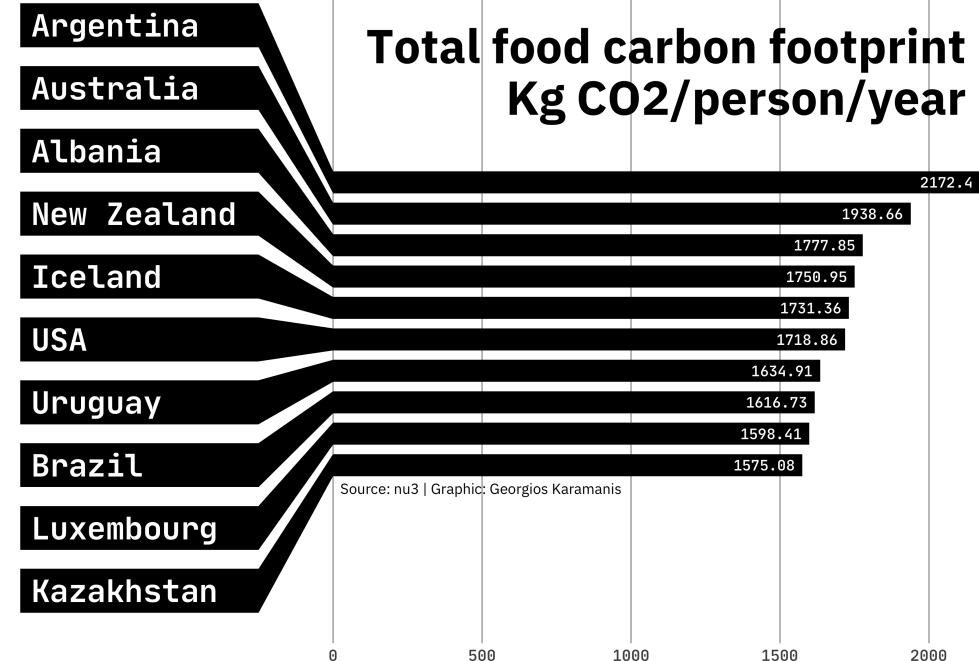
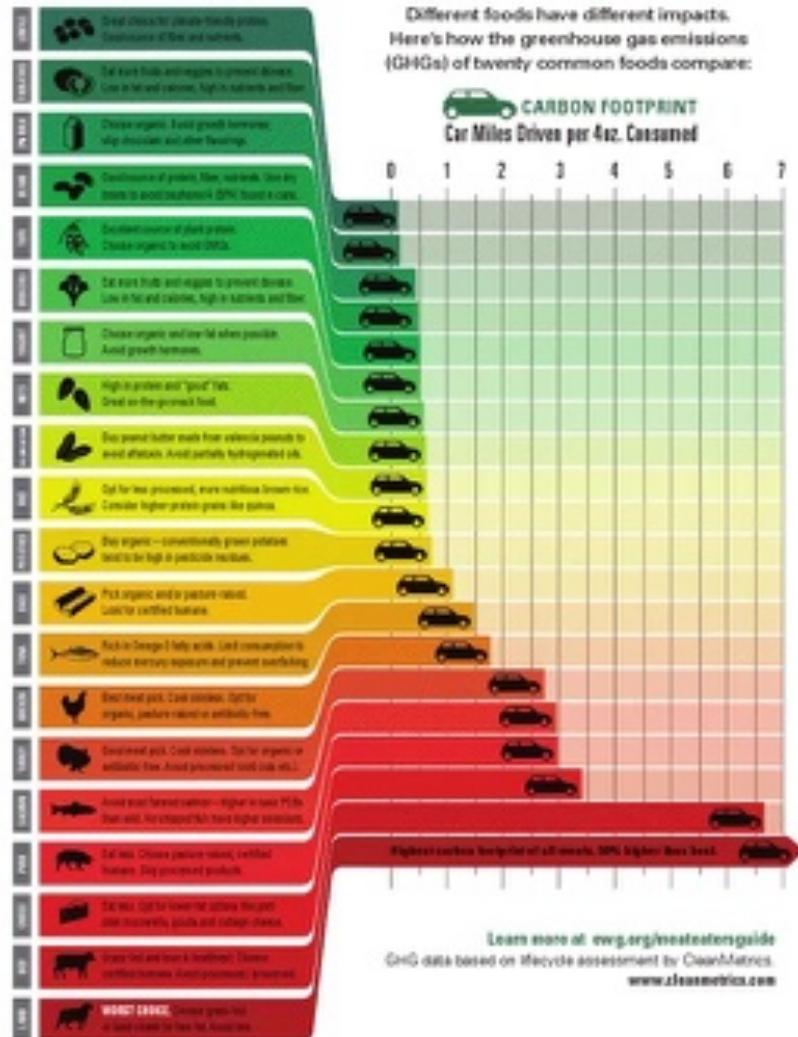
Look at other people's work

Dissect their choices

Imitate style or techniques

Remix

EAT SMART. YOUR FOOD CHOICES AFFECT THE CLIMATE.

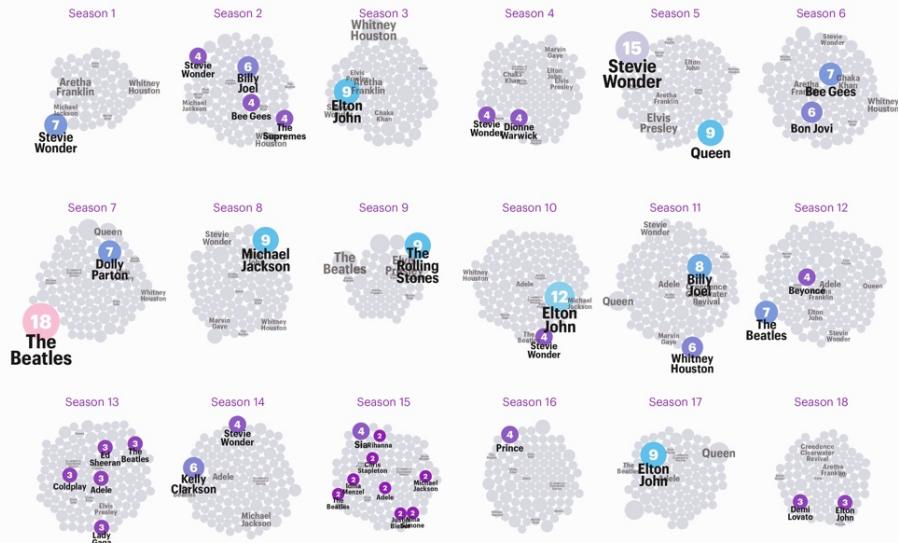


FINDING INSPIRATION

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.



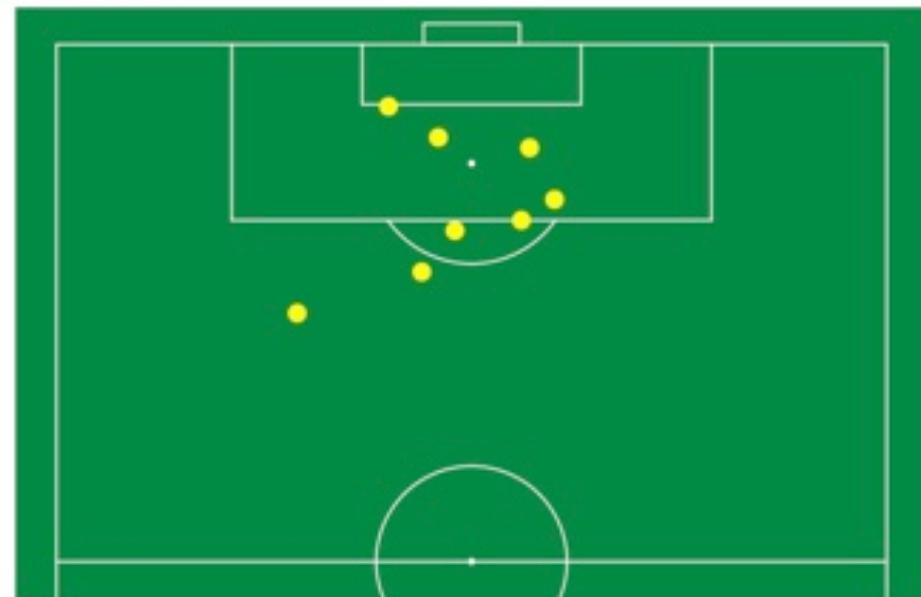
Source: Wikipedia (via kkakey) · Source: Georgios Karamanis

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

FINDING INSPIRATION

Look into charts typically used in other fields

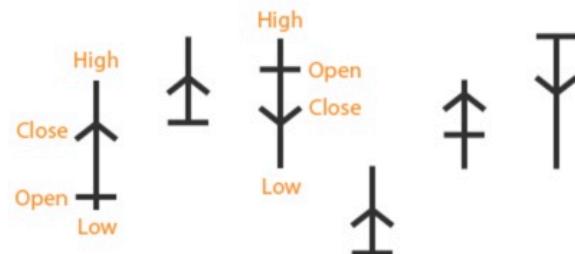
Simple shotmap
ggsoccer example



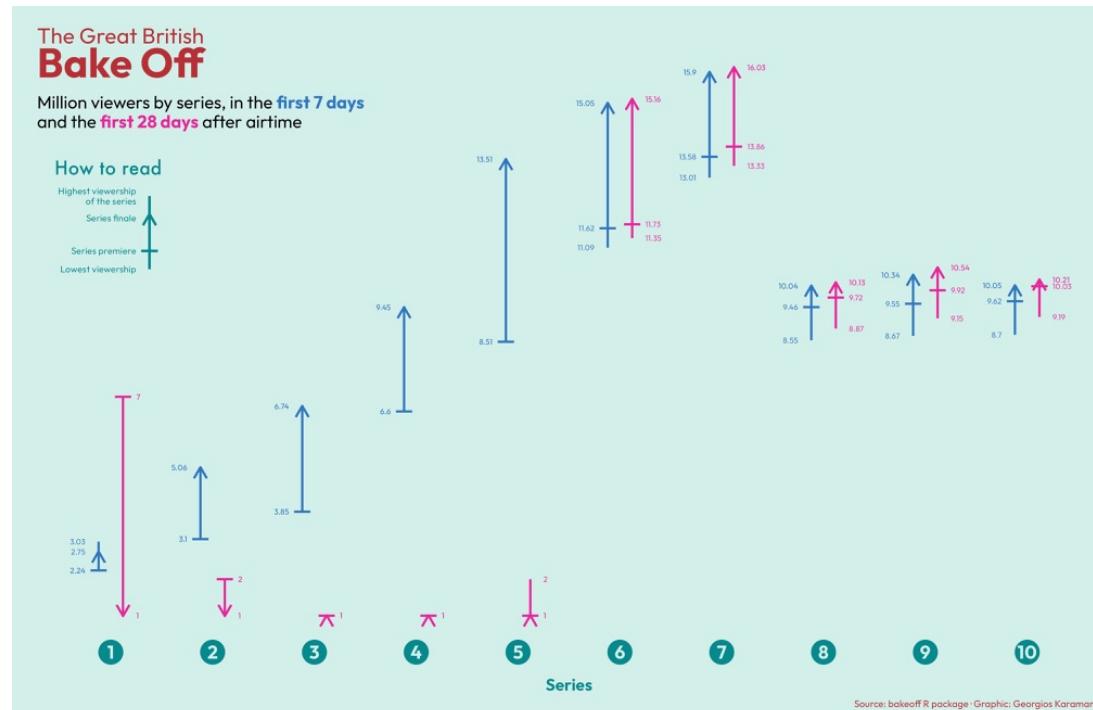
<https://torvaney.github.io/ggsoccer/>

The Anchor Chart

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

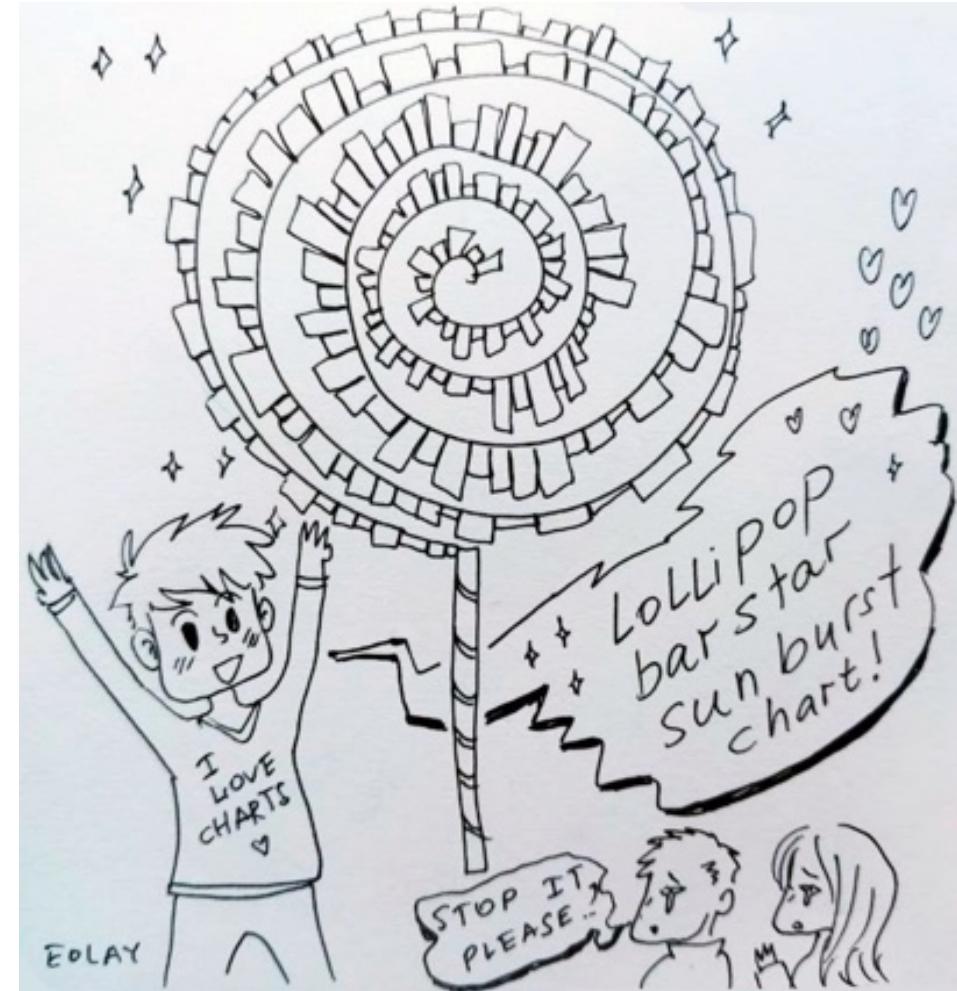


Nison gives some background on Anchor Charts and explains their construction:



FINDING INSPIRATION

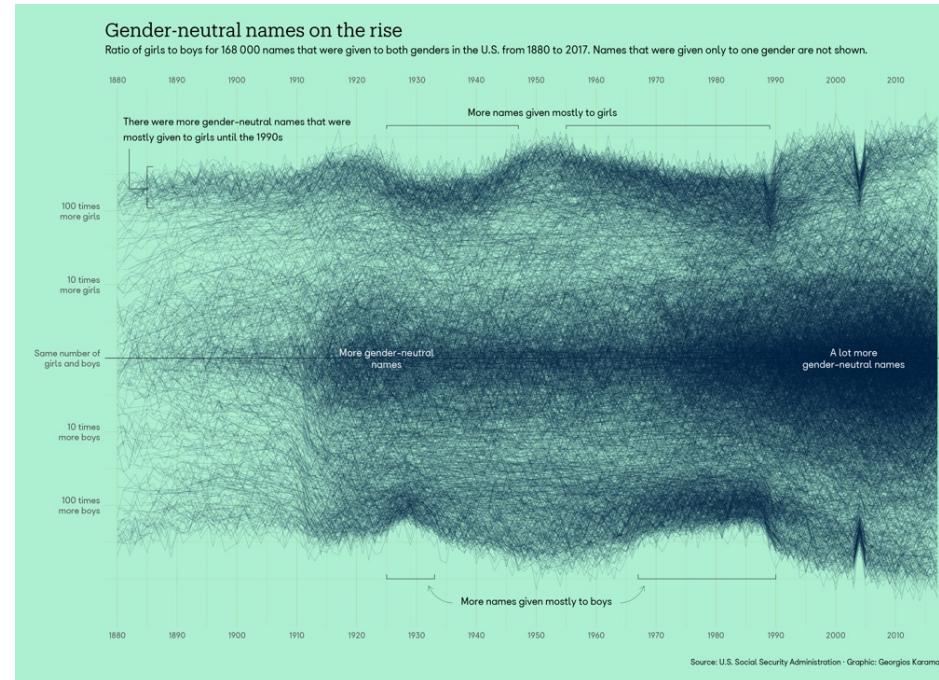
Sketch before coding



Natalia Kiseleva

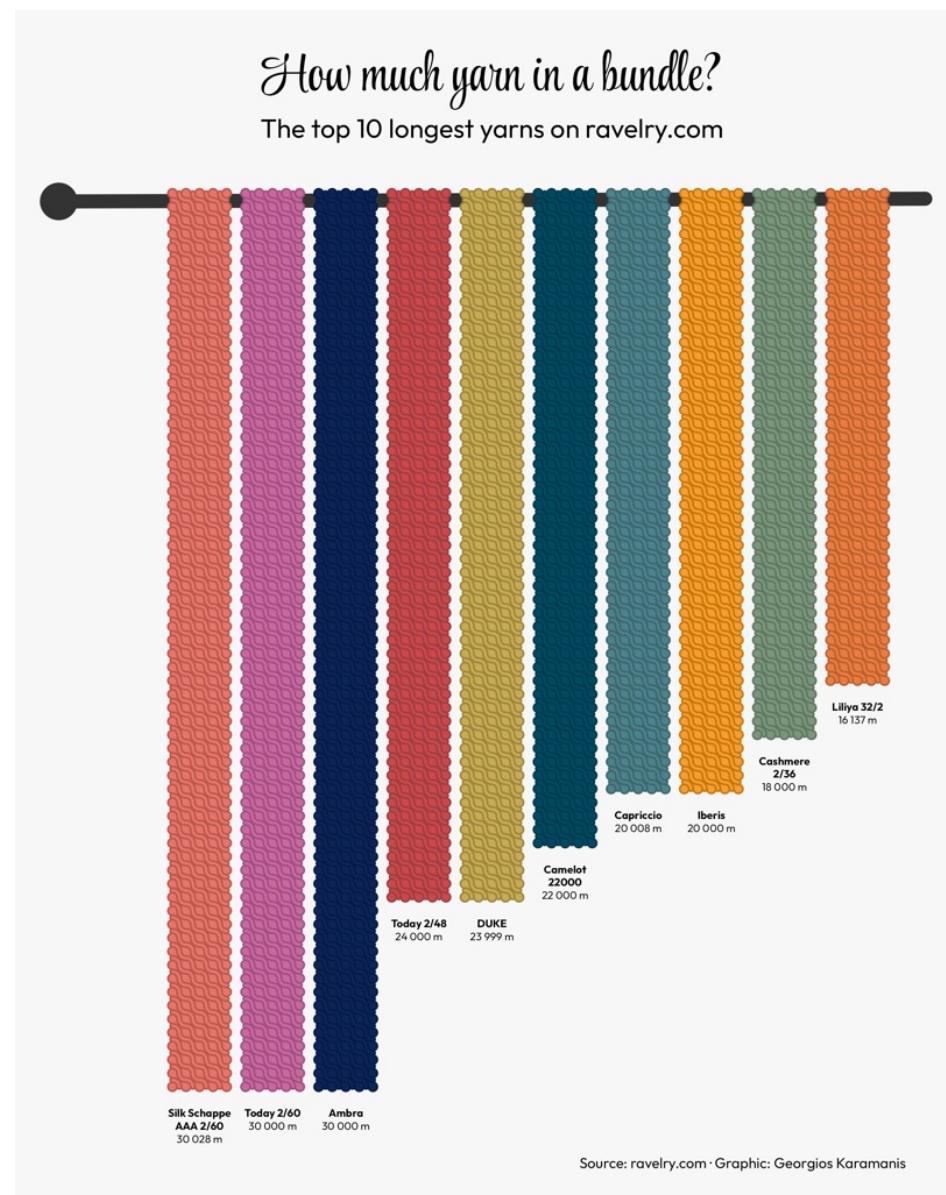
FINDING INSPIRATION

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 detailed information. 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' button are also present. The main content area shows a list of commits from user 'z3tt' with titles like 'Update LinkedIn Handle' and dates ranging from 'last year' to '5 years ago'. Below the commits is a 'README' section. Further down, a heading '#TidyTuesday Contributions' is followed by social media sharing icons for GitHub, LinkedIn, Twitter, and others. A yellow button labeled 'Buy me a coffee' with a coffee cup icon is located near the bottom left. A disclaimer at the bottom right states: 'My contributions to the #TidyTuesday challenge, a weekly social data project that focusses on understanding how to summarize and arrange data to make meaningful and/or beautiful charts with `ggplot2`, `tidyverse`, `dplyr` and other tools that are part of the `tidyverse` ecosystem. The project was founded in 2018 by Thomas Mock and organized by the R4DS ("R for Data Science") online learning community. The intent is to provide a safe and supportive forum to practice their wrangling and data visualization skills.' It also includes a 'DISCLAIMER:' section with two items: 'no Illustrator or Photoshop was harmed during the making of these visualizations.' and '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

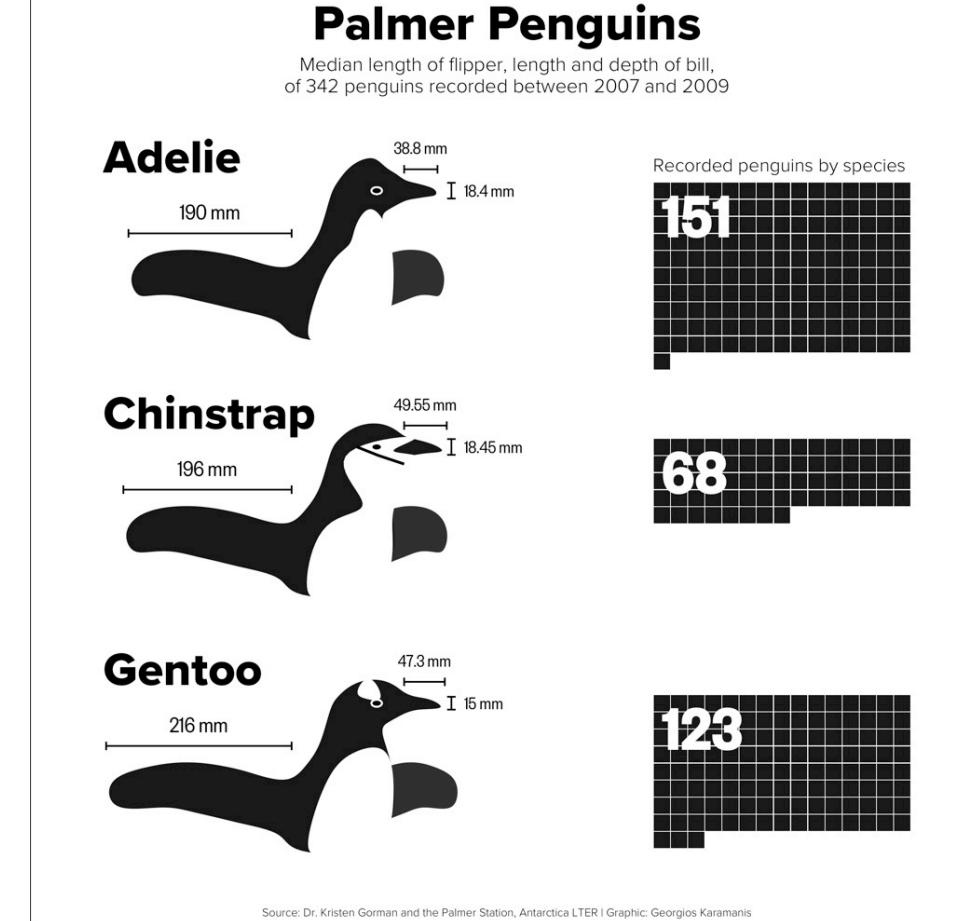
GETTING CREATIVE WITH YOUR CODE

**Try out different options in
ggplot2 functions**

Try to break things

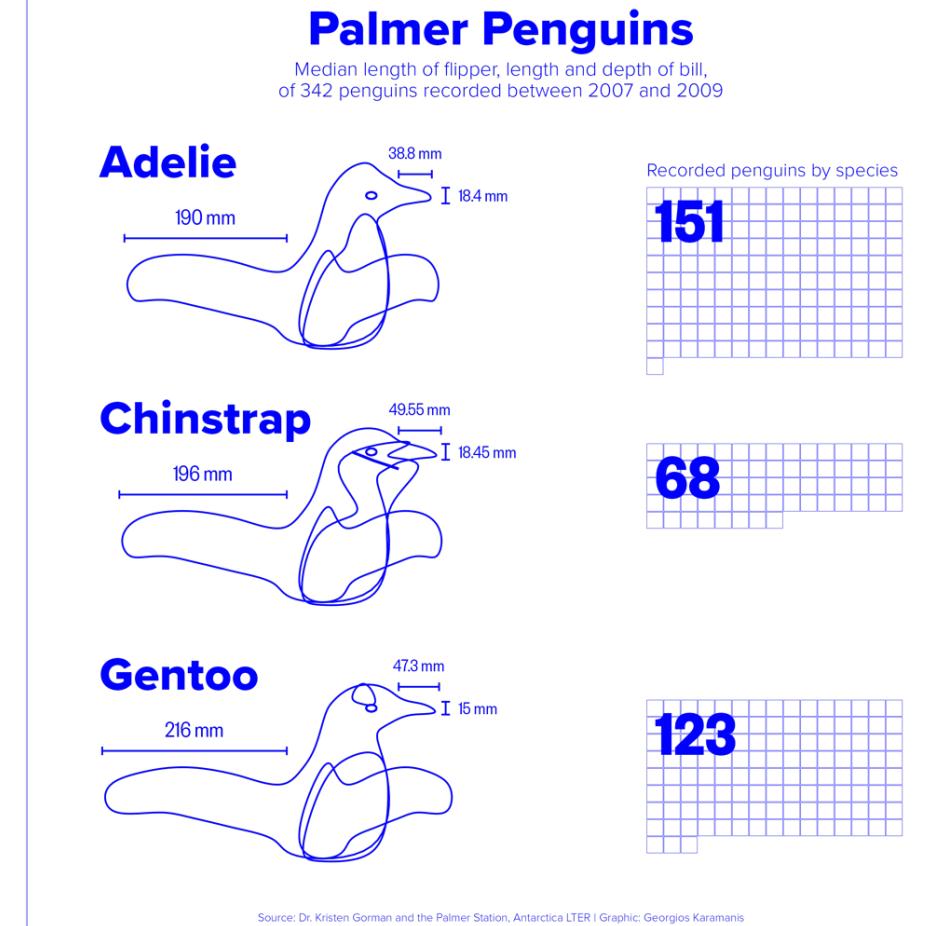
GETTING CREATIVE WITH YOUR CODE

Creative use of geoms



GETTING CREATIVE WITH YOUR CODE

geom_bspline_closed()
from ggforce



GETTING CREATIVE WITH YOUR CODE

Use `geom_text()`

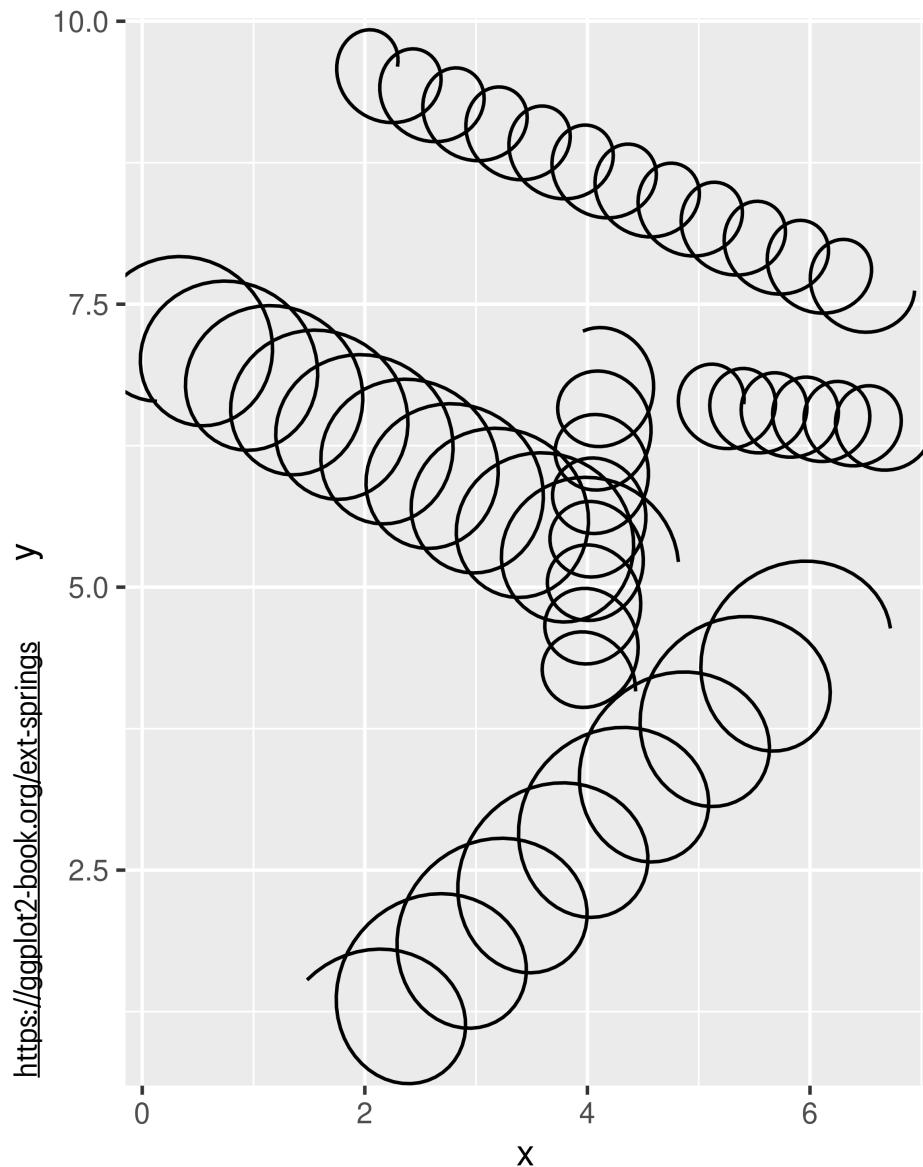
SEX RATIO BY INDUSTRY, 2020



Source: BLS | Graphic: Georgios Karamanis

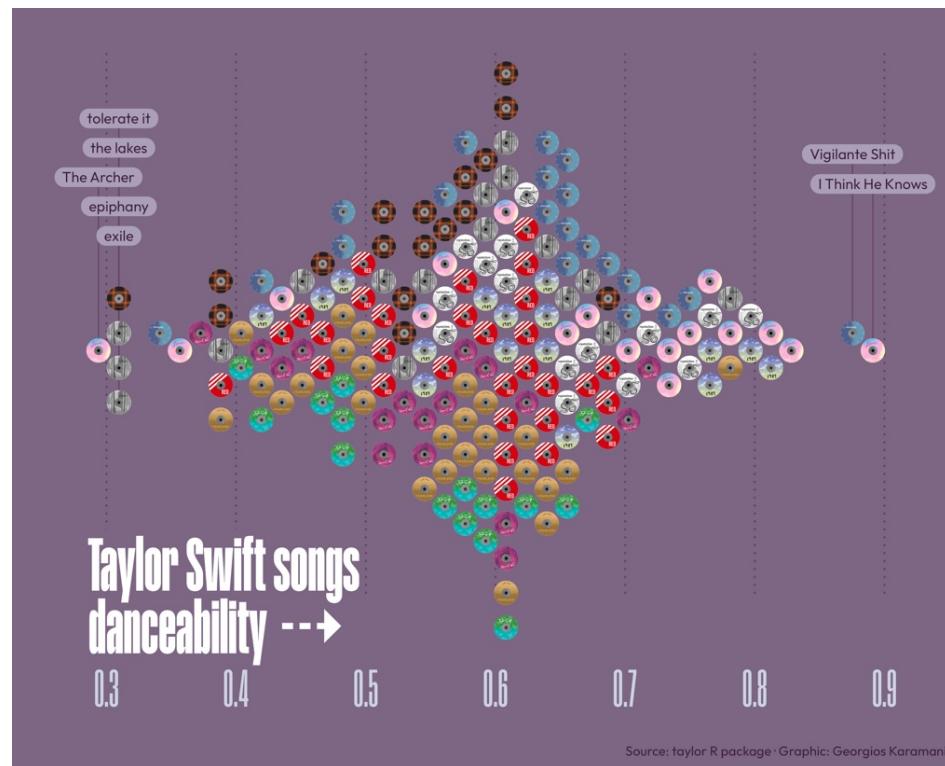
GETTING CREATIVE WITH YOUR CODE

Create your own geoms

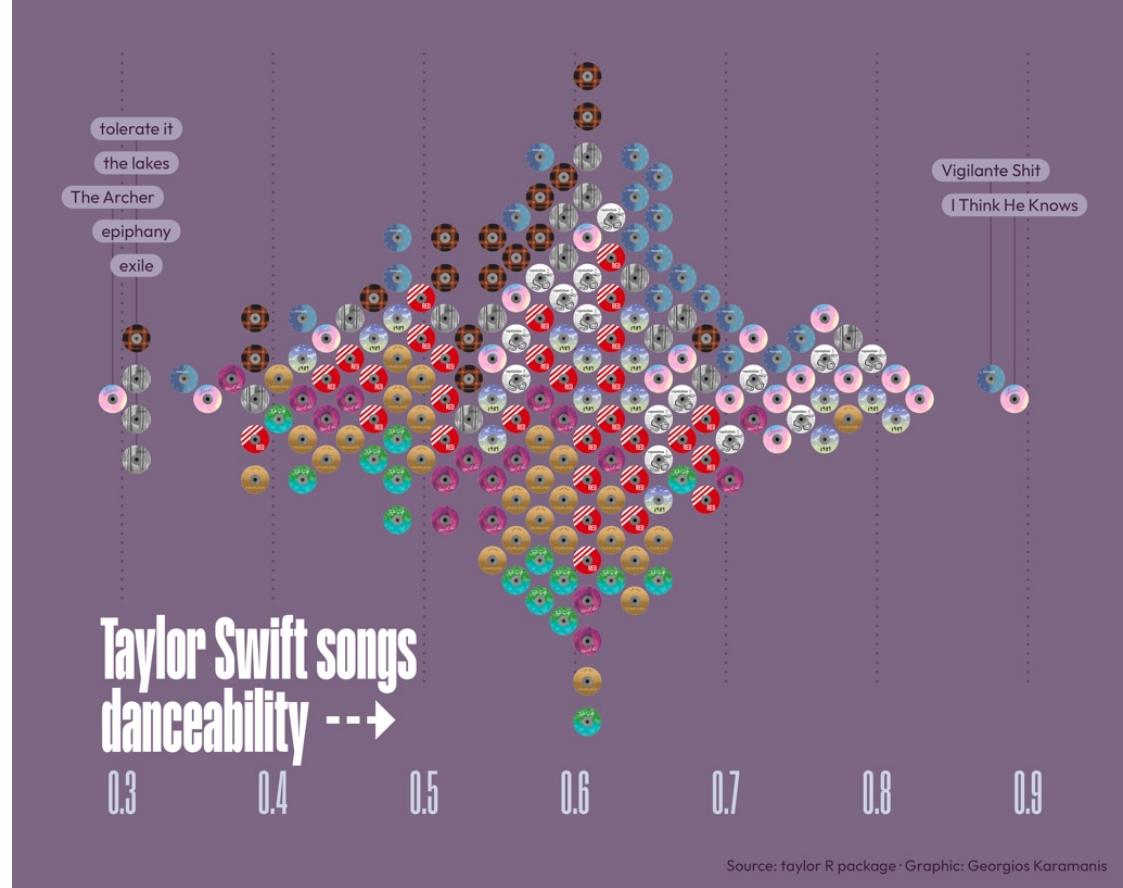
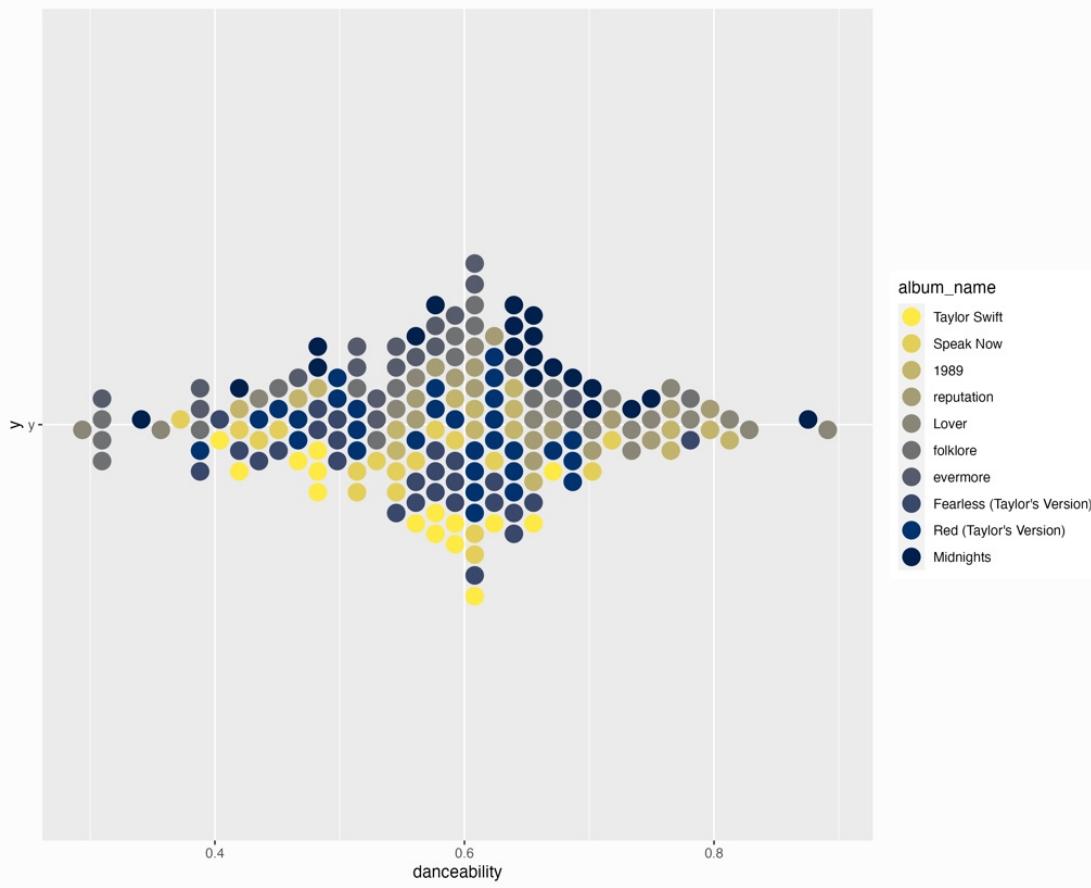


GETTING CREATIVE WITH YOUR CODE

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>

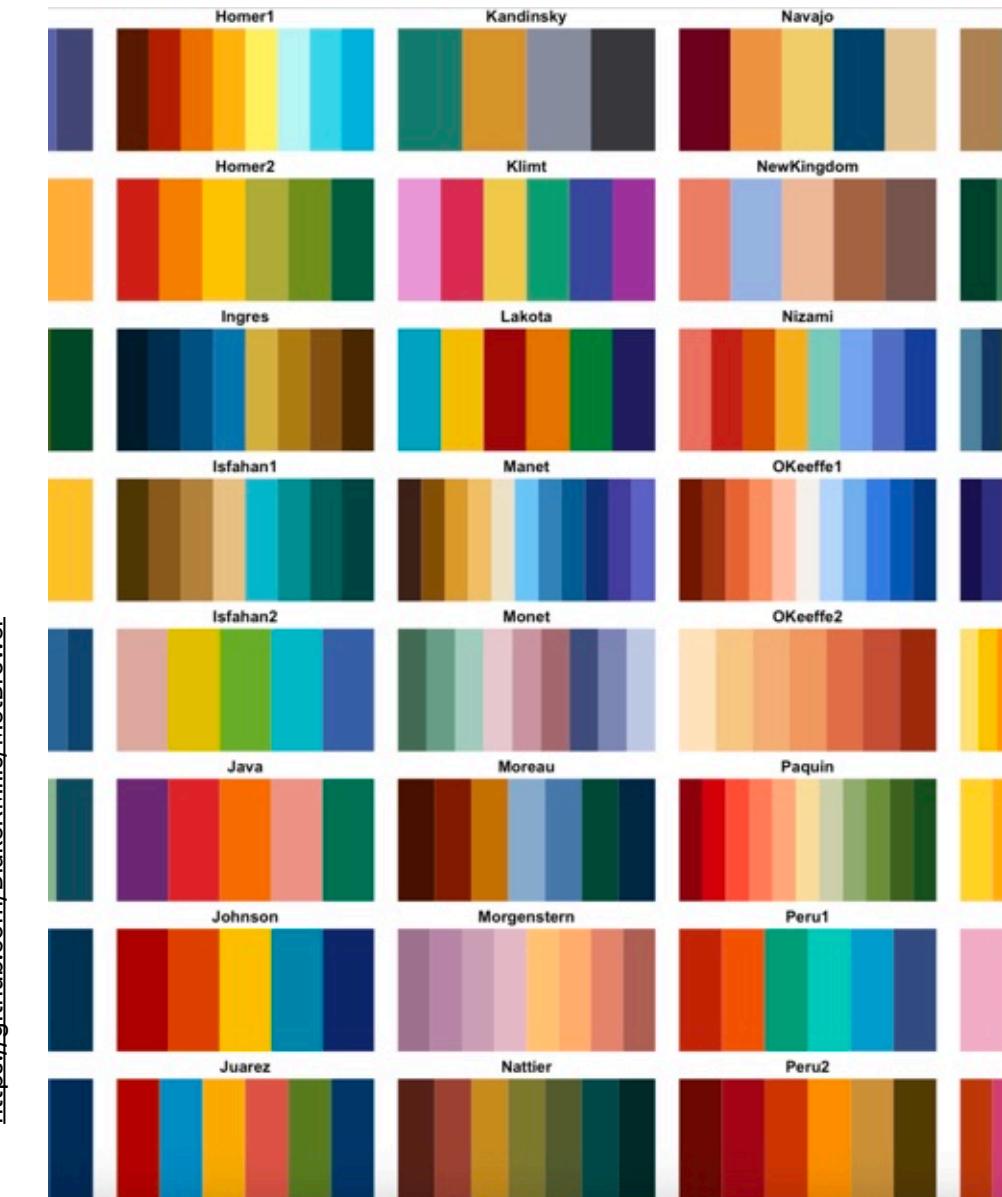
MAKING IT PERSONAL



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

MAKING IT PERSONAL

Try new techniques

Step out of comfort zones

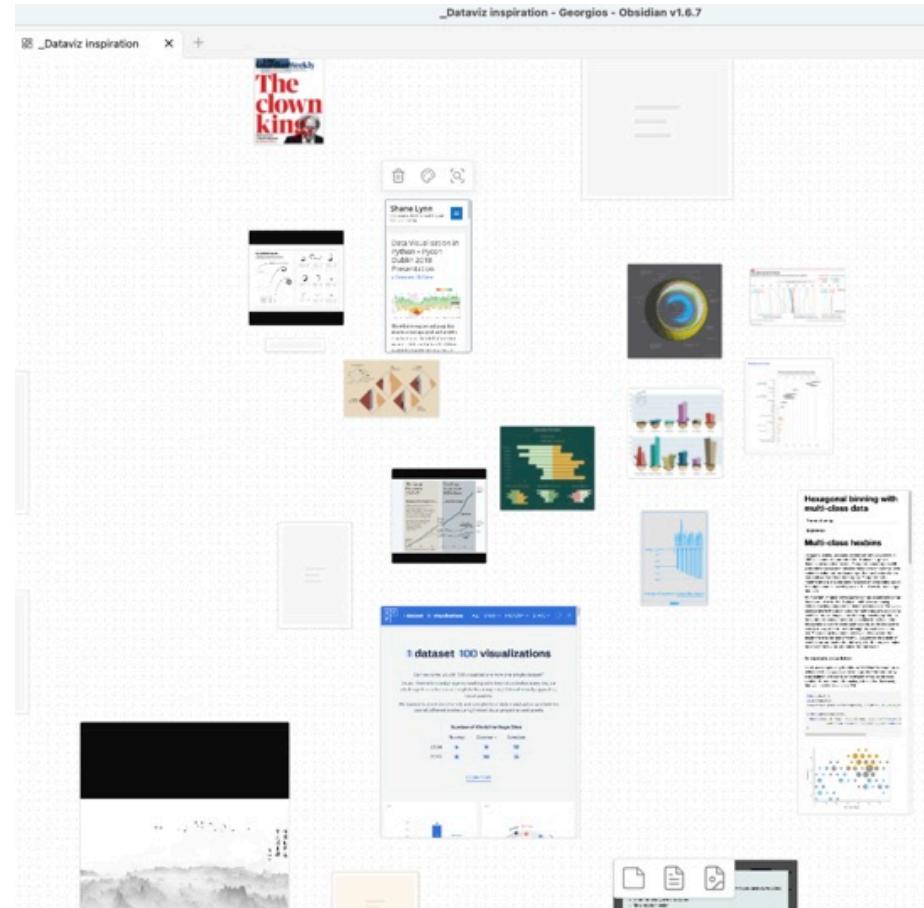
MAKING IT PERSONAL

**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



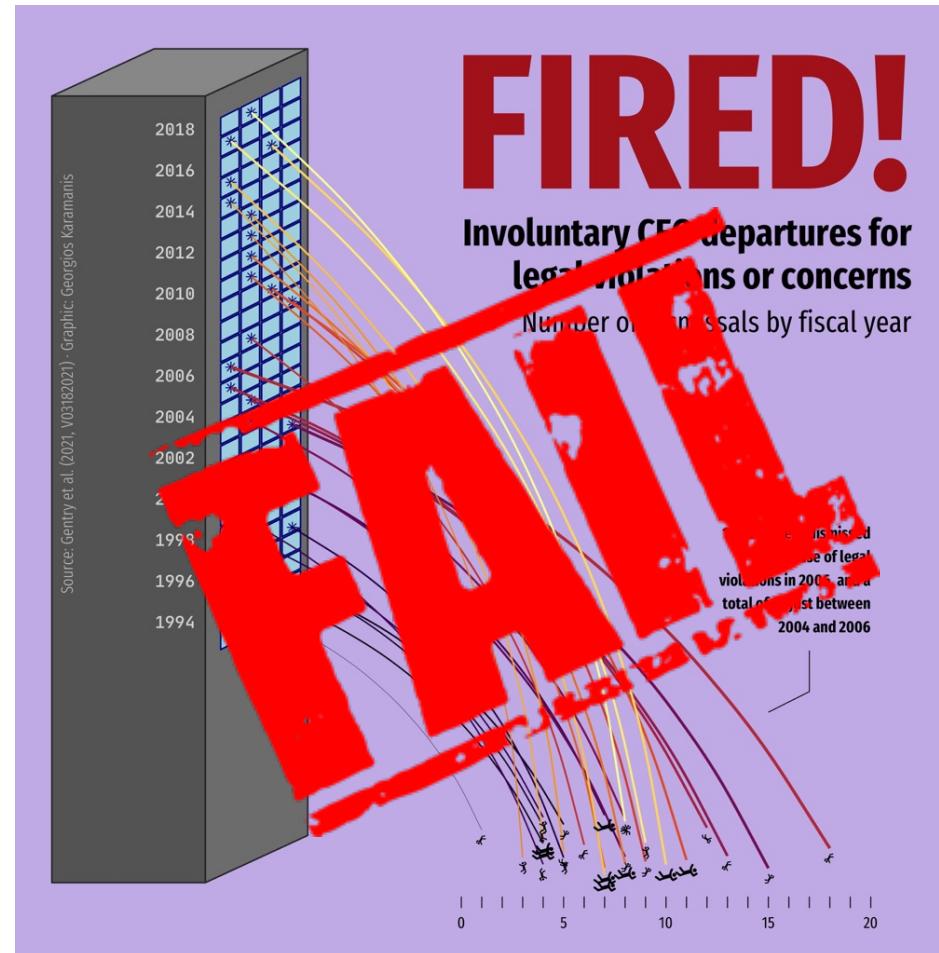
Always give credit!

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

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

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

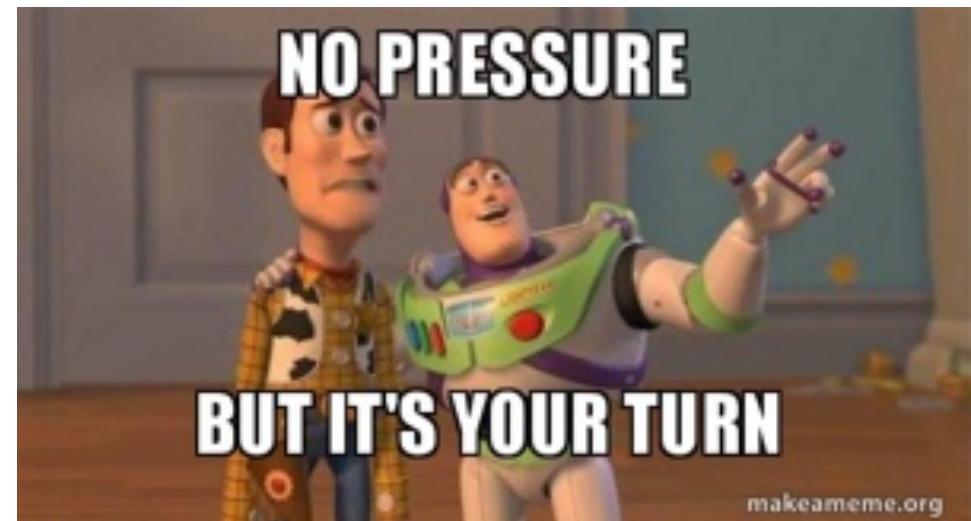
**You can't be creative
all the time**



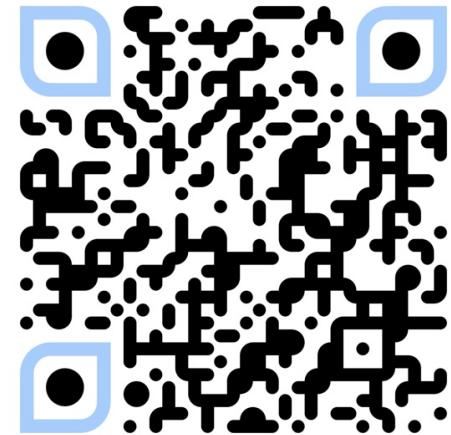
Practice regularly

Make lots of visualizations

Share and get feedback



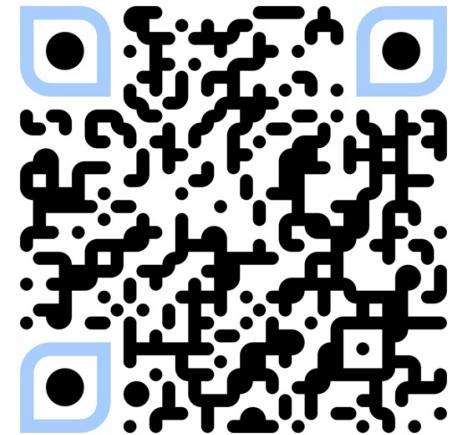
Slides and resources



**[github.com/gkaramanis/
posit_conf_2024](https://github.com/gkaramanis/posit_conf_2024)**

THANK YOU!

Slides and resources



**[github.com/gkaramanis/
posit_conf_2024](https://github.com/gkaramanis/posit_conf_2024)**