From data to story: How to transform numbers into engaging content

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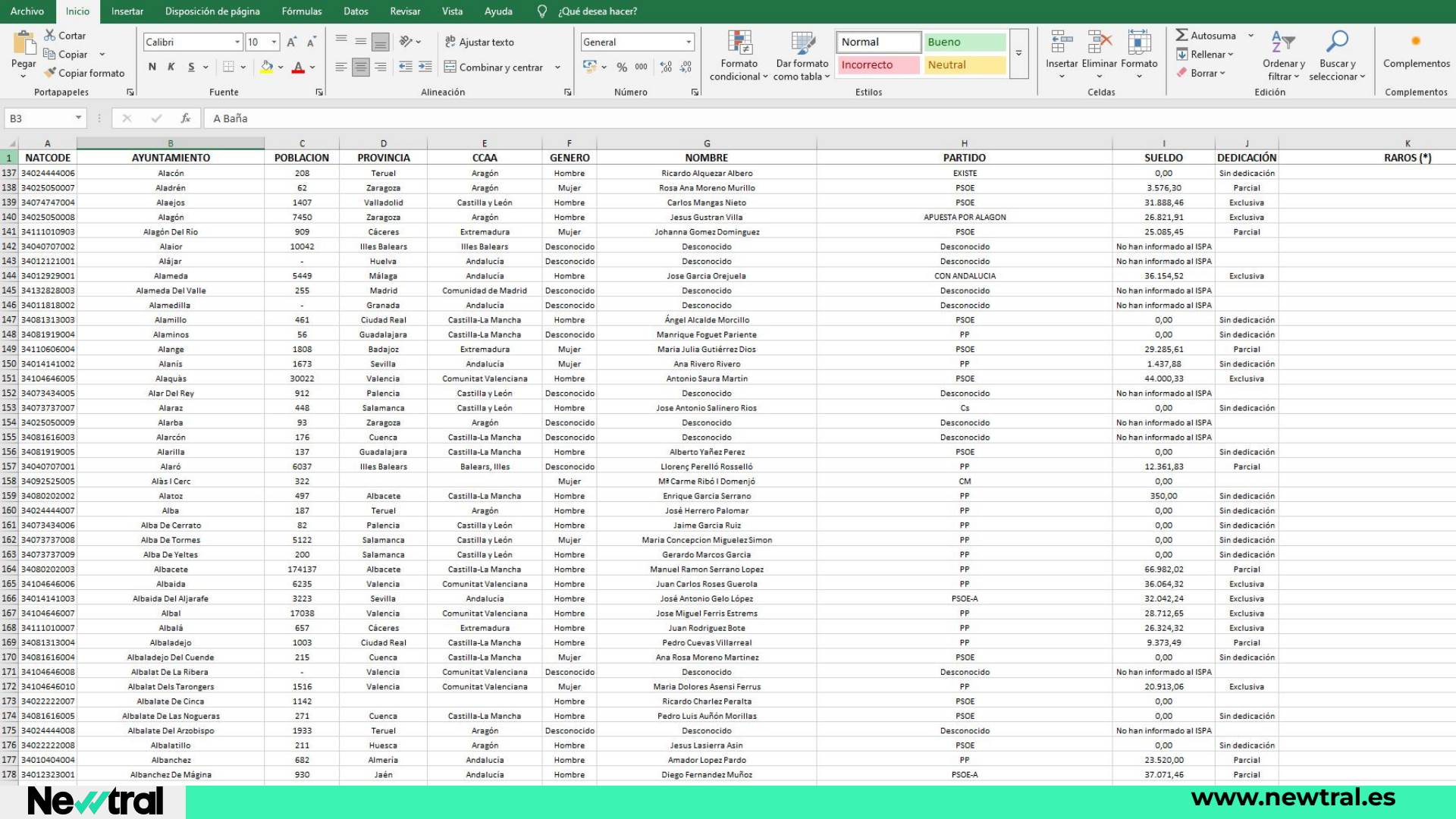
Interreg Communication Network (ICON) meeting 2025

“A data visualization is a display of data designed to enable analysis, exploration and discovery"

Alberto Cairo, *The Truthful Art: Data Charts and Maps for Communication*



Archivo Inicio Insertar Disposición de página Fórmulas Datos Revisar Vista Ayuda ¿Qué desea hacer?

Pegar Cortar Copiar Copiar formato — Portapapeles

Calibri 10 — Fuente

Ajustar texto Combinar y centrar — Alineación

General — Número

Formato condicional Dar formato como tabla

Normal Bueno Incorrecto Neutral — Estilos

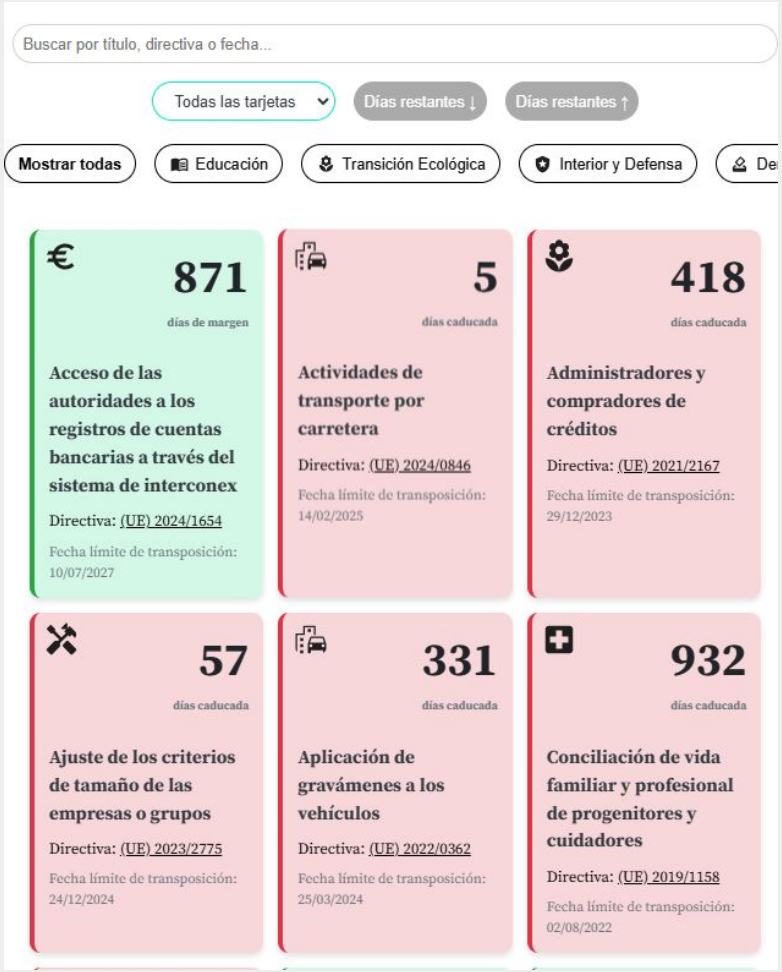
Insertar Eliminar Formato — Celdas

Autosuma Rellenar Borrar Ordenar y filtrar Buscar y seleccionar — Edición

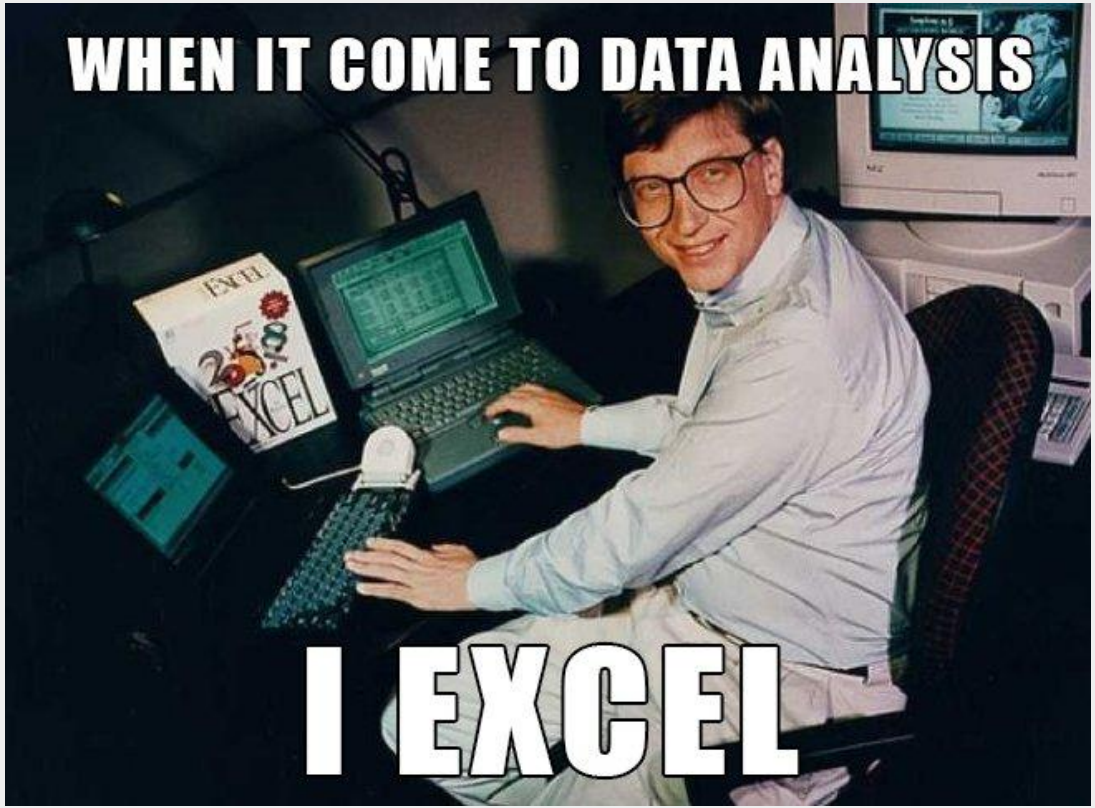
Complementos — Complementos

B3 A Baña

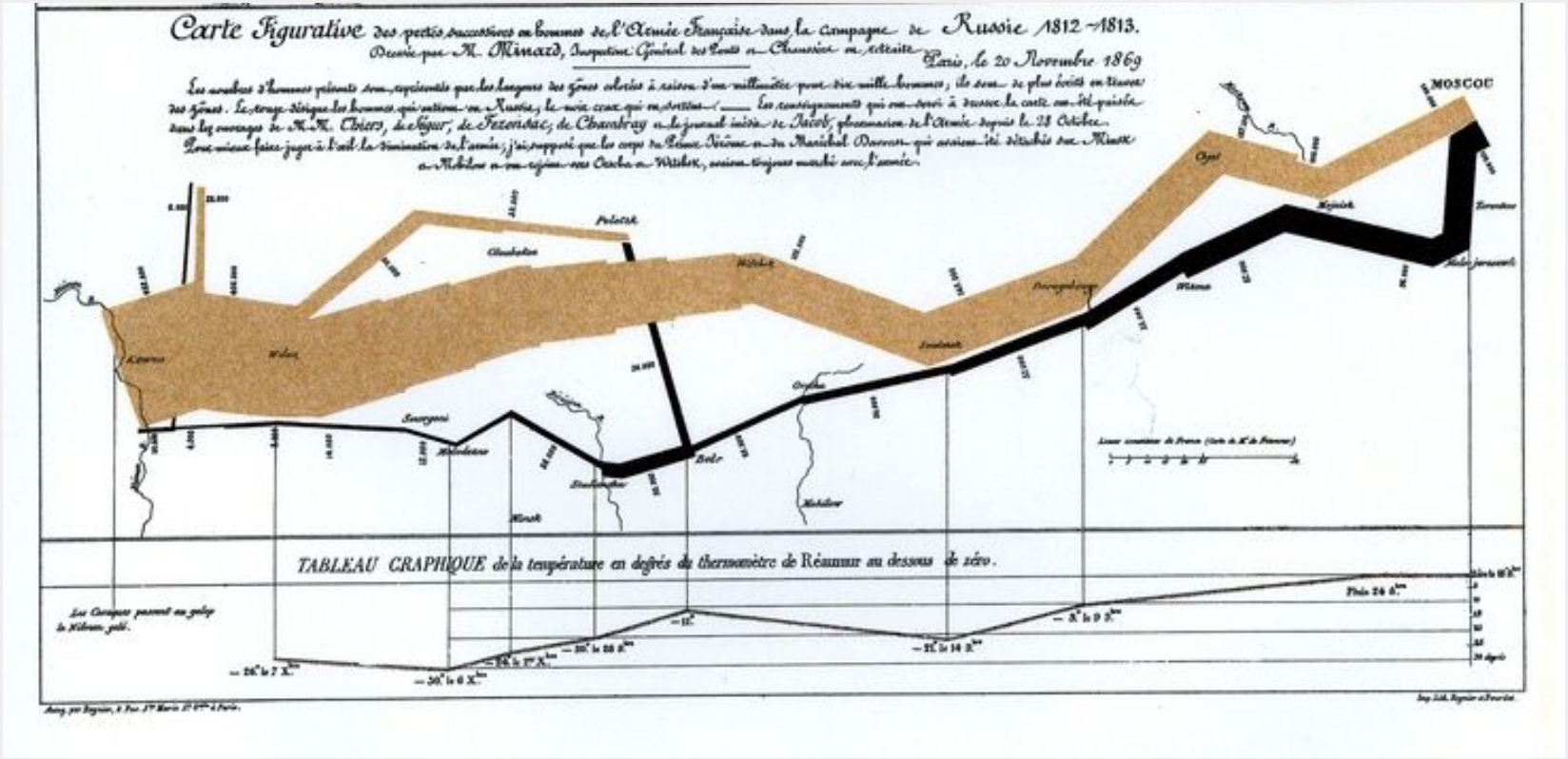
	A	B	C	D	E	F	G	H	I	J	K
1	NATCODE	AYUNTAMIENTO	POBLACION	PROVINCIA	CCAA	GENERO	NOMBRE	PARTIDO	SUELDO	DEDICACIÓN	RAROS (*)
137	34024444006	Alacón	208	Teruel	Aragón	Hombre	Ricardo Alquezar Albero	EXISTE	0,00	Sin dedicación	
138	34025050007	Aladrén	62	Zaragoza	Aragón	Mujer	Rosa Ana Moreno Murillo	PSOE	3.576,30	Parcial	
139	34074747004	Alaejos	1407	Valladolid	Castilla y León	Hombre	Carlos Mangas Nieto	PSOE	31.888,46	Exclusiva	
140	34025050008	Alagón	7450	Zaragoza	Aragón	Hombre	Jesus Gustran Villa	APUESTA POR ALAGON	26.821,91	Exclusiva	
141	34111010903	Alagón Del Río	909	Cáceres	Extremadura	Mujer	Johanna Gomez Dominguez	PSOE	25.085,45	Parcial	
142	34040707002	Alaior	10042	Illes Balears	Illes Balears	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
143	34012121001	Alájar	-	Huelva	Andalucía	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
144	34012929001	Alameda	5449	Málaga	Andalucía	Hombre	Jose Garcia Orejuela	CON ANDALUCIA	36.154,52	Exclusiva	
145	34132828003	Alameda Del Valle	255	Madrid	Comunidad de Madrid	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
146	34011818002	Alamedilla	-	Granada	Andalucía	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
147	34081313003	Alamillo	461	Ciudad Real	Castilla-La Mancha	Hombre	Ángel Alcalde Morcillo	PSOE	0,00	Sin dedicación	
148	34081919004	Alaminos	56	Guadalajara	Castilla-La Mancha	Desconocido	Manrique Foguet Pariente	PP	0,00	Sin dedicación	
149	34110606004	Alange	1808	Badajoz	Extremadura	Mujer	Maria Julia Gutiérrez Dios	PSOE	29.285,61	Parcial	
150	34014141002	Alanís	1673	Sevilla	Andalucía	Mujer	Ana Rivero Rivero	PP	1.437,88	Sin dedicación	
151	34104646005	Alaquàs	30022	Valencia	Comunitat Valenciana	Hombre	Antonio Saura Martin	PSOE	44.000,33	Exclusiva	
152	34073434005	Alar Del Rey	912	Palencia	Castilla y León	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
153	34073737007	Alaraz	448	Salamanca	Castilla y León	Hombre	Jose Antonio Salinero Rios	Cs	0,00	Sin dedicación	
154	34025050009	Alarba	93	Zaragoza	Aragón	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
155	34081616003	Alarcón	176	Cuenca	Castilla-La Mancha	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
156	34081919005	Alarilla	137	Guadalajara	Castilla-La Mancha	Hombre	Alberto Yañez Perez	PSOE	0,00	Sin dedicación	
157	34040707001	Alaró	6037	Illes Balears	Balears, Illes	Desconocido	Llorenç Perelló Rosselló	PP	12.361,83	Parcial	
158	34092525005	Alàs I Cerc	322			Mujer	Mª Carme Ribó I Domenjó	CM	0,00		
159	34080202002	Alatoz	497	Albacete	Castilla-La Mancha	Hombre	Enrique Garcia Serrano	PP	350,00	Sin dedicación	
160	34024444007	Alba	187	Teruel	Aragón	Hombre	José Herrero Palomar	PP	0,00	Sin dedicación	
161	34073434006	Alba De Cerrato	82	Palencia	Castilla y León	Hombre	Jaime Garcia Ruiz	PP	0,00	Sin dedicación	
162	34073737008	Alba De Tormes	5122	Salamanca	Castilla y León	Mujer	Maria Concepcion Miguelez Simon	PP	0,00	Sin dedicación	
163	34073737009	Alba De Yeltes	200	Salamanca	Castilla y León	Hombre	Gerardo Marcos Garcia	PP	0,00	Sin dedicación	
164	34080202003	Albacete	174137	Albacete	Castilla-La Mancha	Hombre	Manuel Ramon Serrano Lopez	PP	66.982,02	Parcial	
165	34104646006	Albaida	6235	Valencia	Comunitat Valenciana	Hombre	Juan Carlos Roses Guerola	PP	36.064,32	Exclusiva	
166	34014141003	Albaida Del Aljarafe	3223	Sevilla	Andalucía	Hombre	José Antonio Gelo López	PSOE-A	32.042,24	Exclusiva	
167	34104646007	Albal	17038	Valencia	Comunitat Valenciana	Hombre	Jose Miguel Ferris Estrems	PP	28.712,65	Exclusiva	
168	34111010007	Albalá	657	Cáceres	Extremadura	Hombre	Juan Rodriguez Bote	PP	26.324,32	Exclusiva	
169	34081313004	Albaladejo	1003	Ciudad Real	Castilla-La Mancha	Hombre	Pedro Cuevas Villarreal	PP	9.373,49	Parcial	
170	34081616004	Albaladejo Del Cuende	215	Cuenca	Castilla-La Mancha	Mujer	Ana Rosa Moreno Martinez	PSOE	0,00	Sin dedicación	
171	34104646008	Albalat De La Ribera	-	Valencia	Comunitat Valenciana	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
172	34104646010	Albalat Dels Tarongers	1516	Valencia	Comunitat Valenciana	Mujer	Maria Dolores Asensi Ferrus	PP	20.913,06	Exclusiva	
173	34022222007	Albalate De Cinca	1142			Hombre	Ricardo Charlez Peralta	PSOE	0,00		
174	34081616005	Albalate De Las Nogueras	271	Cuenca	Castilla-La Mancha	Hombre	Pedro Luis Auñón Morillas	PSOE	0,00	Sin dedicación	
175	34024444008	Albalate Del Arzobispo	1933	Teruel	Aragón	Desconocido	Desconocido	Desconocido	No han informado al ISPA		
176	34022222008	Albalatillo	211	Huesca	Aragón	Hombre	Jesus Lasierra Asin	PSOE	0,00	Sin dedicación	
177	34010404004	Albanchez	682	Almeria	Andalucía	Hombre	Amador Lopez Pardo	PP	23.520,00	Parcial	
178	34012323001	Albanchez De Mágina	930	Jaén	Andalucía	Hombre	Diego Fernandez Muñoz	PSOE-A	37.071,46	Parcial	



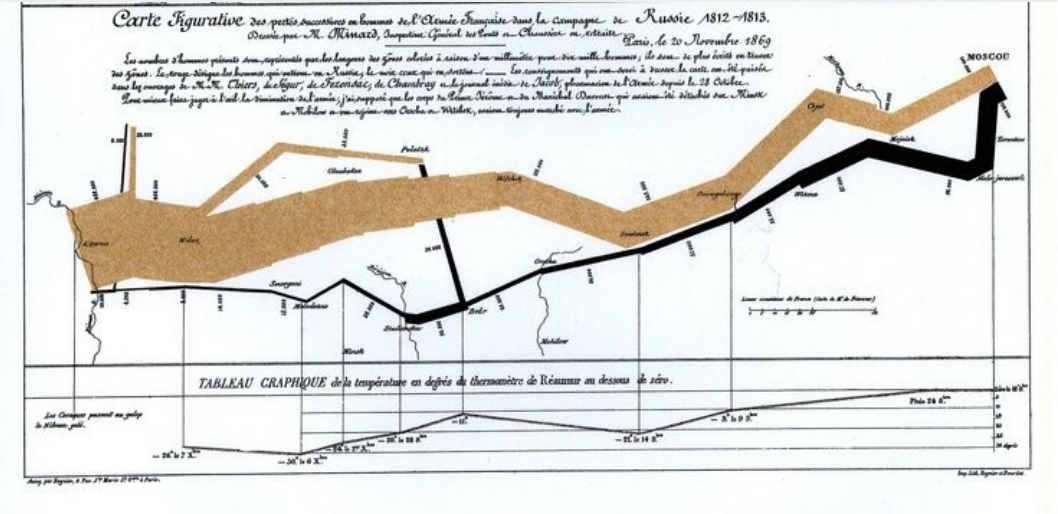
SEARCHER | Check Pending European Laws for Transposition


WHEN IT COME TO DATA ANALYSIS
EXCEL
I EXCEL

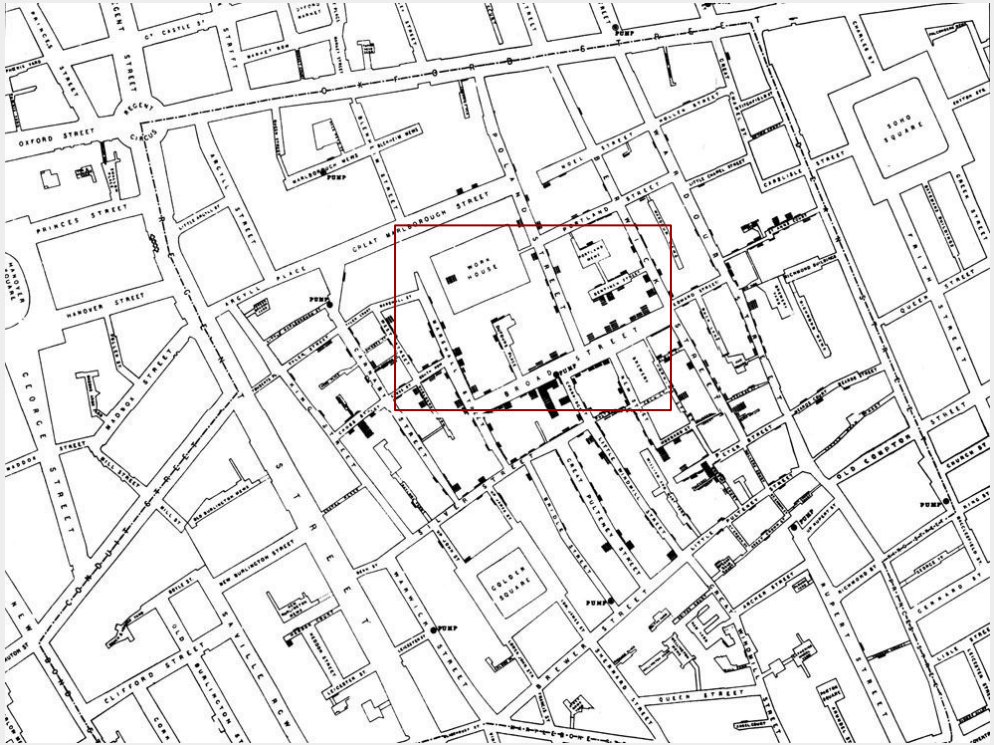
Is data-driven communication something new?



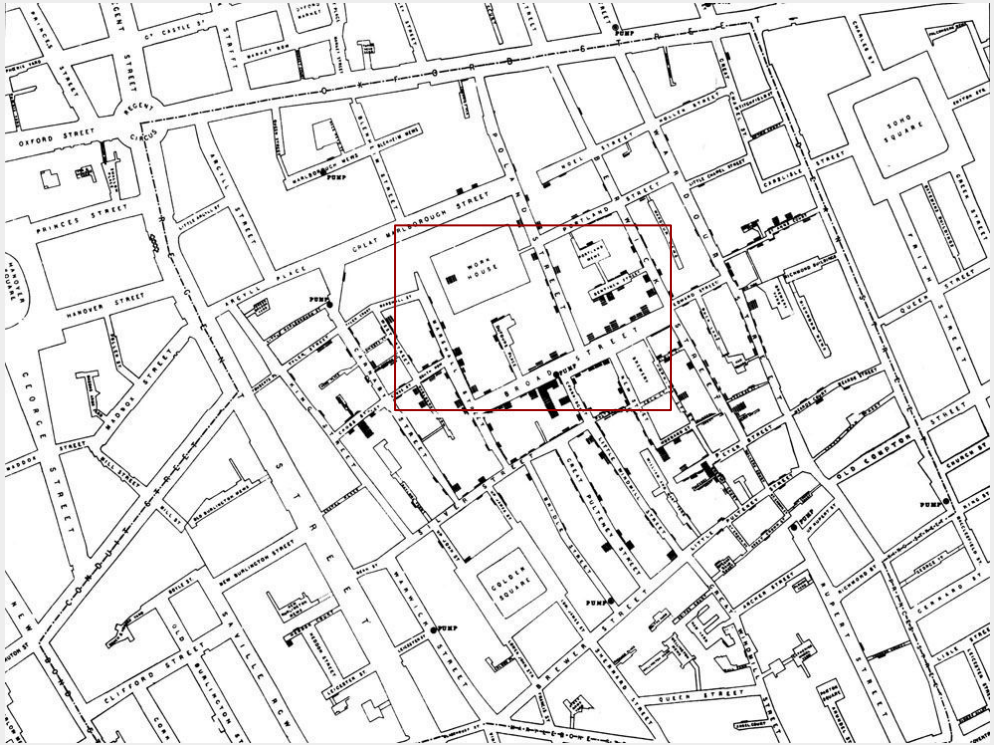
Charles Joseph Minard in 1869



- The **size** of the army and the magnitude of human losses (out of 422,000 soldiers, only 10,000 returned)
- The army's **route**
- Extreme **temperatures**

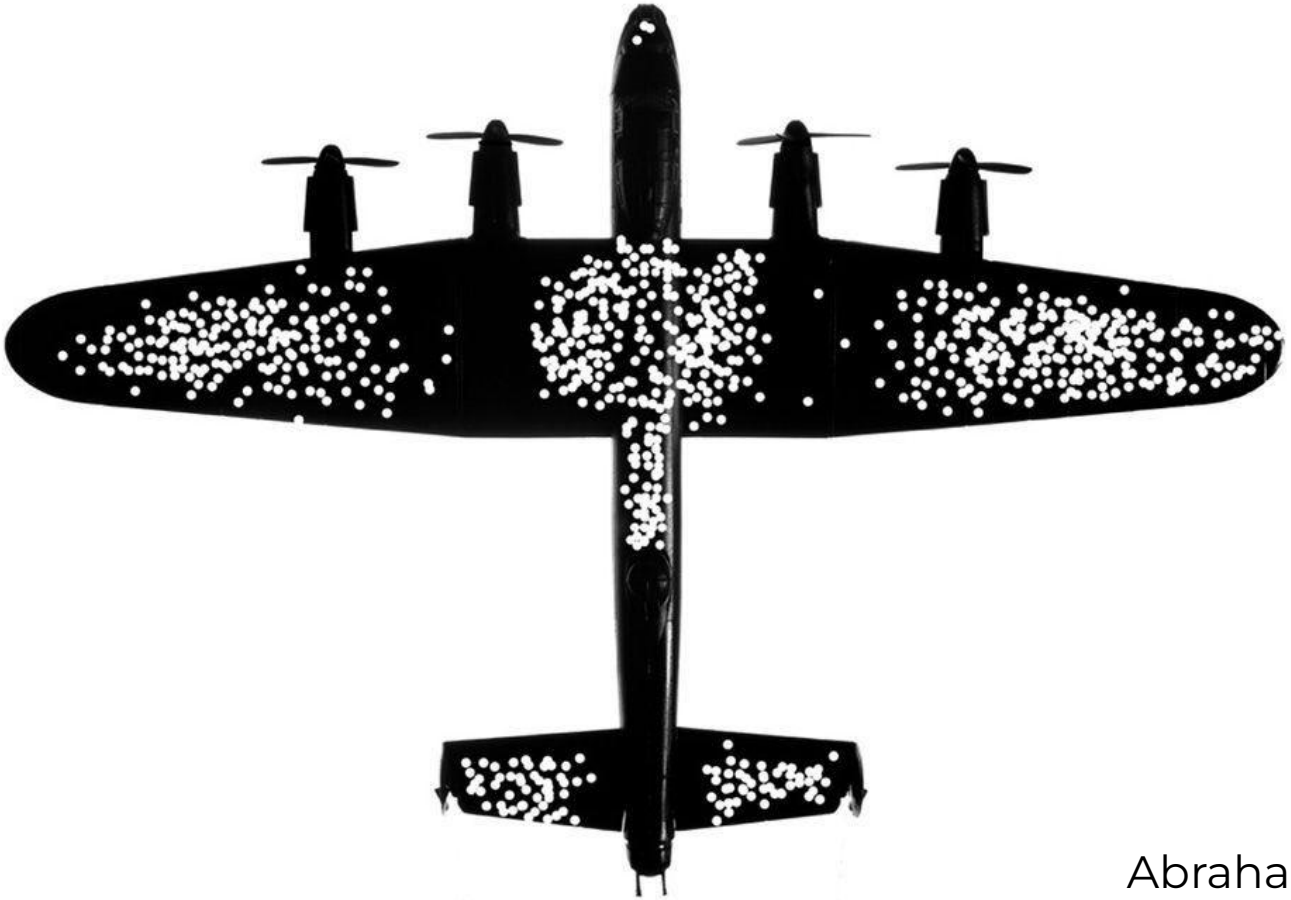


John Snow in 1854



- locations of cholera deaths
- their concentration
- patterns

And crossed them with **water sources** in these areas.

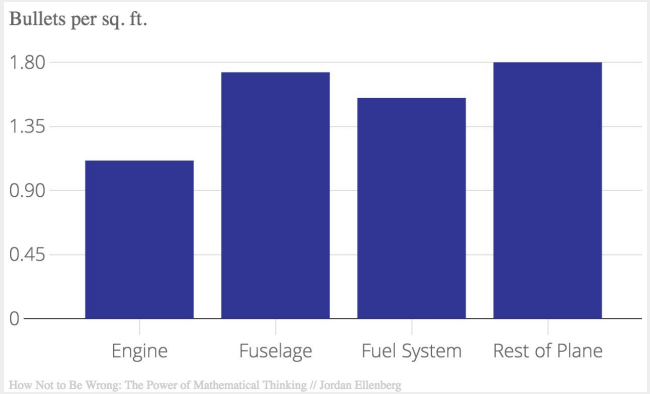


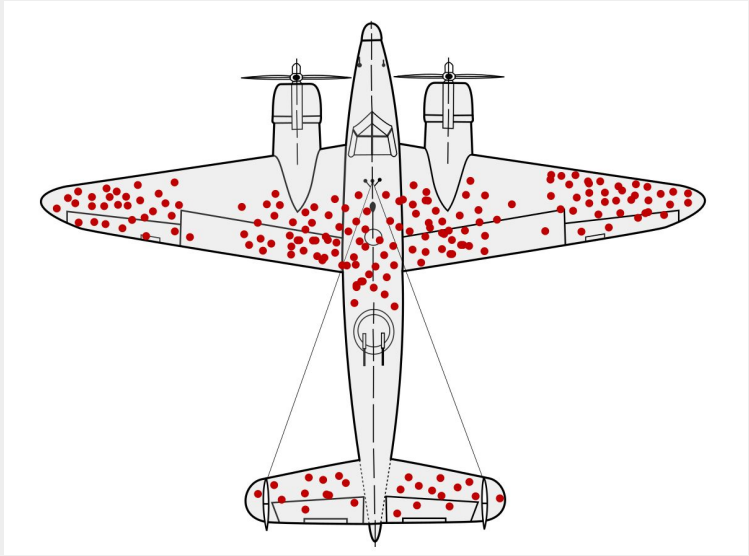
Abraham Wald

Survivorship bias in data analysis.

The real issue was the planes that did not return, likely hit in areas where damage was fatal: the engine.

The problem? Missing data.





Four questions before starting

What do you want to communicate?

Who is your audience?

What data is available?

What is the best way to visualize it?

INTERVIEW THE DATA

Before starting to create any visualization, we must **understand the data**. To do so, we can ask a series of questions such as:

- Are there any outliers or anomalies in the data?
- What are the distributions of numerical variables?
- How do different variables relate to each other (correlations, groupings)?
- Are there missing values, and how should they be handled?
- Are there any trends or patterns or seasonality in the data?
- What insights do we expect to uncover through visualization?

INTERVIEW THE DATA

Example

Annual temperature data by country from 1800 to 2022

What has been the **average** temperature from 1800 to today? Has it increased?

In which country has the temperature **varied** the most?

What **periods** have been critical?

Is there any **correlation** between the highest increases and, for example, industrial production? Car usage? The health of the population?

A GOOD DATA ANALYSIS INCLUDES

- Not only the information you have but also the **information you're missing** and how it affects your conclusions.
  For example, always measuring the price of a café menu and saying it hasn't changed without considering whether the portions have been reduced.

- Mitigation of **biases**

- Choosing **representative** examples, not exceptional ones

Why data storytelling matters

European projects can involve large **amounts** of data

Data storytelling allows to **transform** raw data into attractive narratives easy to comprehend for the user

Projects gain greater **transparency**

Data-driven **decision making**

European projects can involve large **amounts** of data

Data storytelling allows to **transform** raw data into attractive narratives easy to comprehend for the user

Projects gain greater **transparency**

Data-driven **decision making**

Data can be hidden not only in your results but also in the very **purpose** of your project.

Its value doesn't lie in the data itself, but in the **insights** gained through the process of working with it.

Common challenges in communicating data-driven stories

Data Preparation & Quality

- The format of the data
- Missing values

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Visualization & Representation

- How am I going to visualize the data?
- Transform datasets with thousands—or millions—of rows into an effective graphic.

Data Preparation & Quality

- The format of the data
- Missing values

Visualization & Representation

- How am I going to visualize the data?
- Transform datasets with thousands—or millions—of rows into an effective graphic.

Communication & Accessibility

- Most users receive the information on their phones
- Data weight

The psychology of visuals: How to improve graphics for the user

Simplicity

Proximity

Similarity / Equivalence

Order

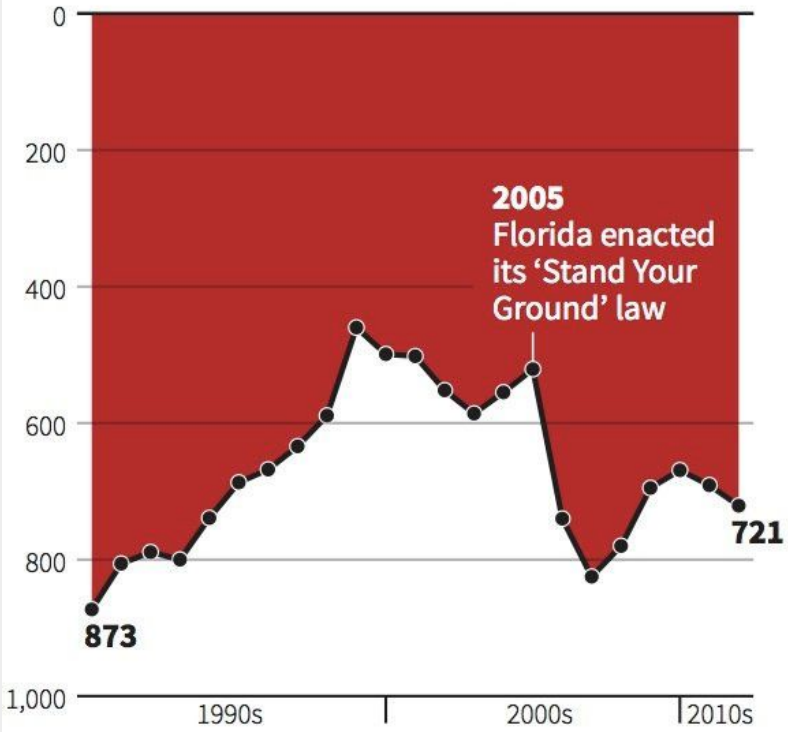
Graphic design composition

Readability and Usability

Effective vs ineffective infographics

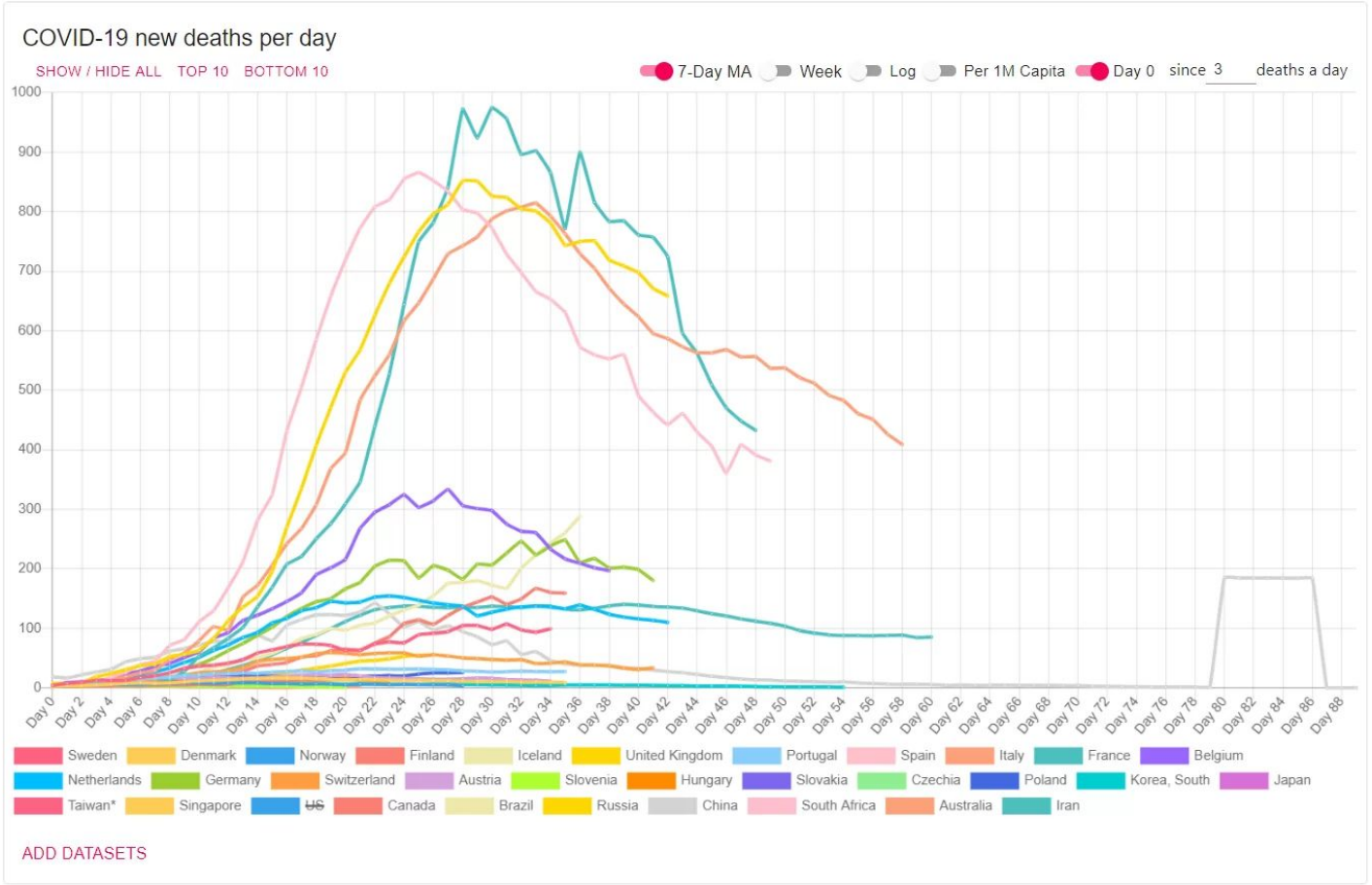
Gun deaths in Florida

Number of murders committed using firearms



Source: Florida Department of Law Enforcement

C. Chan 16/02/2014 REUTERS


COVID-19 new deaths per day
SHOW / HIDE ALL
TOP 10
BOTTOM 10
7-Day MA
Week
Log
Per 1M Capita
Day 0
since 3
deaths a day
1000
900
800
700
600
500
400
300
200
100
0
Day 0
Day 2
Day 4
Day 6
Day 8
Day 10
Day 12
Day 14
Day 16
Day 18
Day 20
Day 22
Day 24
Day 26
Day 28
Day 30
Day 32
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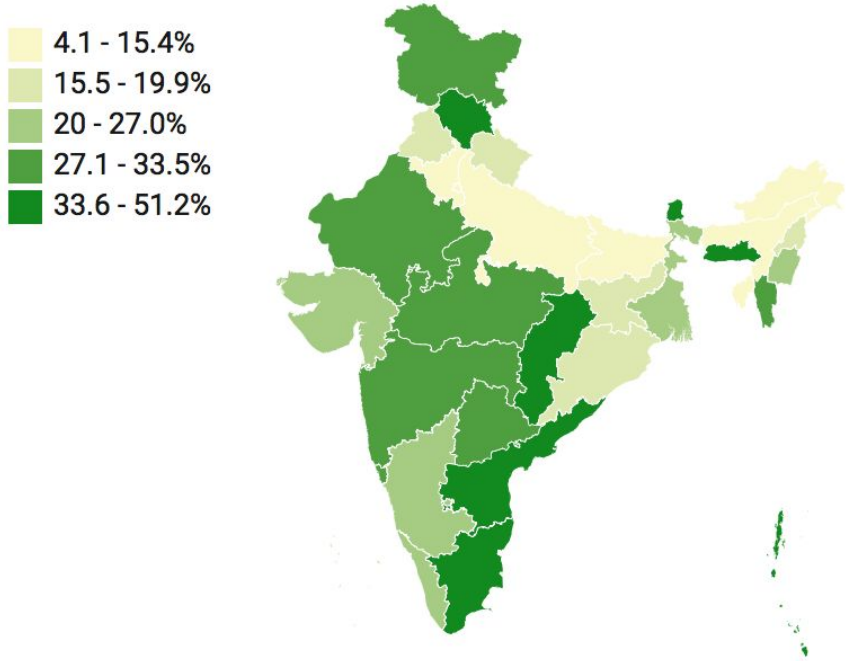
Day 88
Sweden
Denmark
Norway
Finland
Iceland
United Kingdom
Portugal
Spain
Italy
France
Belgium
Netherlands
Germany
Switzerland
Austria
Slovenia
Hungary
Slovakia
Czechia
Poland
Korea, South
Japan
Taiwan*
Singapore
US
Canada
Brazil
Russia
China
South Africa
Australia
Iran
ADD DATASETS

The Hindi belt scores low, while the south does better

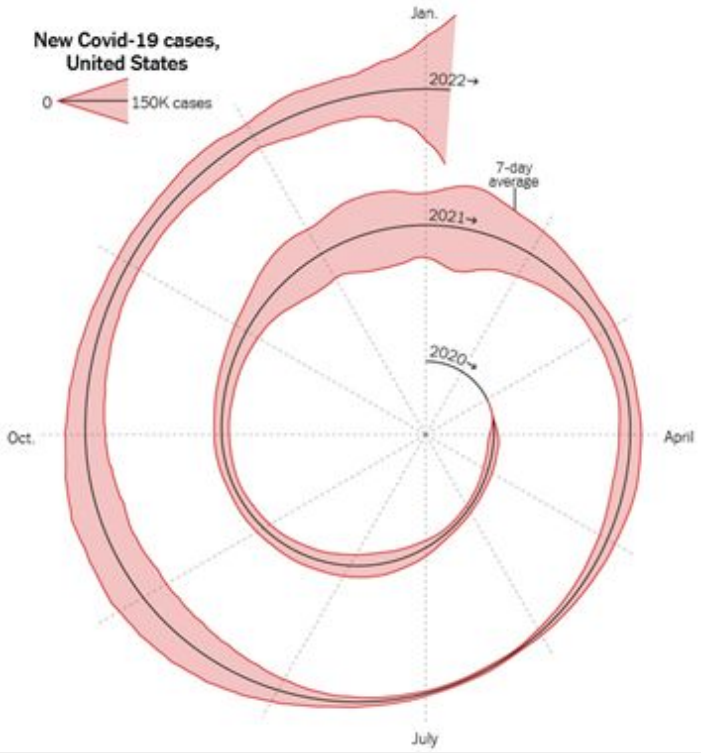
Female labour force participation rate (%)



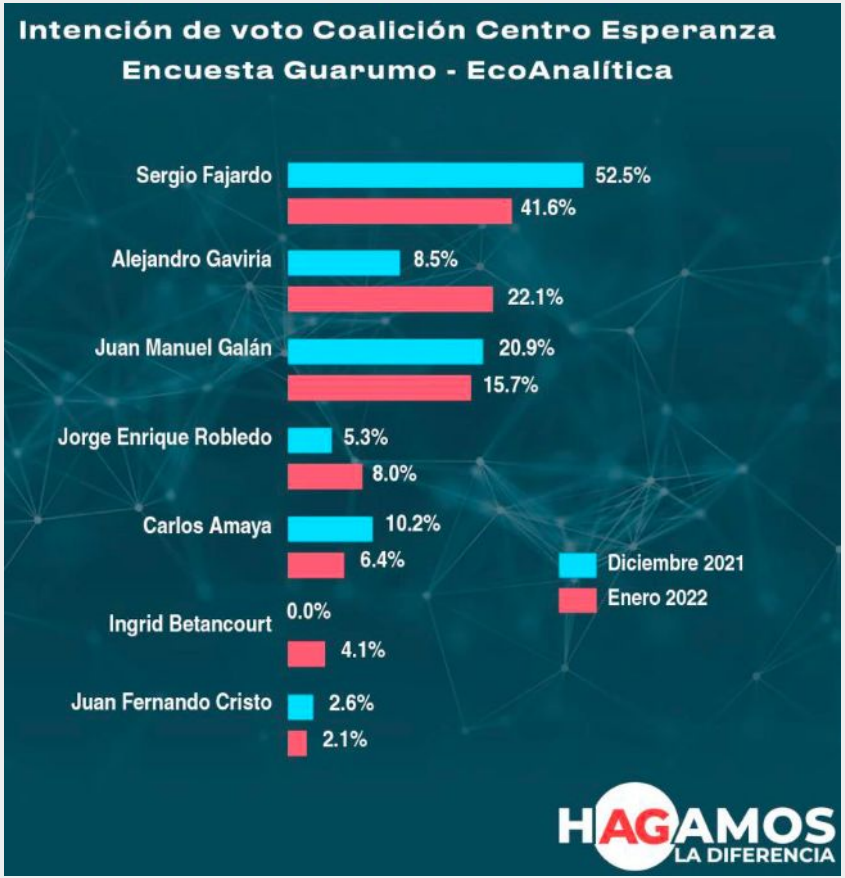
Source: NSSO • Get the data • Created with Datawrapper

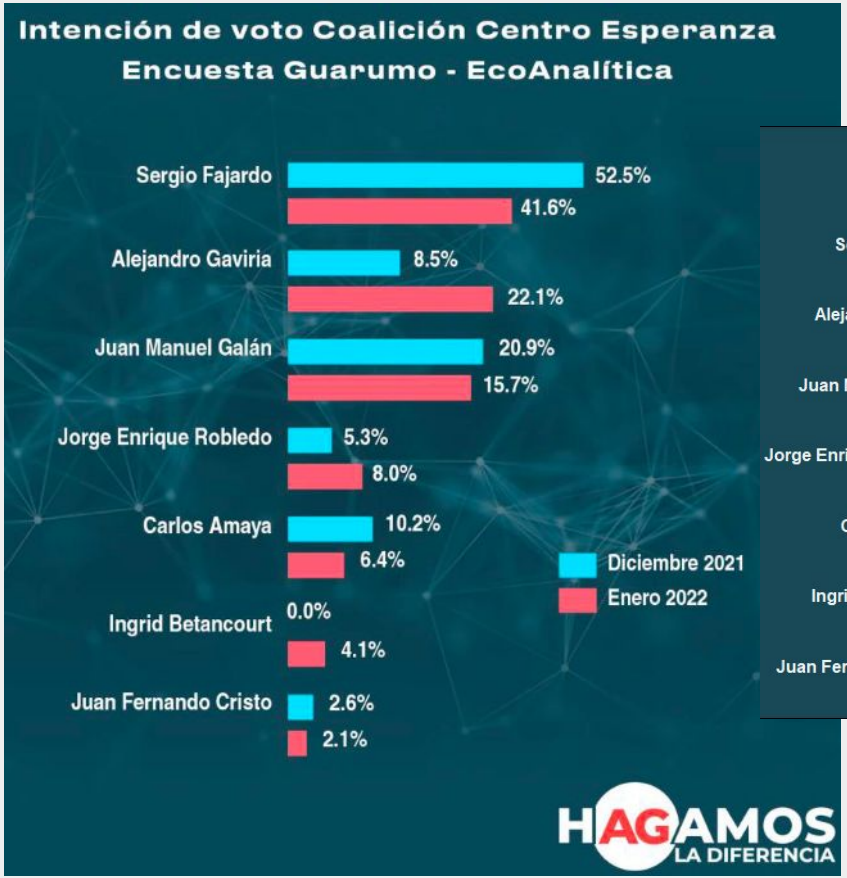
Here's When We Expect Omicron to Peak

Jan. 6, 2022




#elDBTeconomía
rtve.es
[D]
REGISTRO DESEMPLEO
4.848.723
4.100.073
4.447.711
2.129.547
2007
2008
2009
2010
2011
2012
2013
2014
Fuente:
Ministerio de empleo
y Seguridad Social
1


Intención de voto Coalición Centro Esperanza
Encuesta Guarumo - EcoAnalítica
Sergio Fajardo
52.5%
41.6%
Alejandro Gaviria
8.5%
22.1%
Juan Manuel Galán
20.9%
15.7%
Jorge Enrique Robledo
5.3%
8.0%
Carlos Amaya
10.2%
6.4%
Ingrid Betancourt
0.0%
4.1%
Juan Fernando Cristo
2.6%
2.1%
Diciembre 2021
Enero 2022
HAGAMOS
LA DIFERENCIA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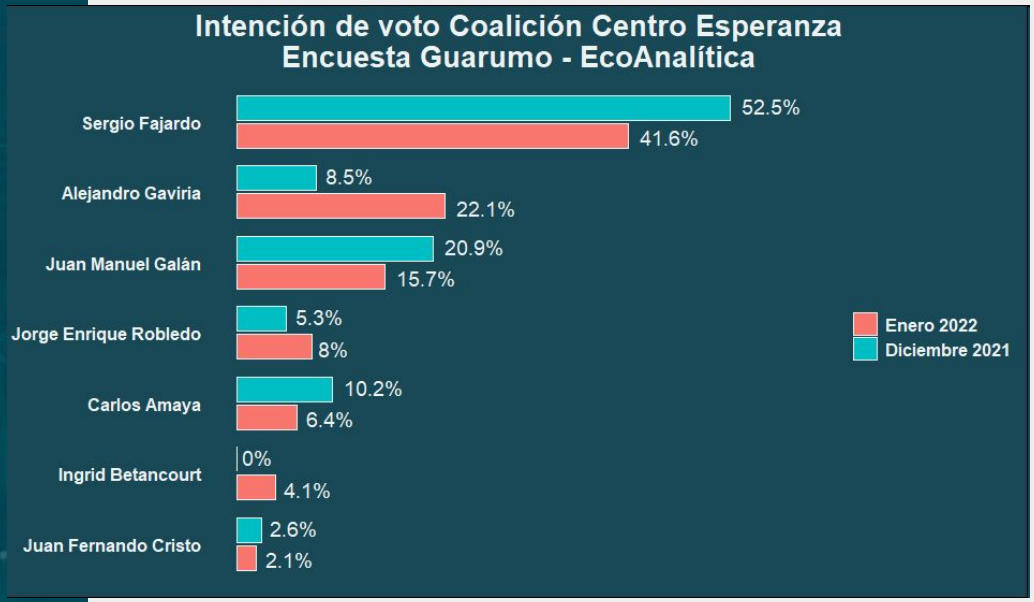
2.1%
Diciembre 2021
Enero 2022
HAGAMOS
LA DIFERENCIA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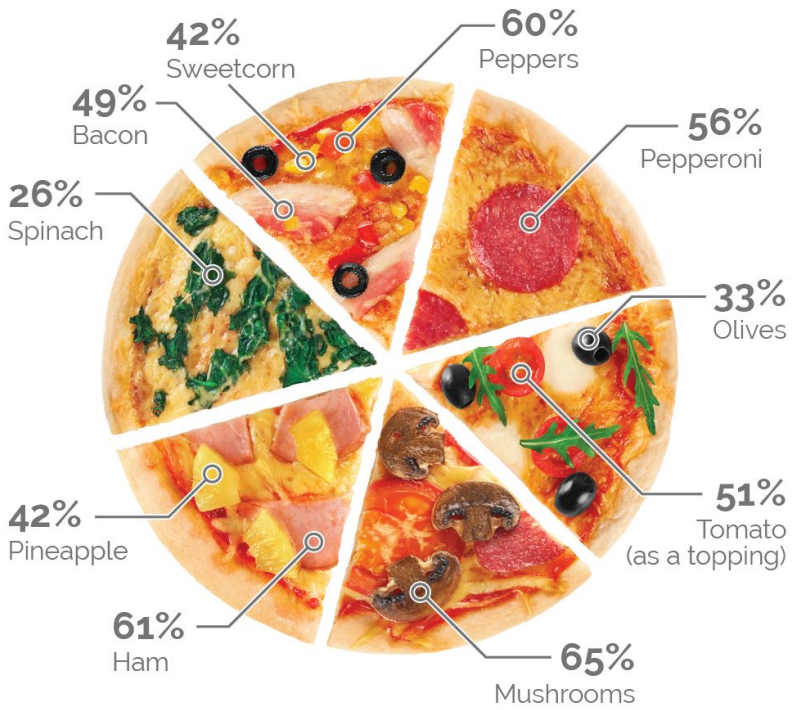
5.3%
8%
Carlos Amaya
10.2%
6.4%
Ingrid Betancourt
0%
4.1%
Juan Fernando Cristo
2.6%
2.1%
Enero 2022
Diciembre 2021

Mushroom is the UK's most liked pizza topping

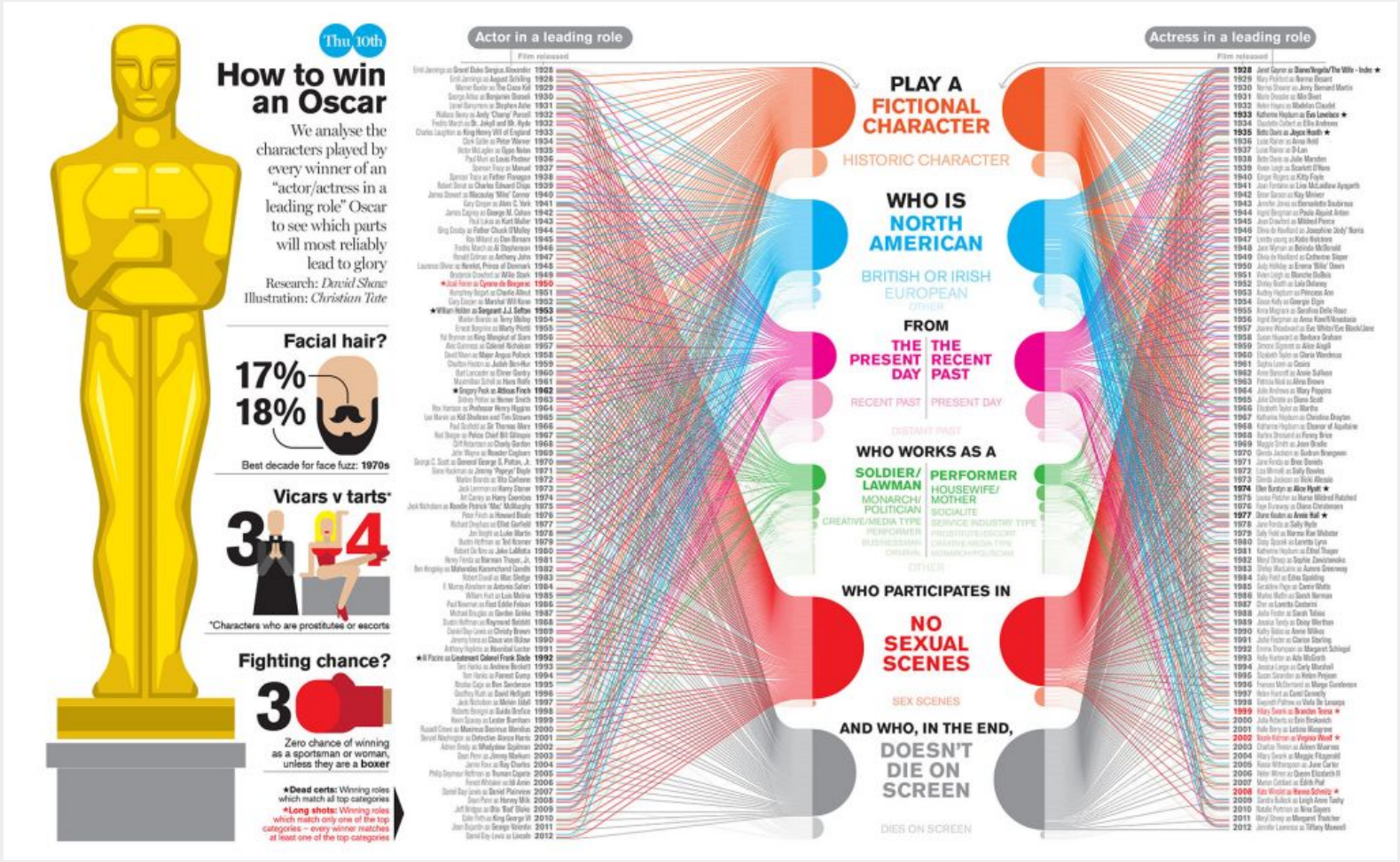
Generally speaking, which of the following toppings do you like on a pizza? Select as many as you like



Other items not depicted include: onions (62%), chicken (56%), beef (36%), chillies (31%), jalapeños (30%), pork (25%), tuna (22%), anchovies (18%). 2% of people say they only like Margherita pizzas

YouGov | yougov.com

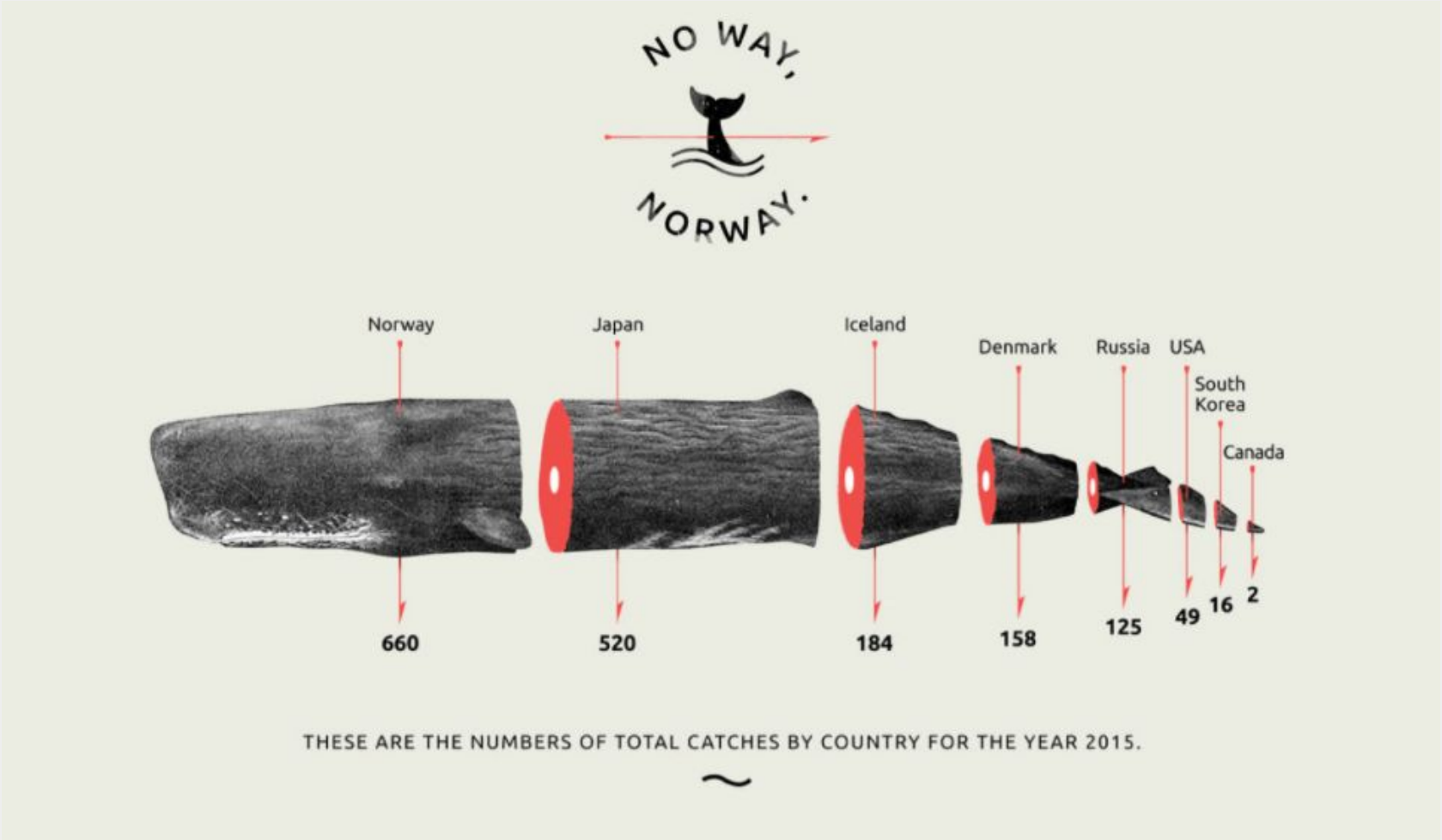
February 26-28, 2017


Thu 10th
How to win an Oscar
We analyse the characters played by every winner of an "actor/actress in a leading role" Oscar to see which parts will most reliably lead to glory
Research: David Shaw
Illustration: Christian Tate
Facial hair?
17%
18%
Best decade for face fuzz: 1970s
Vicars v tarts*
3
4
*Characters who are prostitutes or escorts
Fighting chance?
3
Zero chance of winning as a sportsman or woman, unless they are a boxer
★Dead certs: Winning roles which match all top categories
★Long shots: Winning roles which match only one of the top categories – every winner matches at least one of the top categories
Actor in a leading role
Film released
Actress in a leading role
Film released
PLAY A
FICTIONAL CHARACTER
HISTORIC CHARACTER
WHO IS
NORTH AMERICAN
BRITISH OR IRISH
EUROPEAN
OTHER
FROM
THE PRESENT DAY
THE RECENT PAST
RECENT PAST
PRESENT DAY
DISTANT PAST
WHO WORKS AS A
SOLDIER/ LAWMAN
MONARCH/ POLITICIAN
CREATIVE/MEDIA TYPE
PERFORMER
BUSINESSMAN
CRIMINAL
OTHER
PERFORMER
HOUSEWIFE/ MOTHER
SOCIALITE
SERVICE INDUSTRY TYPE
PROSTITUTE/ESCORT
CRIMINAL/POLITICIAN
WHO PARTICIPATES IN
NO SEXUAL SCENES
SEX SCENES
AND WHO, IN THE END,
DOESN'T DIE ON SCREEN
DIES ON SCREEN

Pay attention to the axes

Be careful with the colors

Avoid overloading: make it simple


NO WAY.
NORWAY.
Norway
Japan
Iceland
Denmark
Russia
USA
South Korea
Canada
660
520
184
158
125
49
16
2
THESE ARE THE NUMBERS OF TOTAL CATCHES BY COUNTRY FOR THE YEAR 2015.

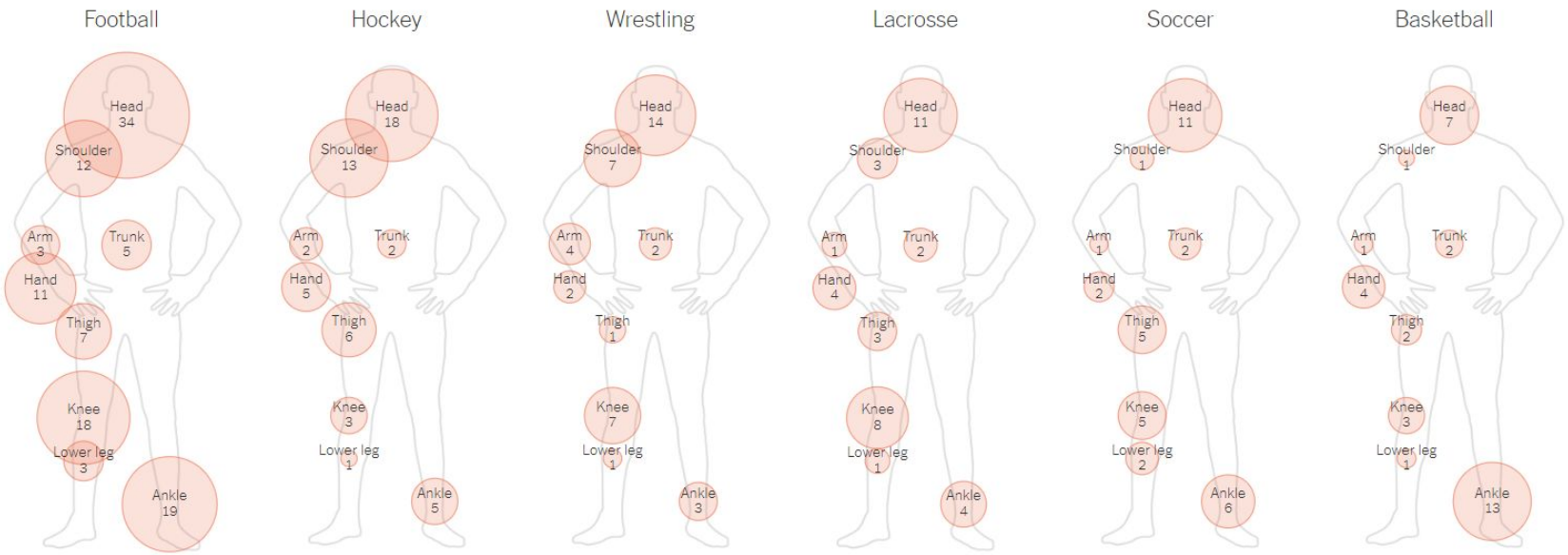
WHO'S YOUR FATHER?

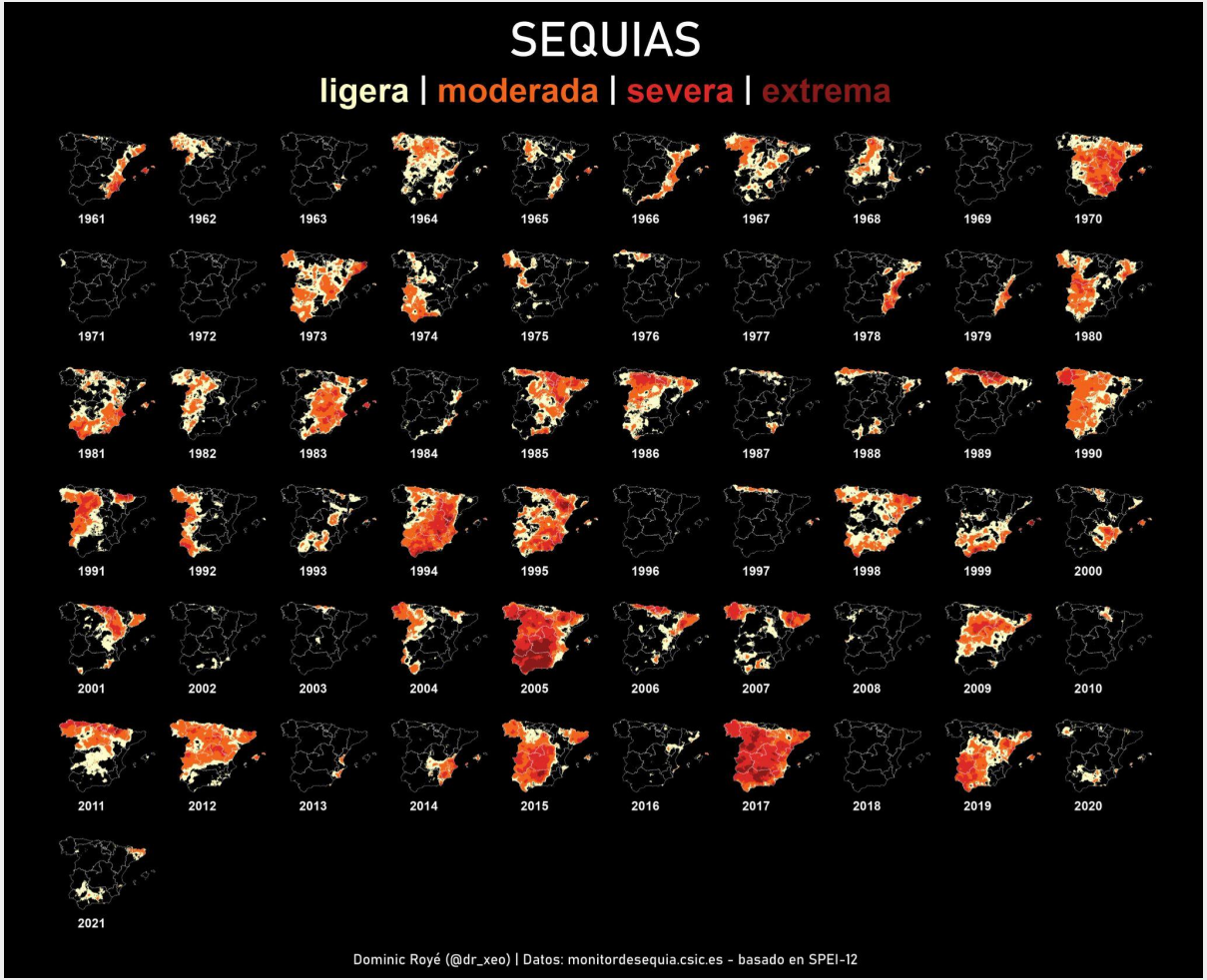
These were the most searched STAR WARS characters during **2017** according to Google.


Homicides by race
GUNS ·N· RACES
Black men in the USA are
14 times more likely than non-hispanic white men
to be shot and killed with guns.
30,8
BLACK
2,2
WHITE
GUN HOMICIDES
PER 100.000 MEN

Common injuries for boys among popular high school sports

Injuries per 10,000 competition plays




SEQUIAS
ligera | moderada | severa | extrema
1961
1962
1963
1964
1965
1966
1967
1968
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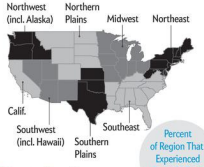
2019
2020
2021
Dominic Royé (@dr_xeo) | Datos: monitordesequia.csic.es - basado en SPEI-12

Text by Clara Moskowitz | Graphic by Cédric Scherer and Georgios Karamanis

Escalating Drought

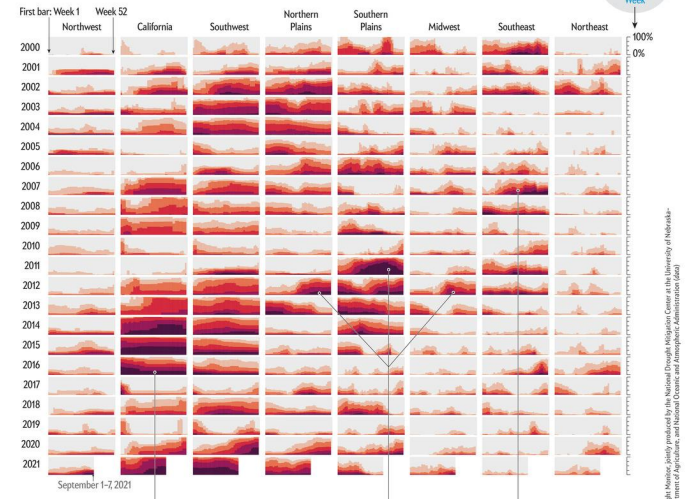
Climate change is intensifying periods of extreme dryness, particularly in the U.S. West

For more than 20 years the National Drought Mitigation Center (NDMC) has been monitoring dozens of indices of drought around the country, including satellite measurements of evaporation and color in vegetation, soil-moisture sensors, rainfall estimates, and river and streamflow levels. Although the agency's weekly assessments have identified periods of exceptional drought before, lately dryness has been ramping up. "The changing climate is definitely contributing to more natural disasters, drought being one of them," says Brian Fuchs, a climatologist who oversees the weekly report at the NDMC. "We're seeing more frequent and high-intensity episodes. This year some of these areas in the West have been in drought more than they have been without drought."



Drought Extent and Intensity by Region over Time

Category: Abnormally Dry | Moderate Drought | Severe Drought | Extreme Drought | Exceptional Drought

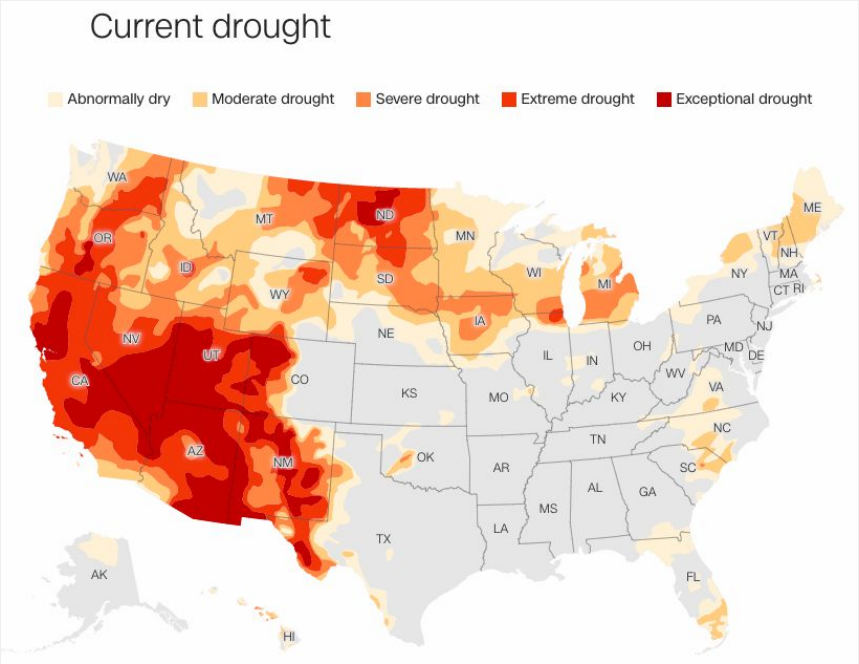


California experienced its hottest drought in recorded history from 2012 to 2016. A warming climate makes the atmosphere thirstier, which increases evaporation and boosts drought.

A drought that originated in the Southern Plains in 2011 eventually spread to the Midwest and Northern Plains when the moisture coming in from the Gulf of Mexico was absorbed by the parched South before it could reach the North.

The Southeast's driest year to date was 2007, when only 31.85 inches of rain fell in Atlanta, 62 percent of its average yearly rainfall.

Source: U.S. Drought Monitor, jointly produced by the National Drought Mitigation Center at the University of Nebraska–Lincoln, U.S. Department of Agriculture, and National Oceanic and Atmospheric Administration (data)


Current drought
Abnormally dry
Moderate drought
Severe drought
Extreme drought
Exceptional drought
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
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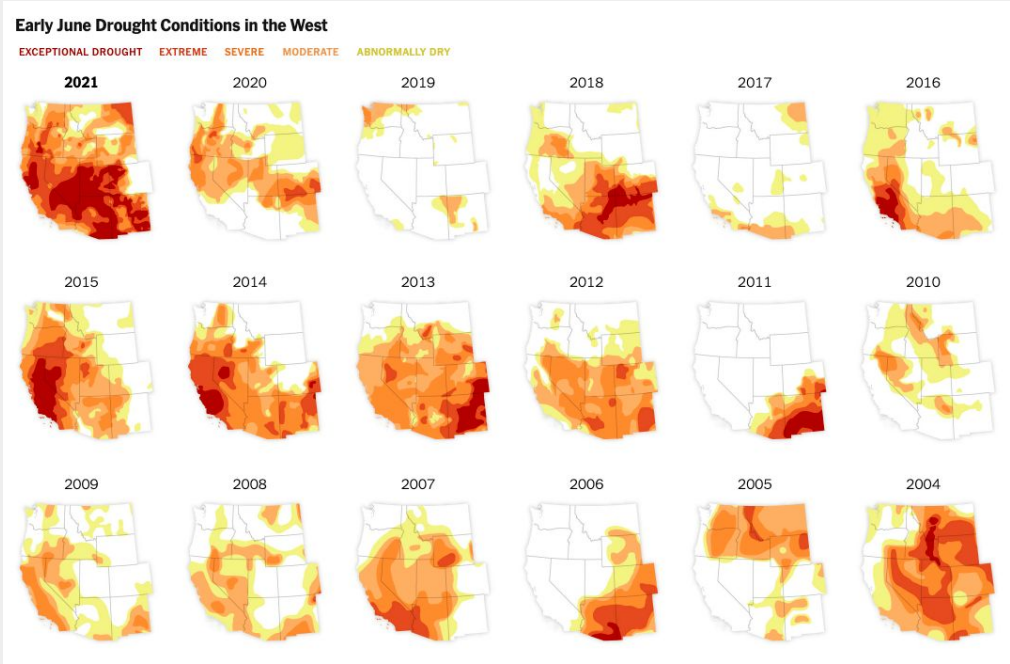

Early June Drought Conditions in the West
EXCEPTIONAL DROUGHT
EXTREME
SEVERE
MODERATE
ABNORMALLY DRY
2021
2020
2019
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
2004

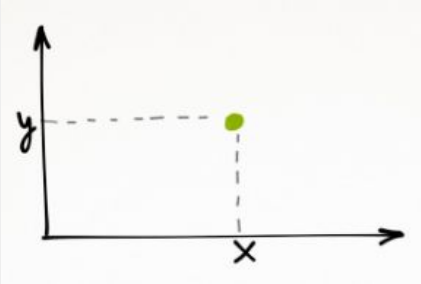
Basics of data visualization

10 tips to improve your graphics

1- Visual encoding

The visual encoding is the way in which data is **mapped** into visual **structures**, upon which we build the images on a screen.

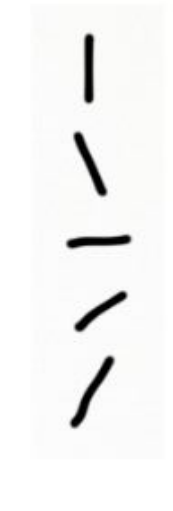
Position



Size

Form

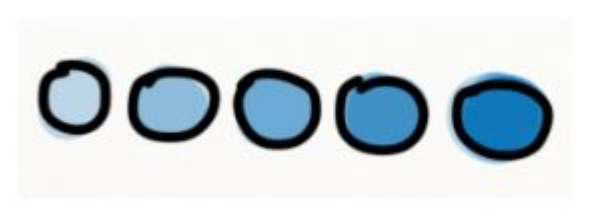
Orientation



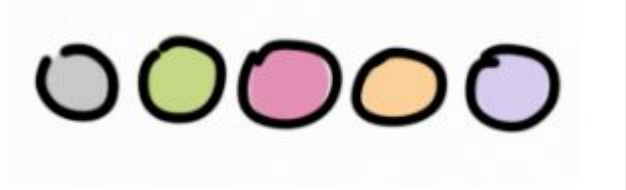
1- Visual encoding

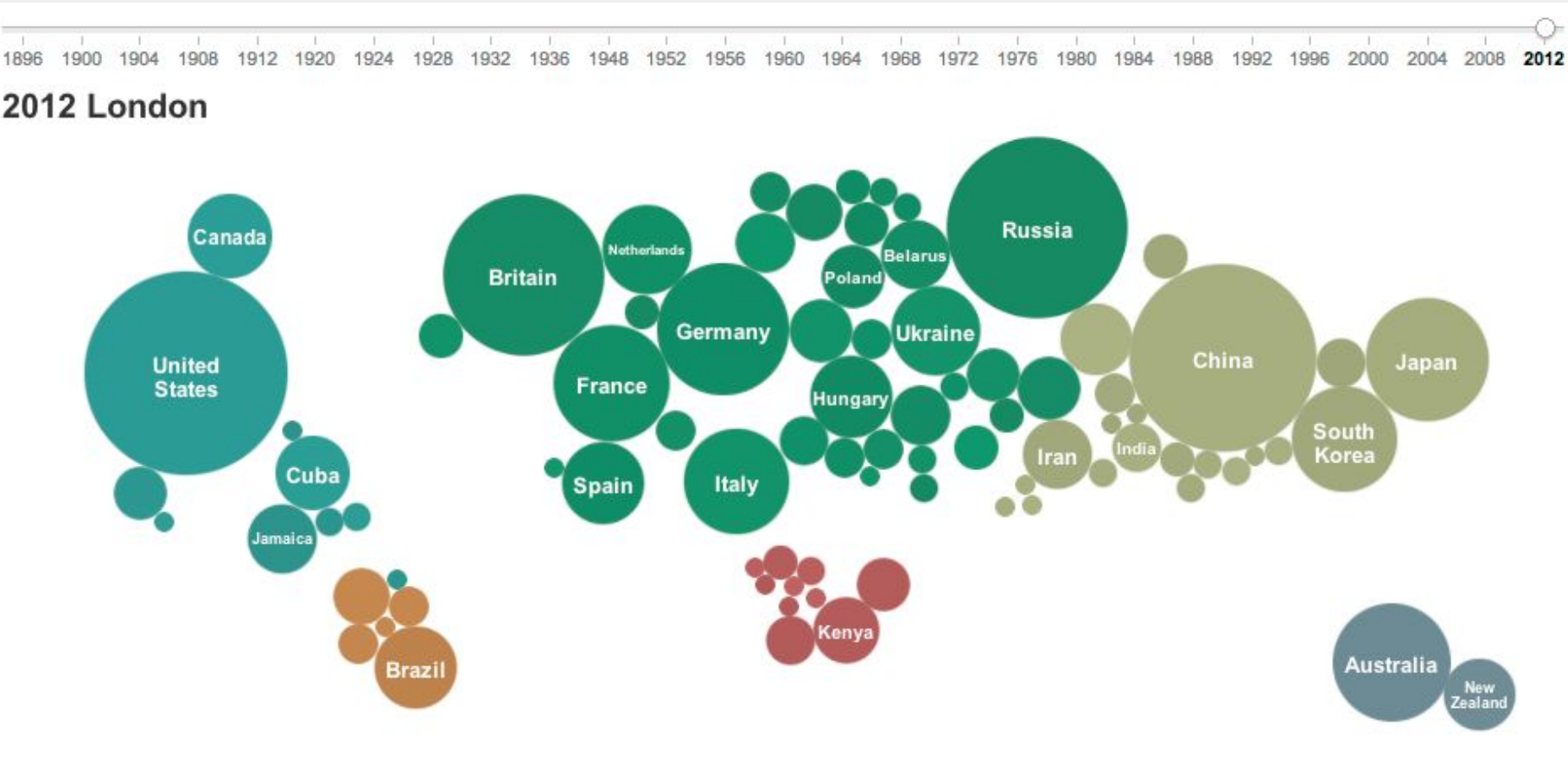
The visual encoding is the way in which data is **mapped** into visual **structures**, upon which we build the images on a screen.

Saturation



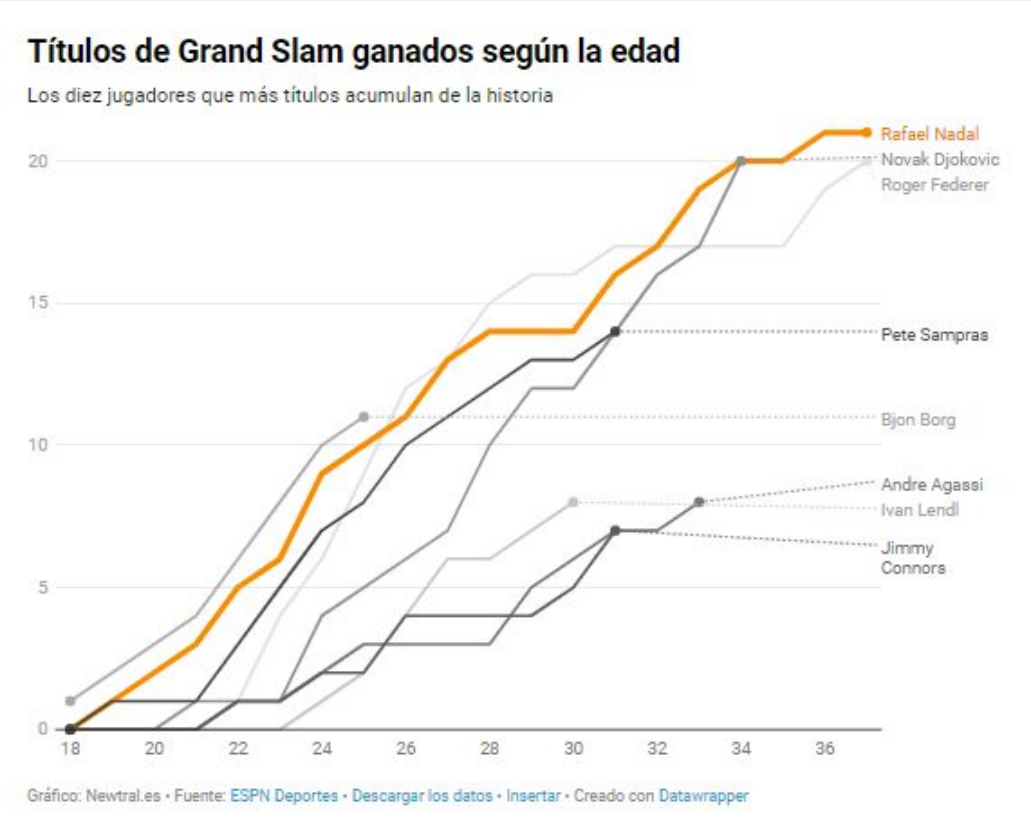
Tone



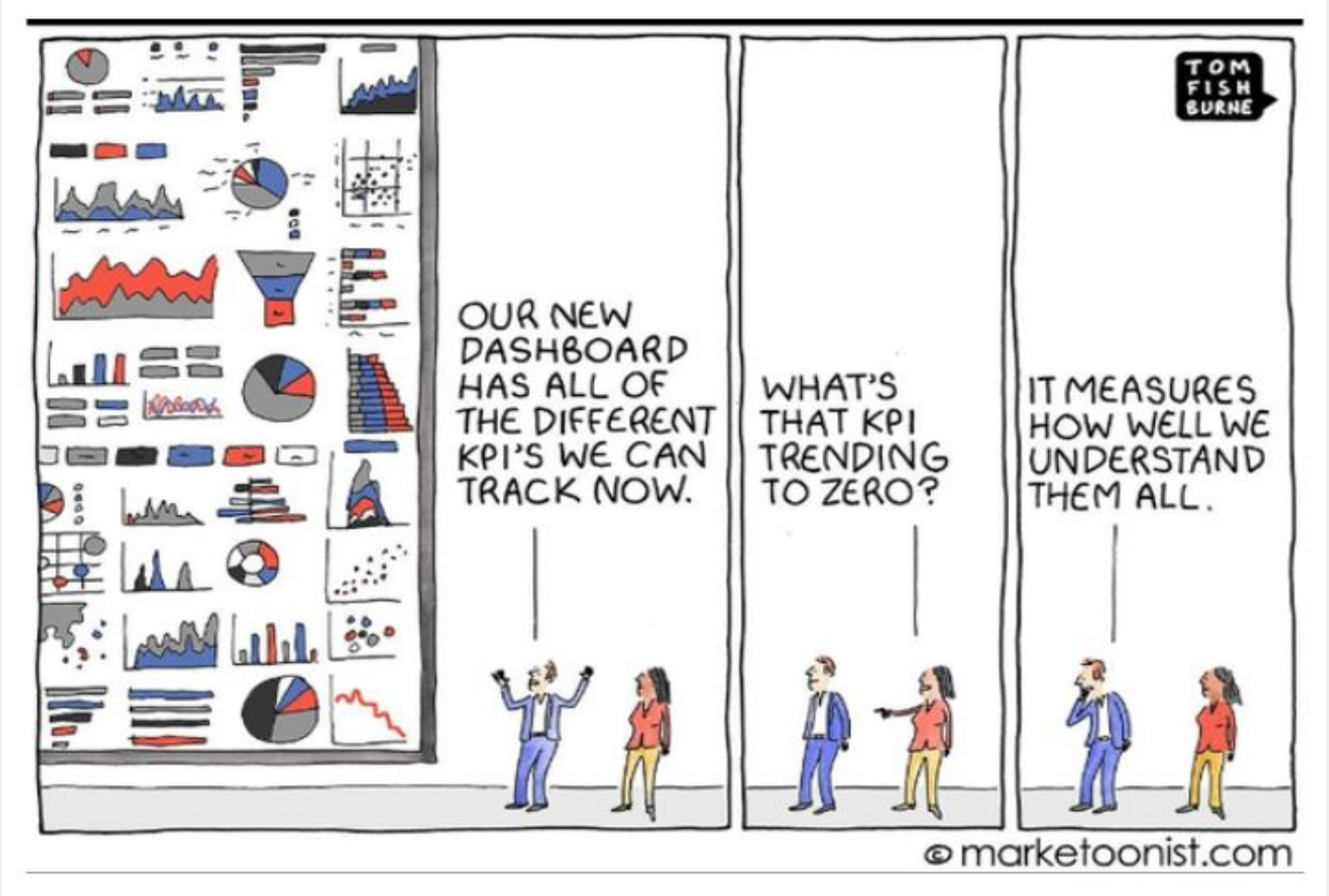


Encoding: color, size and position

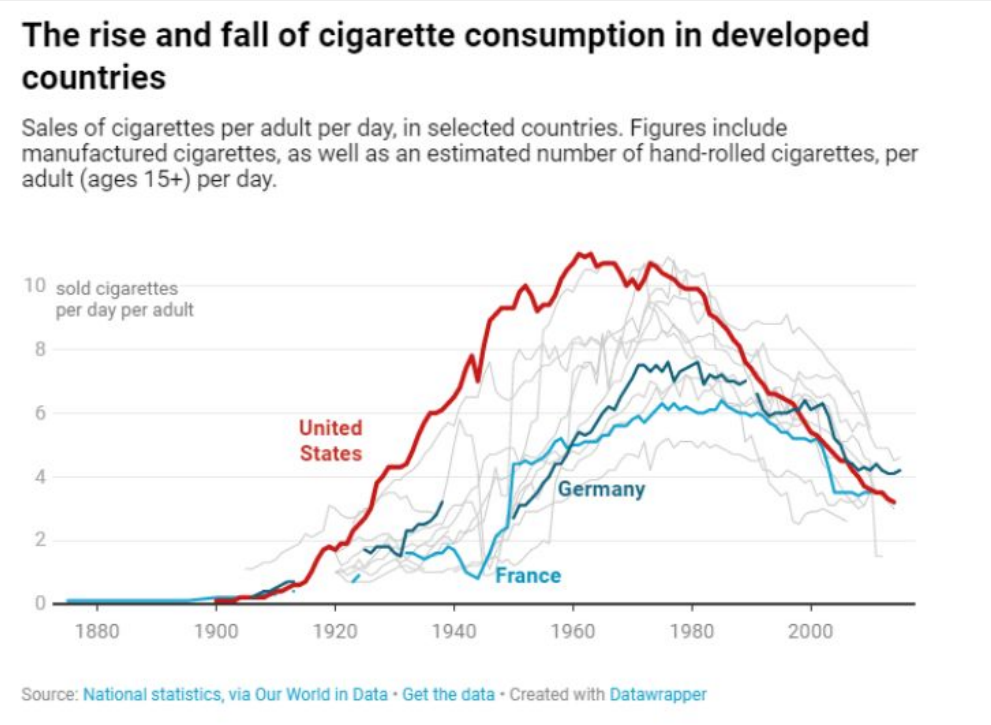
2- The art of standing out



- What do you want to communicate?
- Focus on key ideas
- One graphic, one idea


OUR NEW DASHBOARD HAS ALL OF THE DIFFERENT KPI'S WE CAN TRACK NOW.
WHAT'S THAT KPI TRENDING TO ZERO?
IT MEASURES HOW WELL WE UNDERSTAND THEM ALL.
TOM FISH BURNE
© marketoonist.com

3- Use colors



- General rule: no more than 7 colors in a chart
- Gray, your best friend
- Use intuitive colors
- Use color palettes, they work

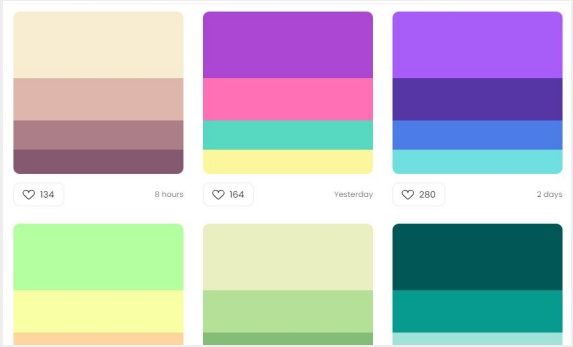
3- Use colors

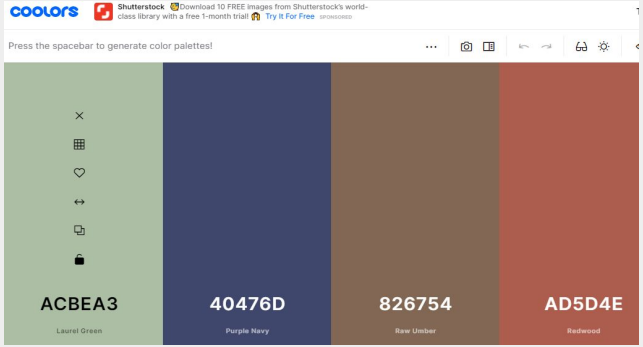
2	4	3	5	6	4	3	7	6	5	3
4	3	4	5	4	1	3	2	8	9	7
5	4	6	7	2	1	5	0	6	5	4
2	6	7	8	9	3	1	2	4	0	1
5	3	4	0	9	2	5	4	7	7	2
5	4	1	1	2	0	9	0	9	5	6

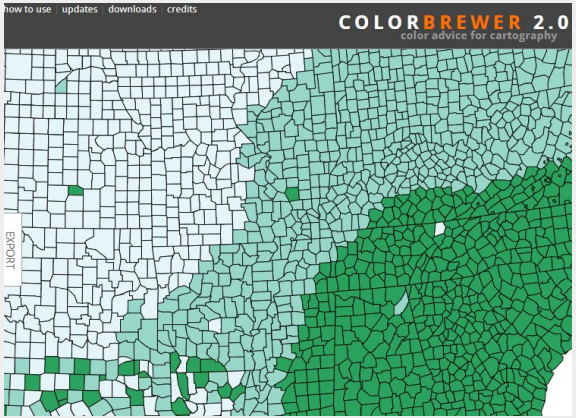
2	**4**	**3**	**5**	**6**	**4**	**3**	**7**	**6**	**5**	**3**
4	**3**	**4**	**5**	**4**	**1**	**3**	**2**	**8**	**9**	**7**
5	**4**	**6**	**7**	**2**	**1**	**5**	**0**	**6**	**5**	**4**
2	**6**	**7**	**8**	**9**	**3**	**1**	**2**	**4**	**0**	**1**
5	**3**	**4**	**0**	**9**	**2**	**5**	**4**	**7**	**7**	**2**
5	**4**	**1**	**1**	**2**	**0**	**9**	**0**	**9**	**5**	**6**

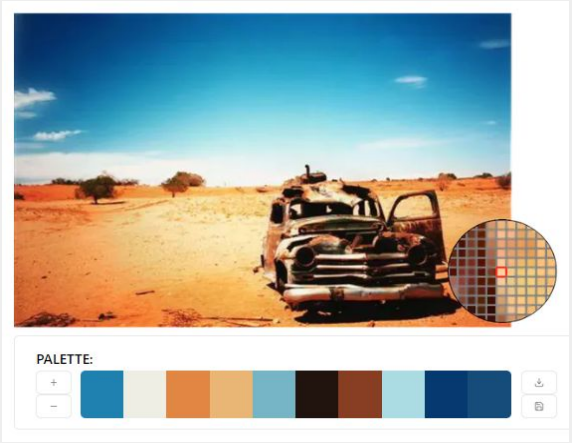
2	4	3	5	6	4	3	7	6	5	3
4	3	4	5	4	1	3	**2**	8	9	7
5	4	6	7	**2**	1	5	0	6	5	4
2	6	7	8	9	3	1	**2**	4	0	1
5	3	4	0	9	**2**	5	4	7	7	**2**
5	4	1	1	**2**	0	9	0	9	5	6

3- Use colors


134
8 hours
164
Yesterday
280
2 days

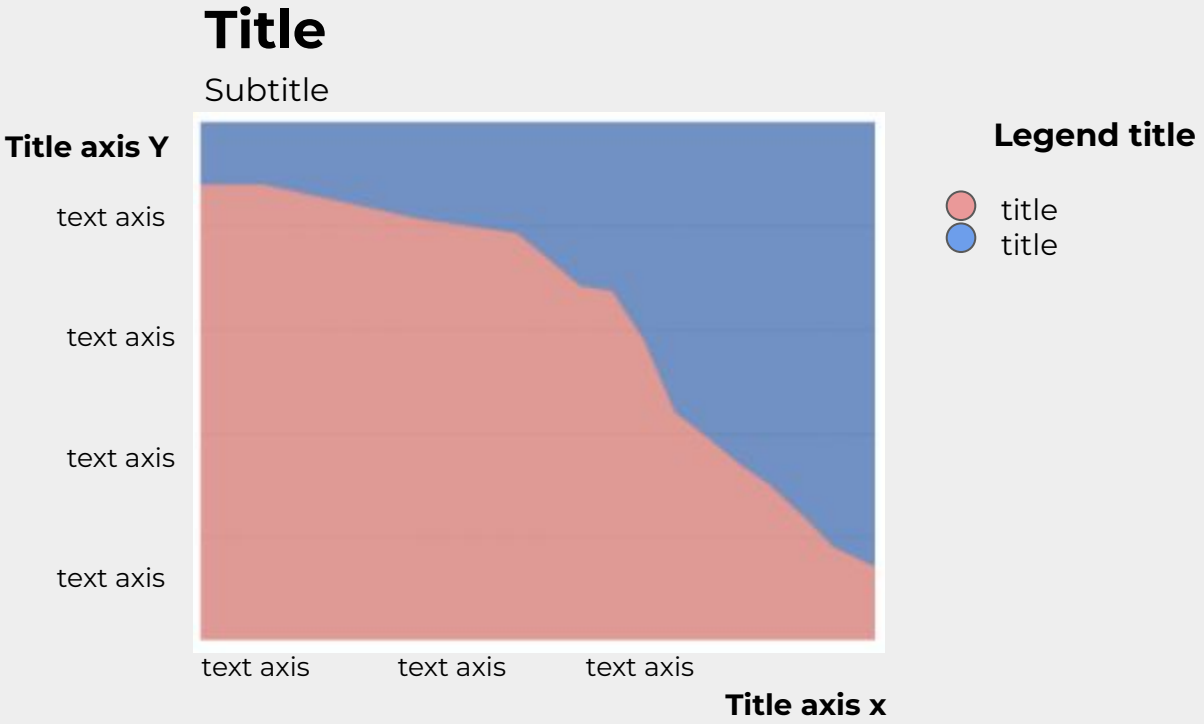

coolors
Shutterstock
Download 10 FREE images from Shutterstock's world-class library with a free 1-month trial!
Try It For Free
Press the spacebar to generate color palettes!
ACBEA3
Laurel Green
40476D
Purple Navy
826754
Raw Umber
AD5D4E
Redwood


how to use
updates
downloads
credits
COLORBREWER 2.0
color advice for cartography
EXPORT


PALETTE:

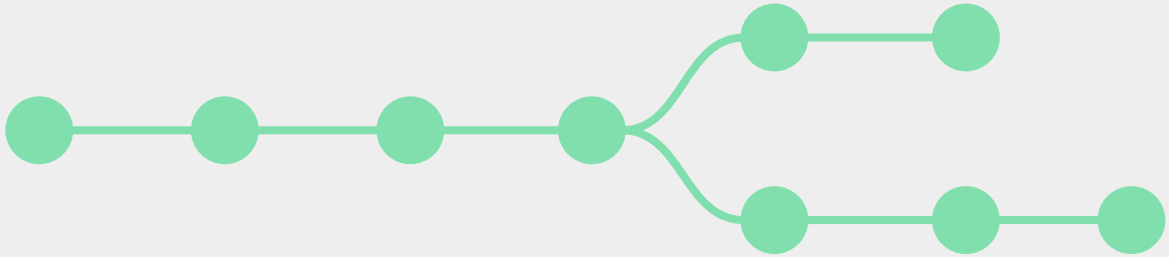
4- Respect the hierarchy

5- Don’t forget anything in your graphic



Source and who created the graphic. Add notes only if necessary

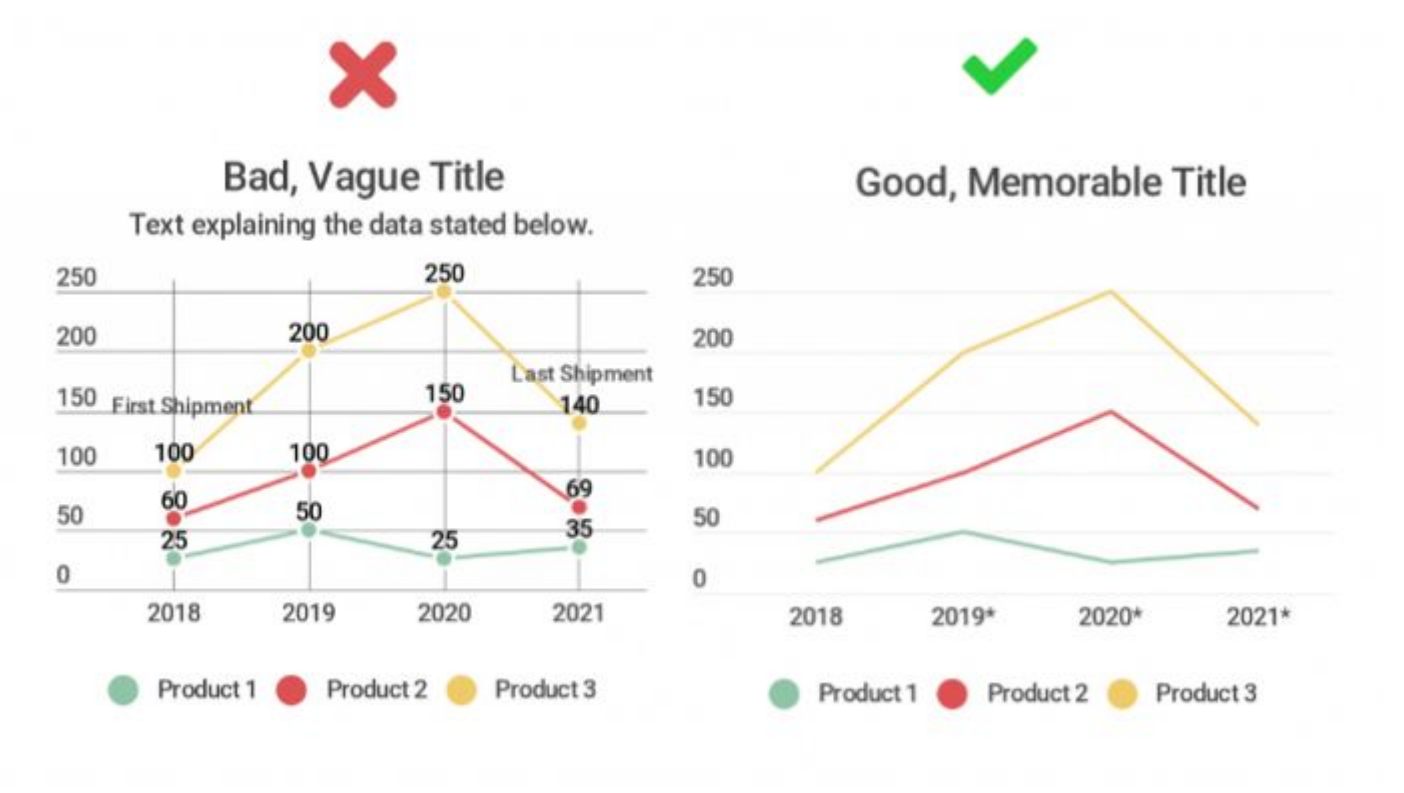
6- Simplify



"Think about subway maps, which are abstracted from the complex shape of the city and are focused on the rider's goal: to get from one place to the next"

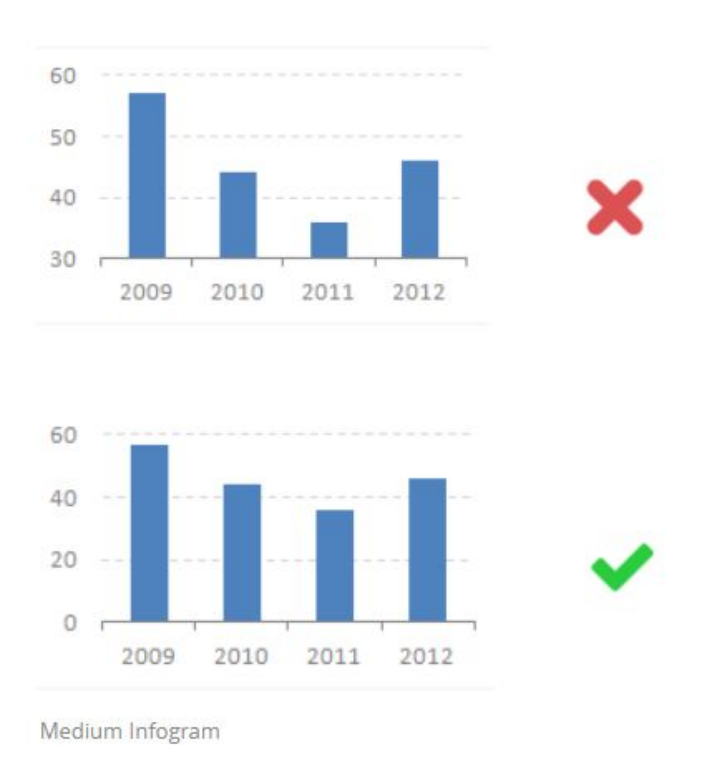
Visualizing Data by Ben Fry

6- Simplify

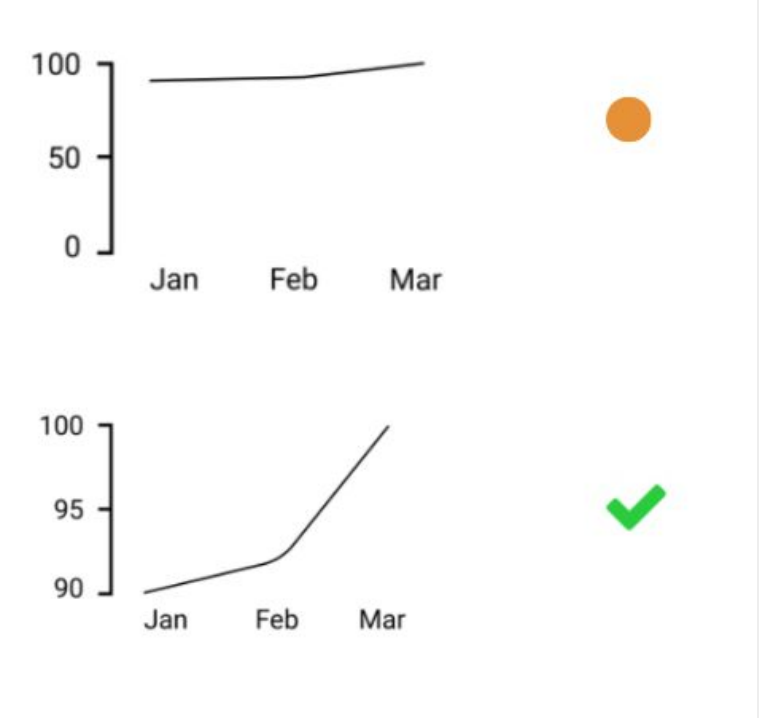

Bad, Vague Title
Text explaining the data stated below.
250
200
150
100
50
0
First Shipment
Last Shipment
100
200
250
60
100
150
50
25
25
140
69
35
2018
2019
2020
2021
Product 1
Product 2
Product 3
Good, Memorable Title
250
200
150
100
50
0
2018
2019*
2020*
2021*
Product 1
Product 2
Product 3

7- Start your axis in 0

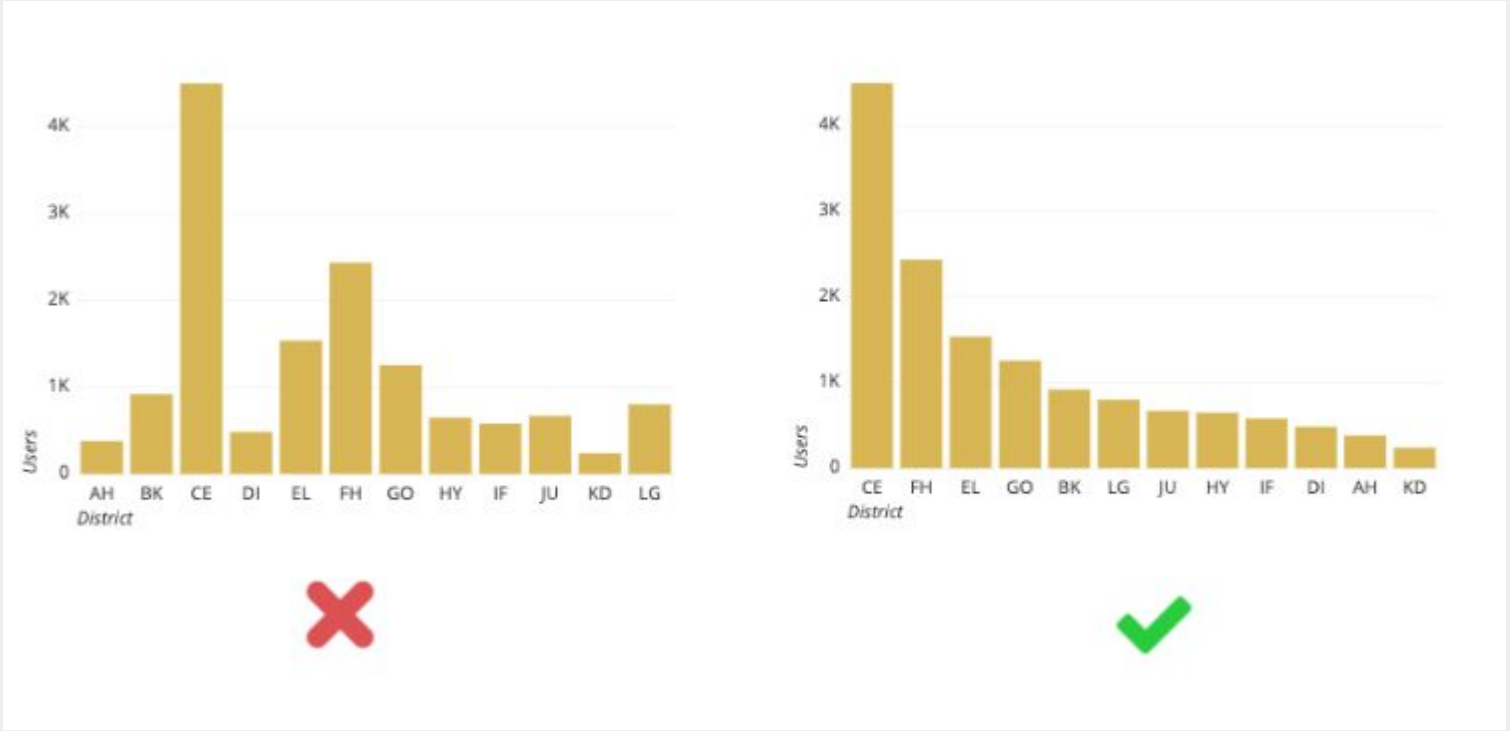
In bar and column charts



But it's okay not to do it on line charts



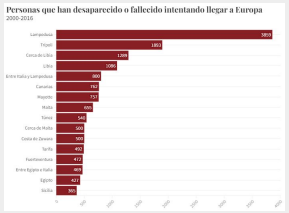
8- Order (when you can)



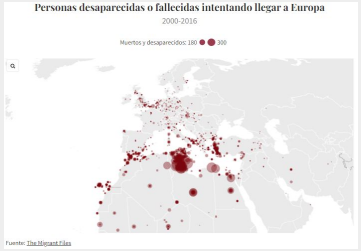
8- Try to get the elements aligned

The Migrants Files

From 2000 to 2016, at least 34,861 people disappeared or lost their lives trying to reach Europe.



From 2000 to 2016, at least 34,861 people disappeared or lost their lives trying to reach Europe.



The Migrants Files

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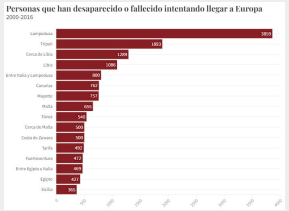
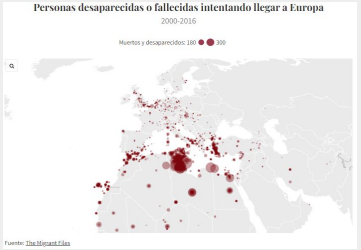
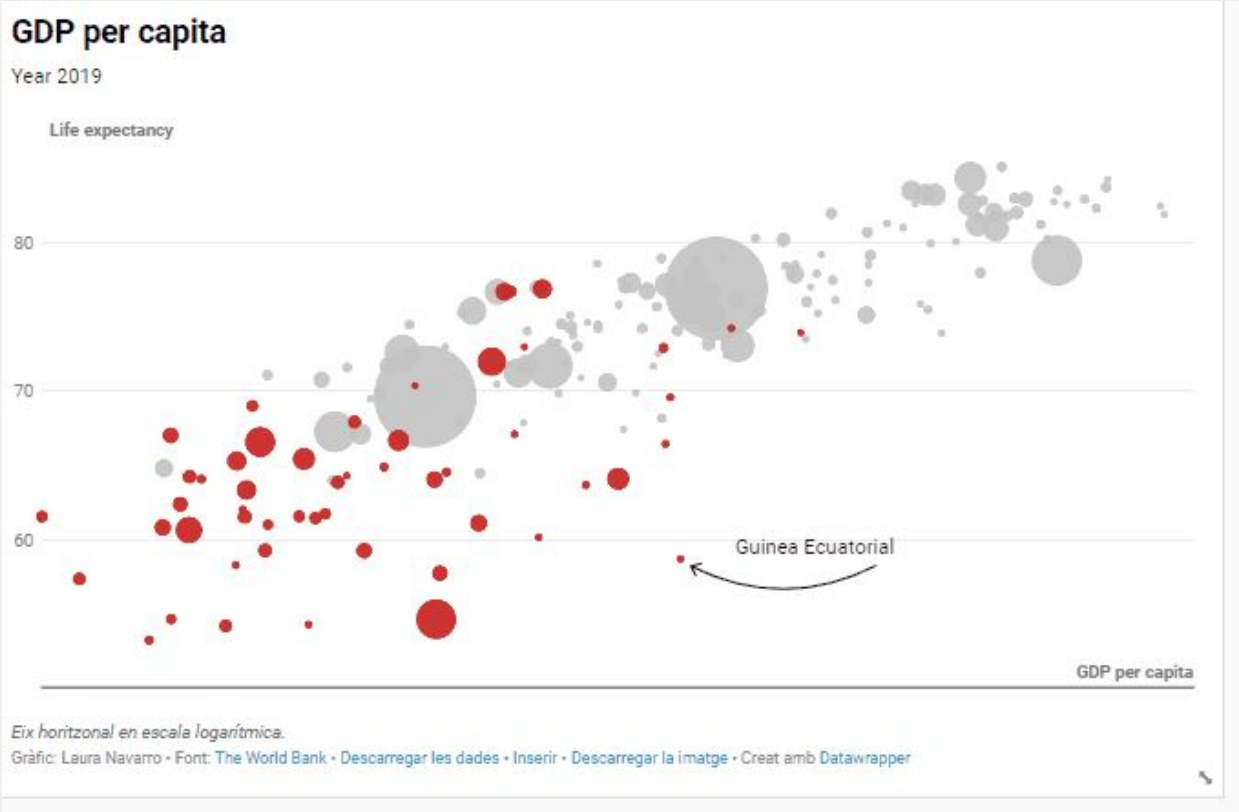




From 2000 to 2016, at least 34,861 people disappeared or lost their lives trying to reach Europe.

10- Mobile first!



Internet traffic from mobile phones

2022
56,4%

2013
16,2%

Source: Statcounter

BONUS- Make it unforgettable!

What type of graphic shall I use?

Comparison

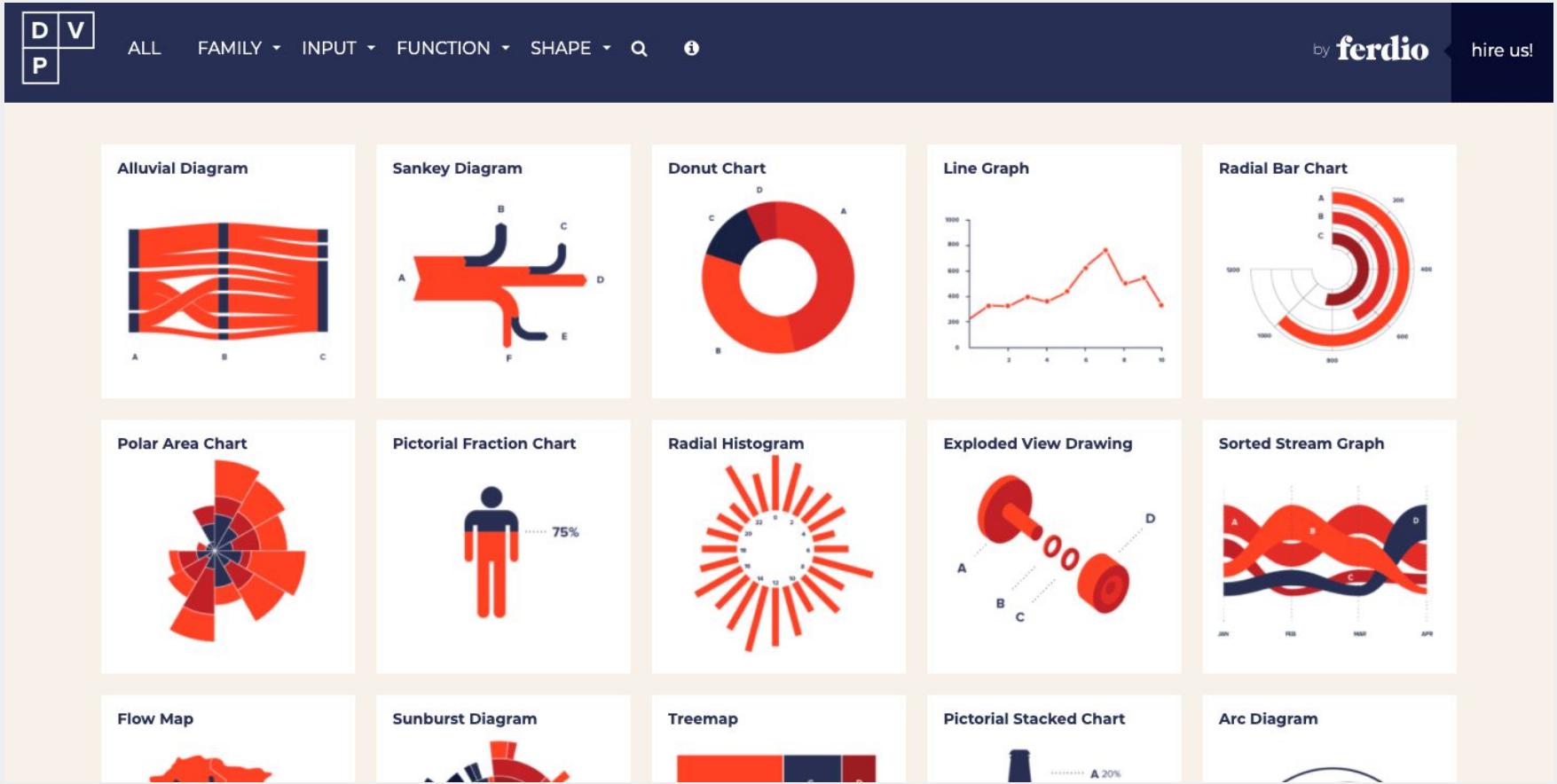
Distribution

Relationship

Composition

Maps

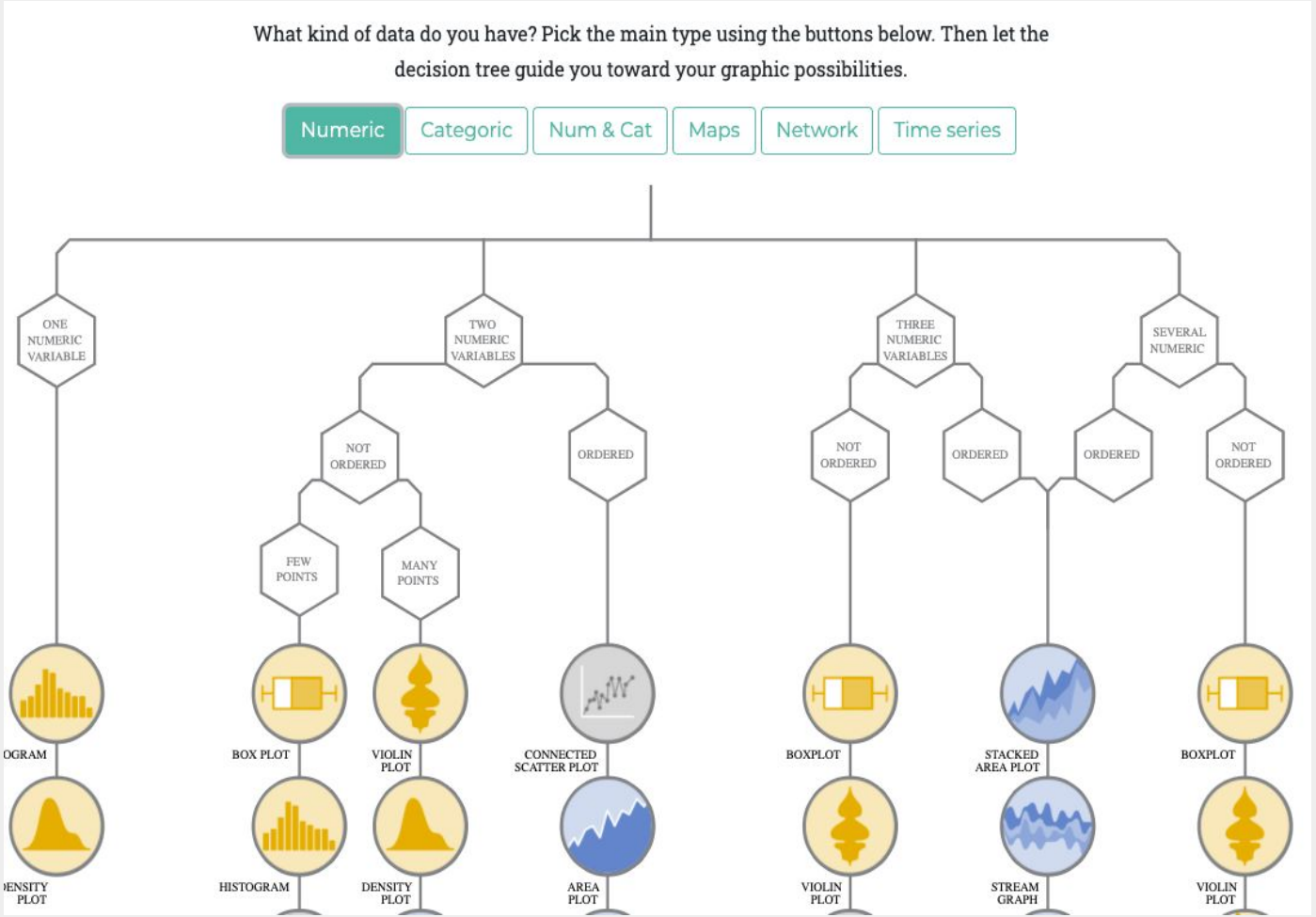
Dataviz project



[The Data Visualization Catalog]

[RAWGraphs]

[Text visualization]

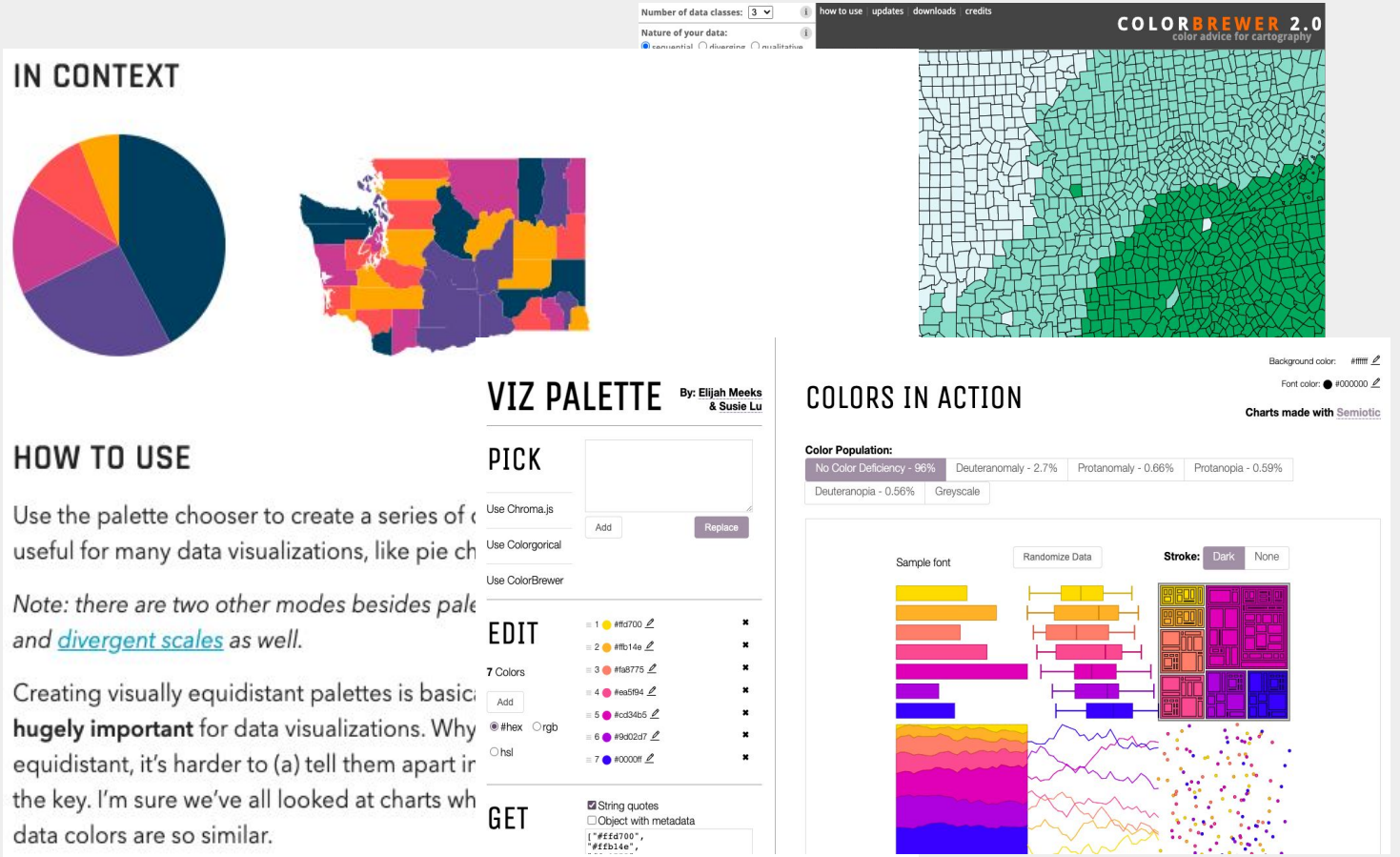


From Data to Viz

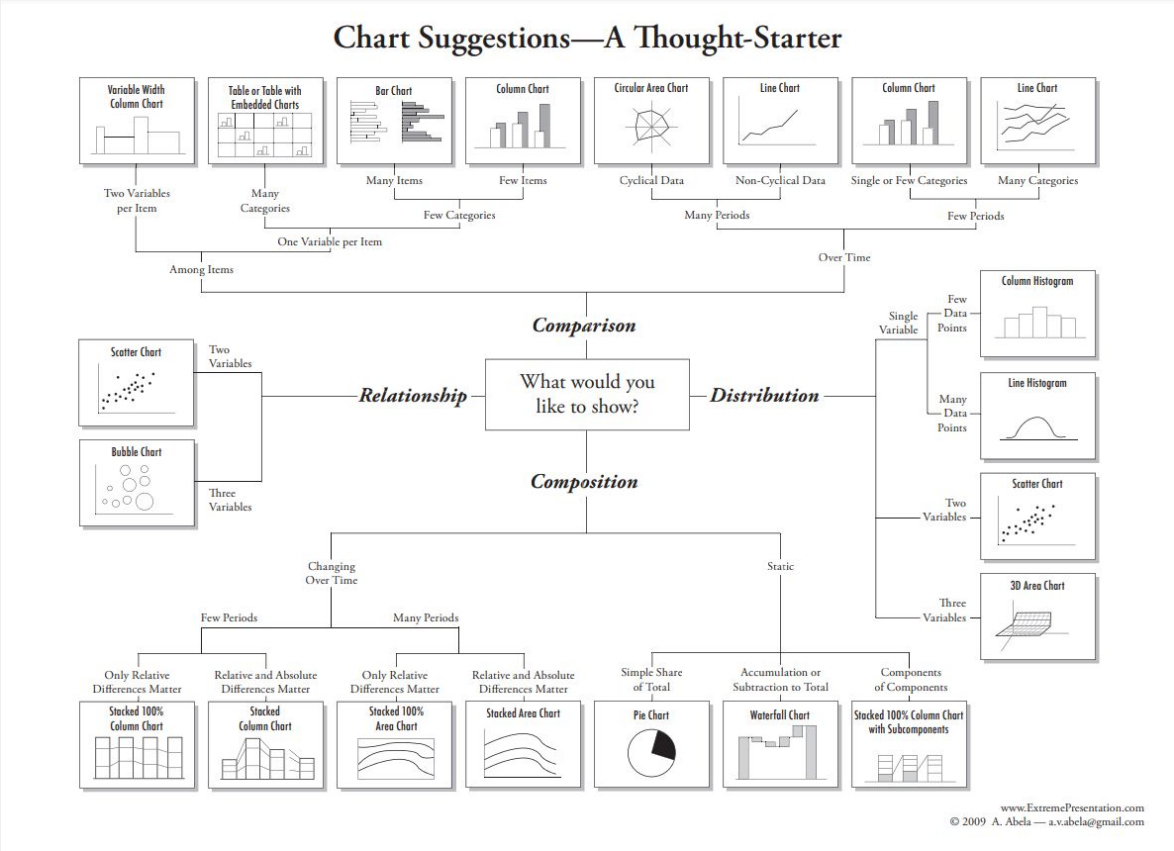
[Data Color Picker]

[Viz Palette]

[Color Brewer]



Andrew Abela is the founding dean of the Busch School of Business and Ordinary Professor of Marketing at The Catholic University of America, in Washington, D.C.



BEFORE CONTINUING,
ASK THESE QUESTIONS

- Does the visualization **answer** what I want to convey?
- Is the **purpose** of what is shown clear?
- Can it be **understood** in less than 30 seconds without effort?
- Does it include guides or instructions on how to **interpret** it?

Turning data into stories

What comes first?

The idea of what you want to communicate and then search and find the data

Explore datasets and then get an idea

What can I do with a raw dataset?

Explore and analyze your data

Interrogate and question the data

Analyzing my data

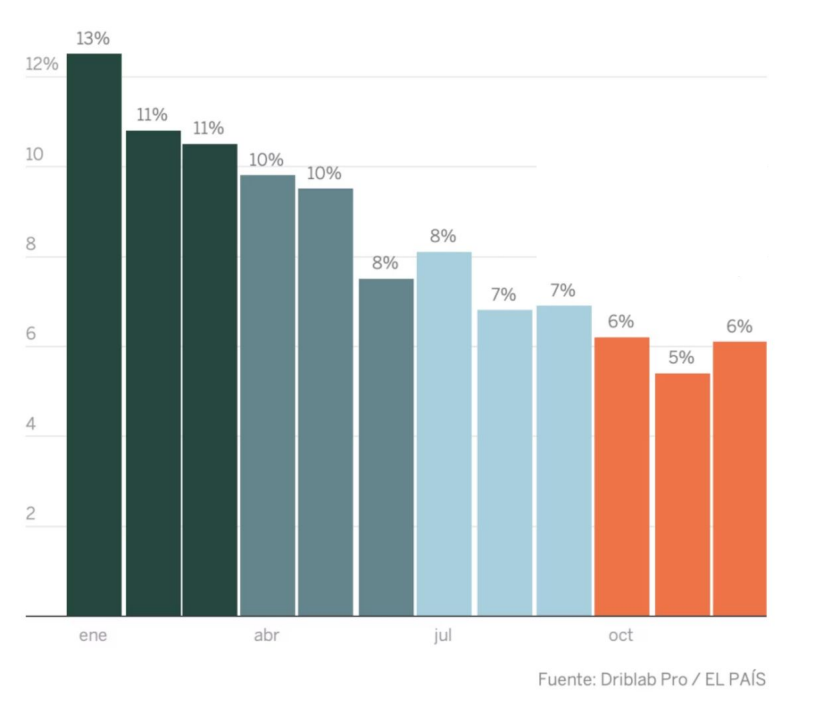
The data (hundreds, thousands or even millions of rows) by itself does not tell us anything interesting.

A short **Exploratory Data Analysis** (EDA) of ours variables can give us much more information than we think

Mean, median, max, min, standard deviation

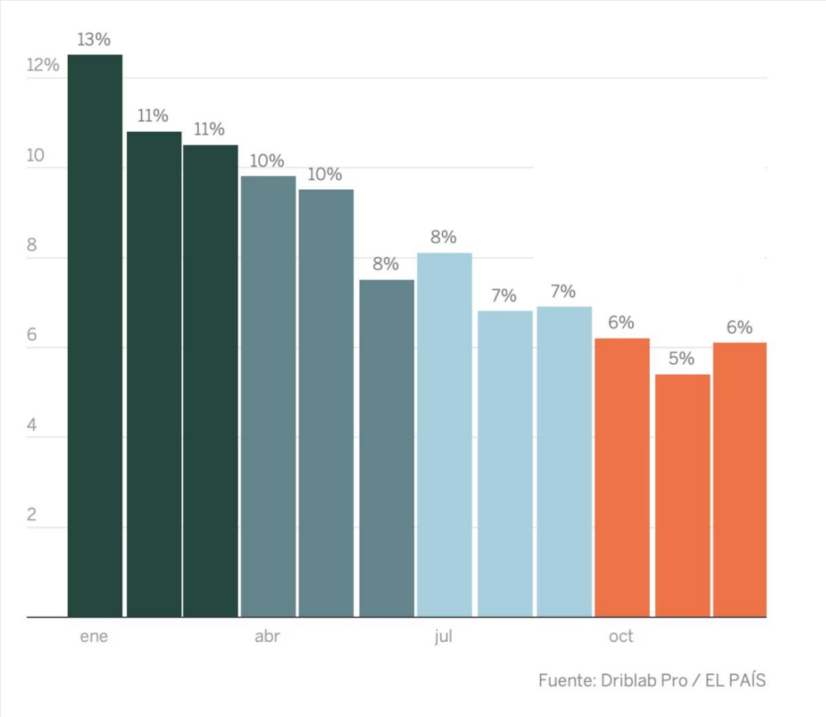
Questioning and investigating serves to create stories

Birth months of professional footballers

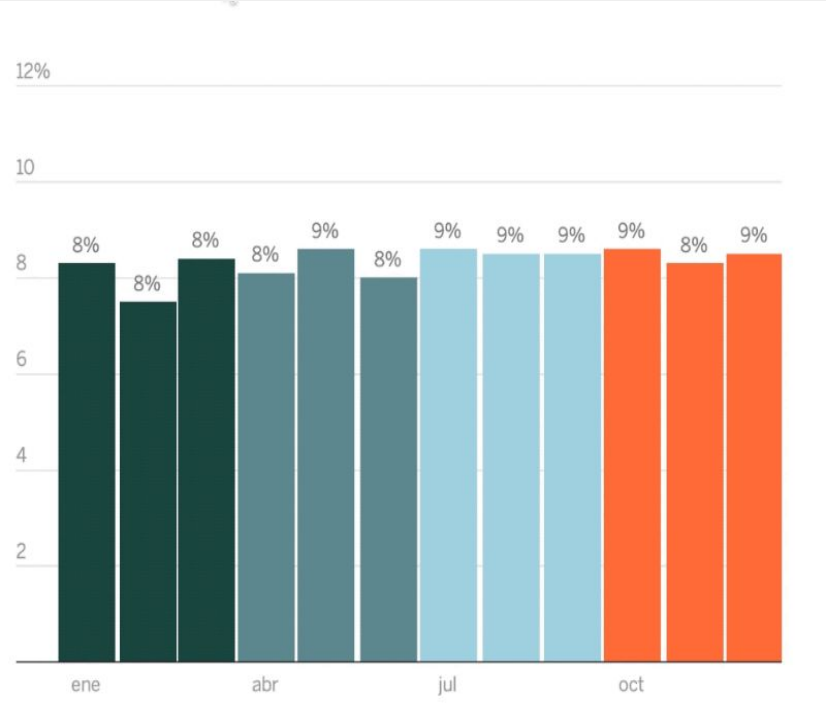


Questioning and investigating serves to create stories

Birth months of professional footballers



General birth month



“13% of professional footballers are born in January”

Title based on one data

It has no story behind

We must **go further**:
this information is only
the beginning

What is the story behind this title?

“13% of professional footballers are born in January”

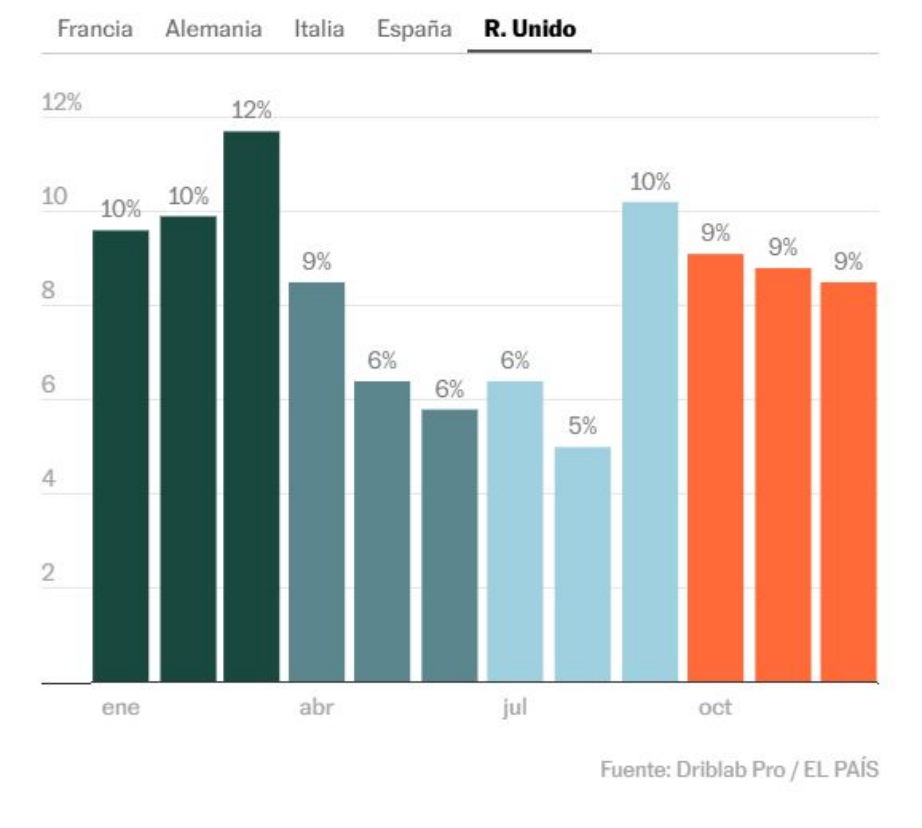
“13% of professional footballers are born in January”

January boys and girls are the oldest in their teams

15% older, possibly stronger and more skilled

You're more likely to be one of the best, you'll start more games, and your coaches will pay more attention to you

Data does not always behave the same way



What do you want people to remember?

“13% of professional footballers are born in January”

The effect that being born in one month or another has on your professional future.

How to improve your data-driven story

Personify the data

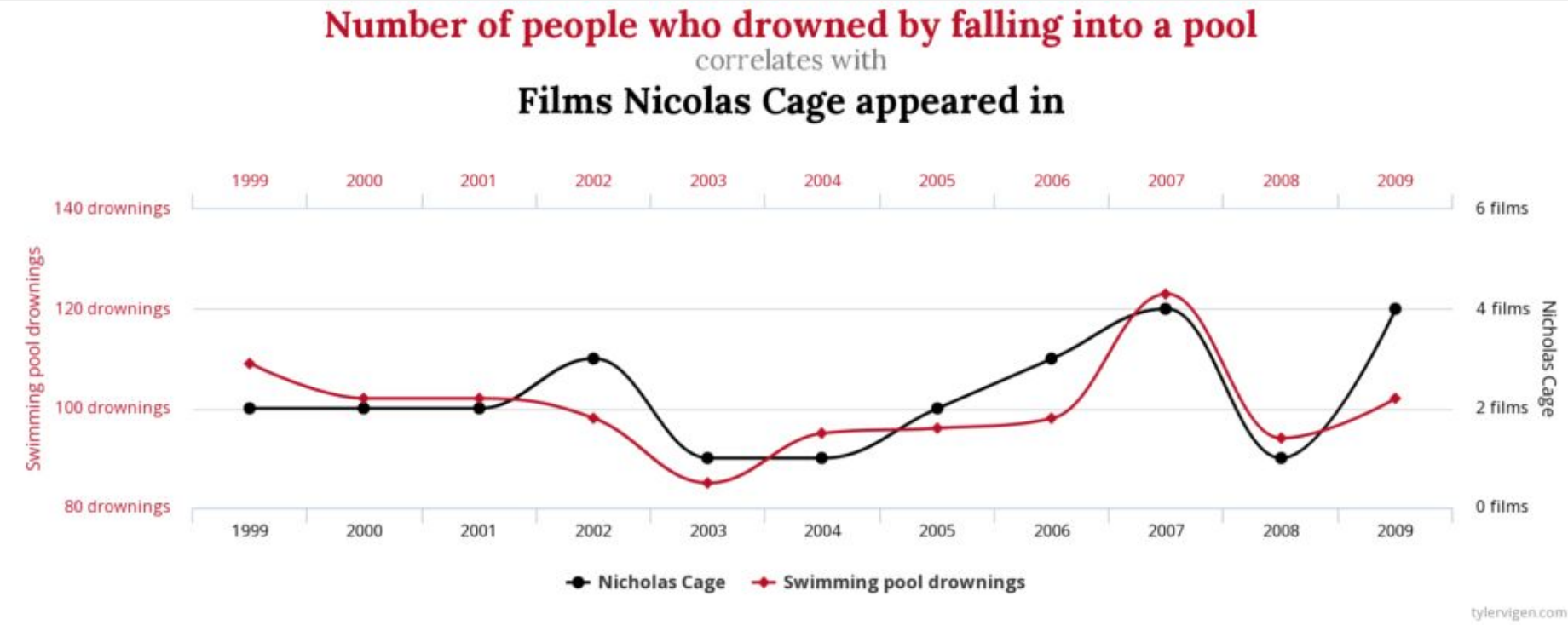
Telling the story through real people helps the audience remember what you want to convey

Rules & Tips

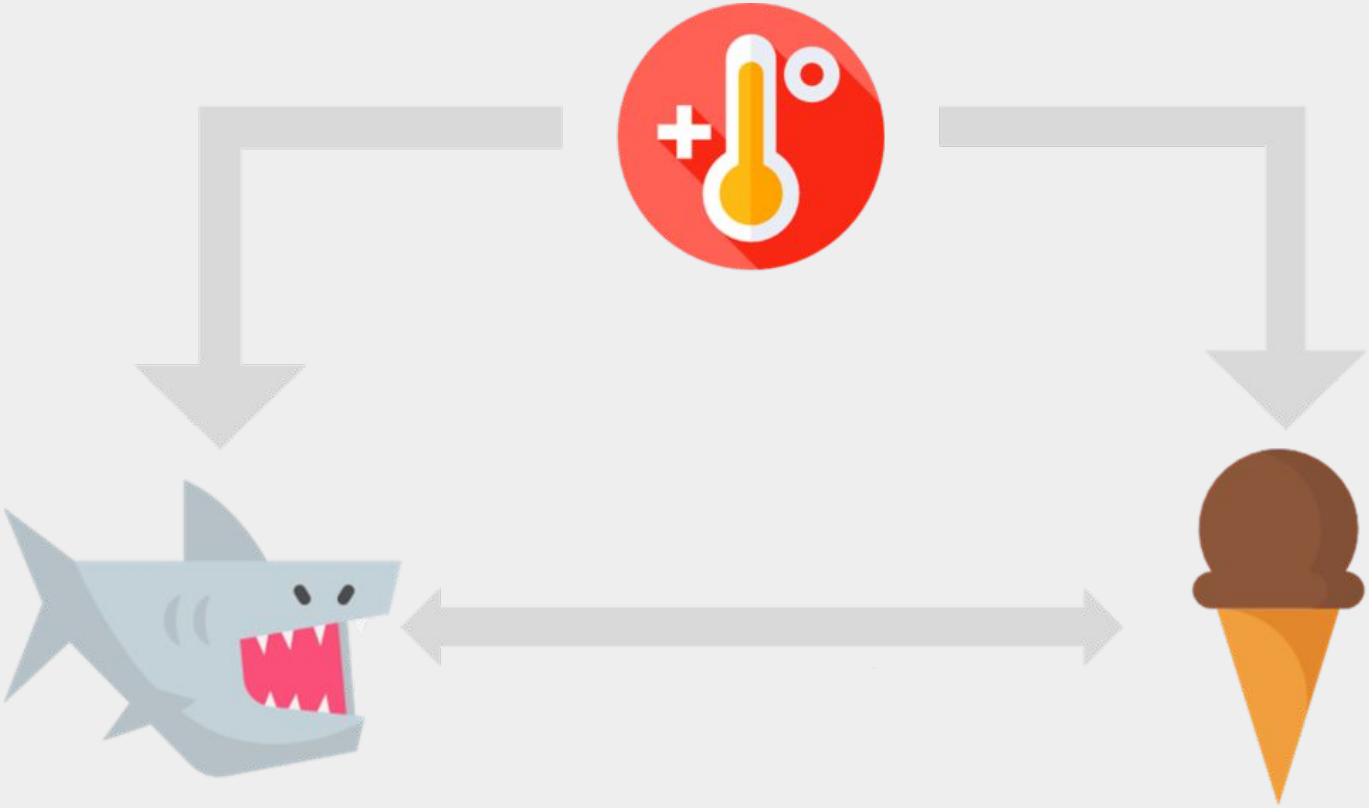
Question things and don’t take anything for granted

Data is rarely a coincidence

Correlation does not imply causation



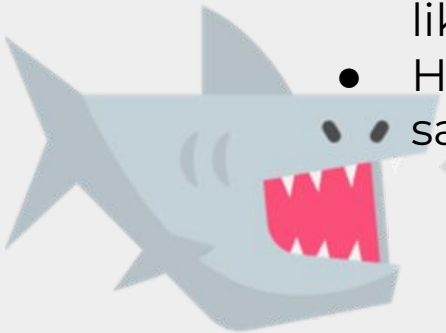
Correlation does not imply causation

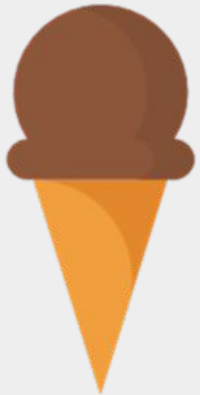


Correlation does not imply causation

spurious correlation: the underlying factor is temperature.

- Warmer weather leads to more people swimming in the ocean, increasing the likelihood of shark encounters
- Hotter days also drive higher ice cream sales





Improve the reader's understanding

Translate the numbers into proportions
that are easier to understand

Use analogies to make large numbers
easier to understand

Translate the numbers into proportions that are easier to understand

NUEVO INFORME

Casi 13 millones de personas viven en riesgo de pobreza en España

La Red de Lucha contra la Pobreza y la Exclusión Social en el Estado Español ha publicado un nuevo informe que refleja el aumento de la pobreza infantil y la dificultad para llegar a fin de mes de la mitad de la población. Detrás de la cifras están algunos factores como la subida de la cesta de la compra o los alquileres.

ondacero.es
Madrid | 04.06.2024 11:39

"Almost 13 million people live at risk of poverty in Spain"

NUEVO INFORME

One in every four Spaniards is at risk of poverty

La Red de Lucha contra la Pobreza y la Exclusión Social en el Estado Español ha publicado un nuevo informe que refleja el aumento de la pobreza infantil y la dificultad para llegar a fin de mes de la mitad de la población. Detrás de la cifras están algunos factores como la subida de la cesta de la compra o los alquileres.

ondacero.es
Madrid | 04.06.2024 11:39

Translate the numbers into proportions that are easier to understand

32,8% of young people cannot afford to buy a house

One-third of young people cannot afford to buy a house

Use analogies to make large numbers easier to understand

It is estimated that there were
between 55 and 60 million casualties in
World War II

Use analogies to make large numbers easier to understand

It is estimated that there were between 55 and 60 million casualties in World War II

It's almost the total population of Portugal, the Netherlands, and Poland combined

Use analogies to make large numbers easier to understand

80,000 people have been affected by
the severe wildfires in the United States

Use analogies to make large numbers easier to understand

80,000 people have been affected by
the severe wildfires in the United States

It's as if the Santiago Bernabéu
stadium were full of those affected

Structuring the story

Context → Problem → Data → Insight → Call to Action

1- Context

There is a fact that catches our attention

↓

The global problem of plastic pollution

↓

12 million tonnes of plastic is dumped into the ocean every year (Eunomia, 2016)

2- Problem

Why is this a problem? / How does the context affect it?

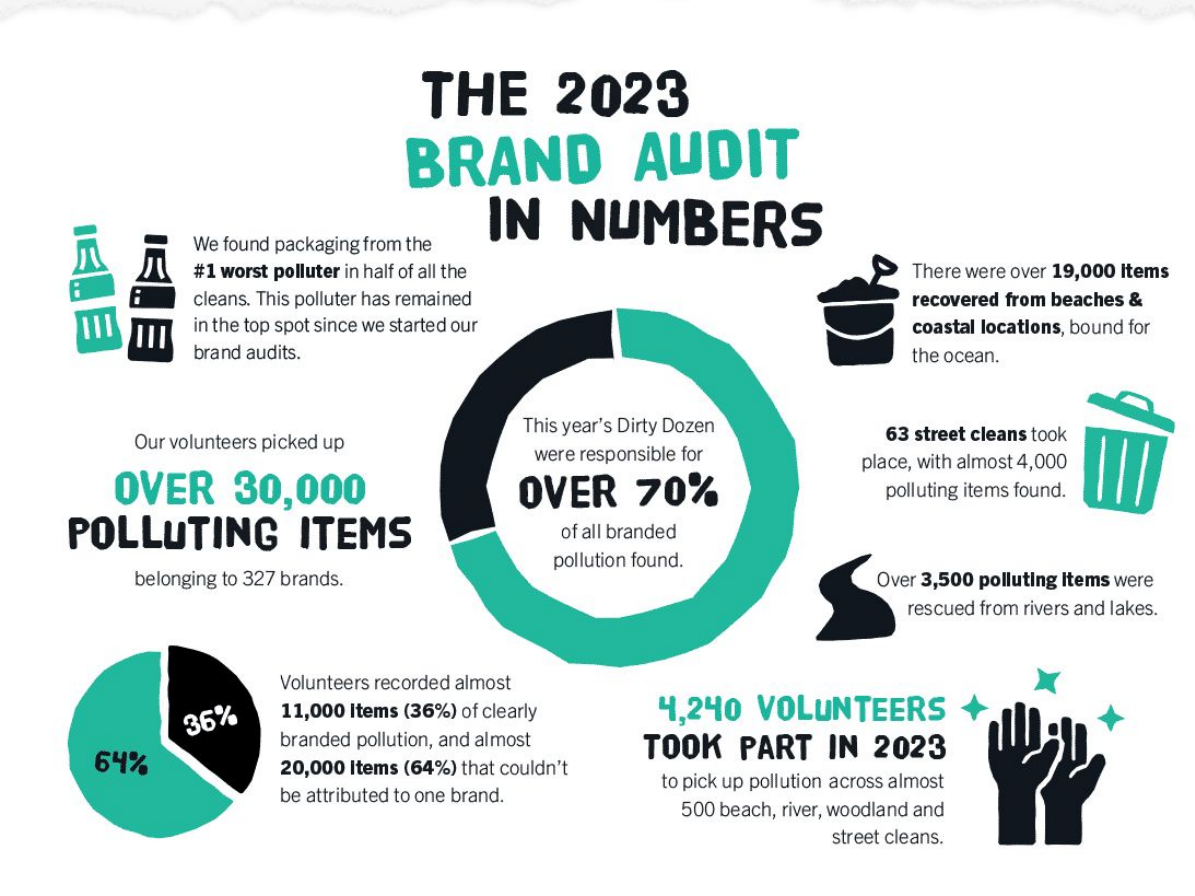
How does it affect marine life?

100,000 marine mammals and turtles and 1 million sea birds are killed by marine plastic pollution every year. (UK Government, 2018)

3- Data

The data is present throughout the entire narrative, but in this part, it takes on a special prominence

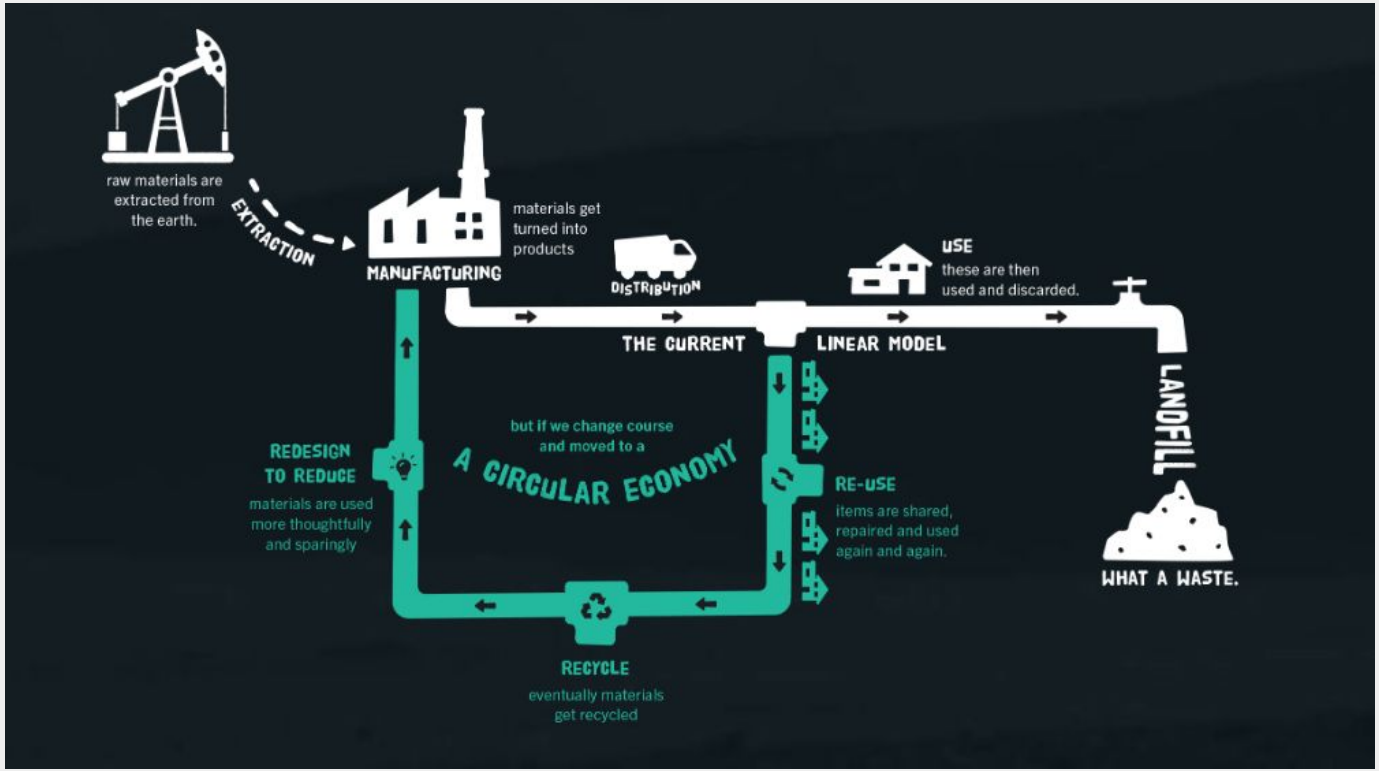
3- Data


THE 2023
BRAND AUDIT
IN NUMBERS
We found packaging from the **#1 worst polluter** in half of all the cleans. This polluter has remained in the top spot since we started our brand audits.
There were over **19,000 items recovered from beaches & coastal locations**, bound for the ocean.
This year's Dirty Dozen were responsible for
OVER 70%
of all branded pollution found.
Our volunteers picked up
OVER 30,000
POLLUTING ITEMS
belonging to 327 brands.
63 street cleans took place, with almost 4,000 polluting items found.
Over **3,500 polluting items** were rescued from rivers and lakes.
36%
64%
Volunteers recorded almost **11,000 items (36%)** of clearly branded pollution, and almost **20,000 items (64%)** that couldn't be attributed to one brand.
4,240 VOLUNTEERS
TOOK PART IN 2023
to pick up pollution across almost 500 beach, river, woodland and street cleans.

3- Data


DIRTY DOZEN
#1
THE Coca-Cola COMPANY
FOUND IN 50% OF ALL AUDITS
1,820 POLLUTING ITEMS
RESPONSIBLE FOR 17% OF BRANDED POLLUTION FOUND
ACROSS 15 DIFFERENT PRODUCT BRANDS
#2
McDonald's
FOUND IN 19% OF ALL AUDITS
1,220 POLLUTING ITEMS
RESPONSIBLE FOR 11% OF BRANDED POLLUTION FOUND
ACROSS JUST ONE PRODUCT BRAND
#3
PEPSICO
FOUND IN 27% OF ALL AUDITS
976 POLLUTING ITEMS
RESPONSIBLE FOR 9% OF BRANDED POLLUTION FOUND
ACROSS 6 DIFFERENT PRODUCT BRANDS
#4
Mondelēz International
777 POLLUTING ITEMS
#5
ABInBev
628 POLLUTING ITEMS
#6
TESCO PLC
408 POLLUTING ITEMS
#7
HARIBO
389 POLLUTING ITEMS
#8
Nestlé
381 POLLUTING ITEMS
#9
MARS
303 POLLUTING ITEMS
#10
HEINEKEN
294 POLLUTING ITEMS
#11
Carlsberg Group
260 POLLUTING ITEMS
#12
Red Bull
227 POLLUTING ITEMS

3- Data


raw materials are extracted from the earth.
EXTRACTION
MANUFACTURING
materials get turned into products
DISTRIBUTION
USE
these are then used and discarded.
THE CURRENT
LINEAR MODEL
LANDFILL
WHAT A WASTE.
but if we change course and moved to a
A CIRCULAR ECONOMY
REDESIGN TO REDUCE
materials are used more thoughtfully and sparingly
RE-USE
items are shared, repaired and used again and again.
RECYCLE
eventually materials get recycled

4- Insight

Provide context to the data

These levels of pollution have an irreparable effect on marine life

5- Call to action

What we can do about this problem?

Reducing single-use plastic consumption by 50% could reduce plastic pollution in the oceans by 30% by 2030 (Plastic Pollution Coalition, 2023)

It is not always possible to tell a story with data: success and "failure" cases

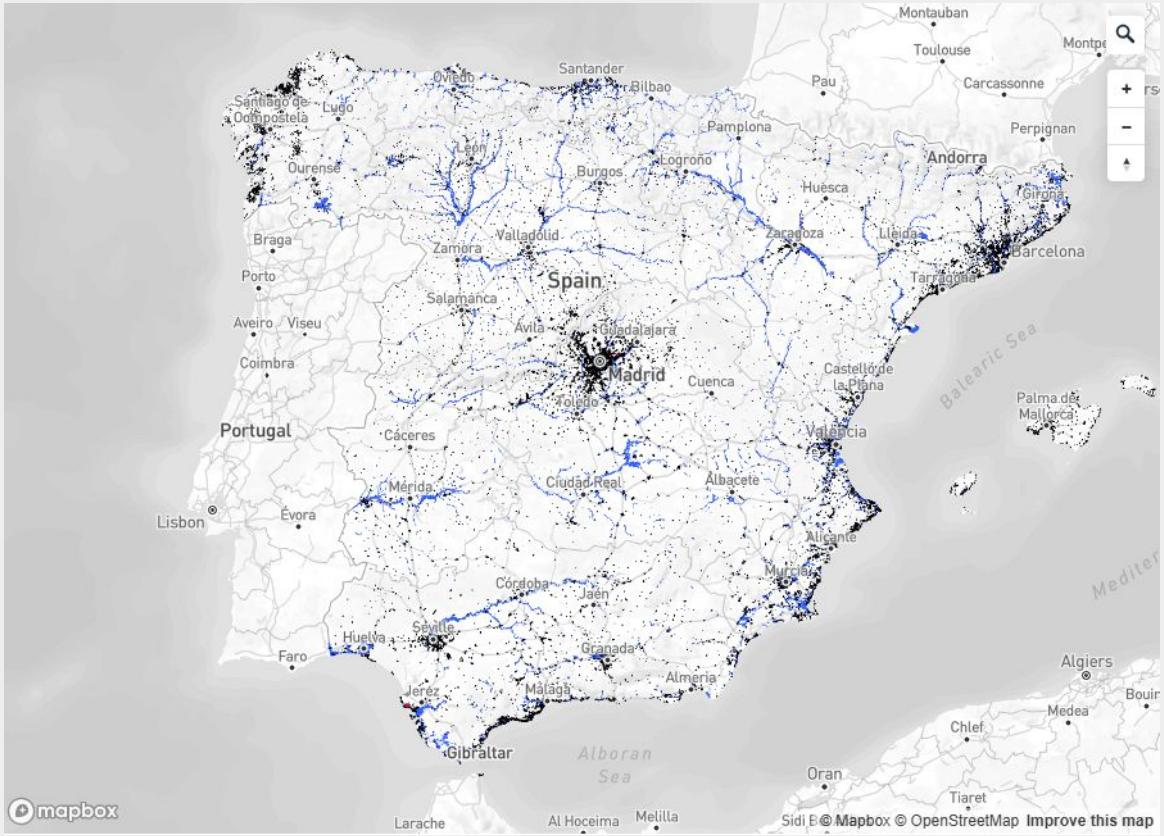
Again: what comes first?

The idea of what you want to communicate and then search and find the data

Explore datasets and then get an idea


CHARCUTERÍA
Y
SALAZONES
MARÍA
Loterías y
Apuestas del
Estado

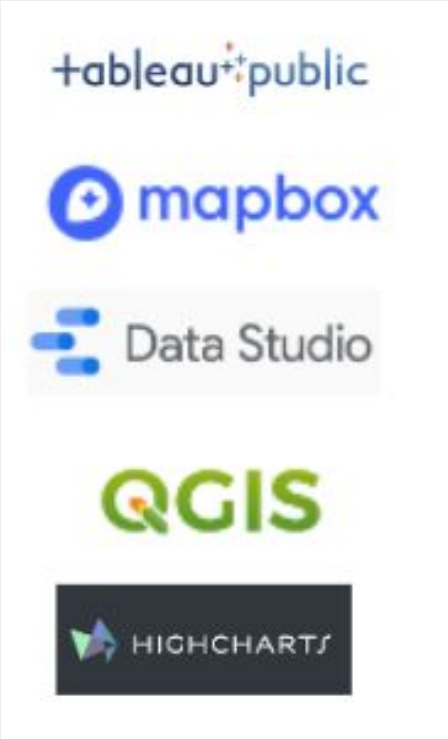
MAP | Nearly 200,000 Buildings at Risk of Flooding, Street by Street



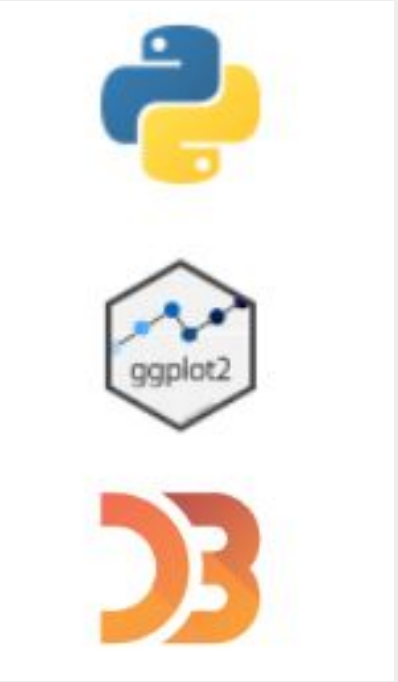
Software: What tool are we going to use?

No coding & free & easy

No coding & free & not so easy



Coding & free & difficult



Exercise 1

What Can Neighboring Countries Learn from Austria's Clean Air?

1. Data exploration. In groups, check the data and decide:
   - What specific data will we focus on?
   - What story do we want to tell?
   - What visuals best tell this story?

2. Data Source: Our World in Data: https://ourworldindata.org/cleanest-air-lessons

3. Visualization Tool: Datawrapper (www.datawrapper.de)

Exercise 1

- **What specific data will we focus on?**
  Per capita sulphur dioxide emissions

- **What story do we want to tell?**
  In the last 40 years, all Central European countries have reduced their sulphur dioxide emissions, with Austria leading the way, but none more so than Italy. Why?

- **What visuals best tell this story?**
  First: how countries have their dropped their emissions

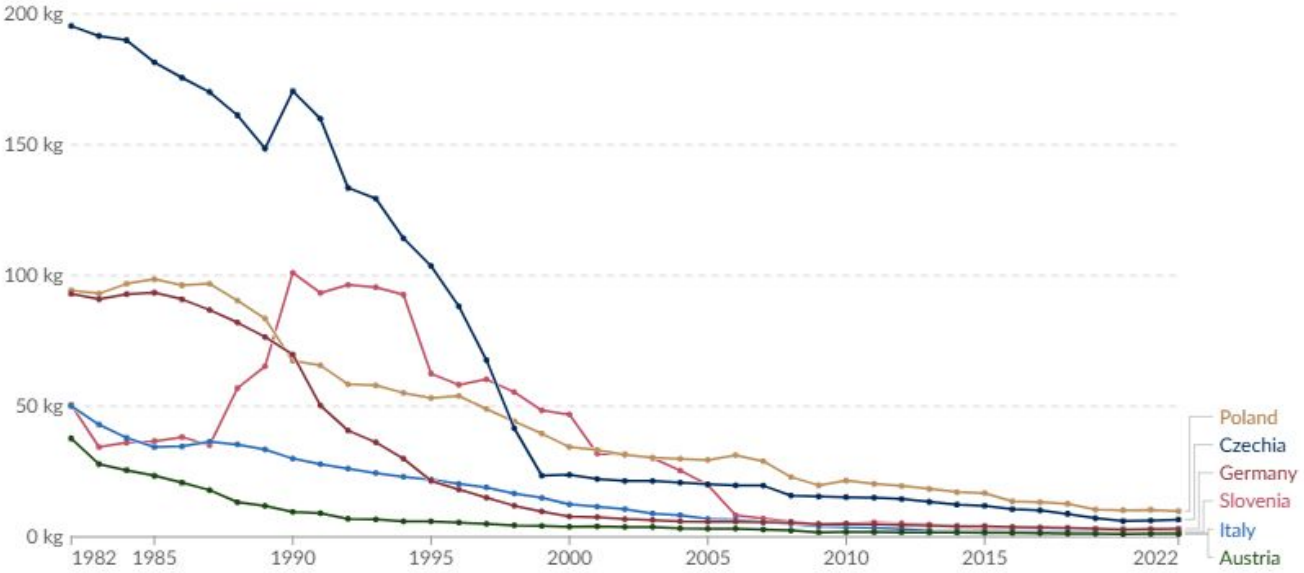
Per capita sulphur dioxide emissions

Sulphur dioxide (SO_2) is an air pollutant formed from the burning of fuels that contain sulphur, such as coal. SO_2 is one of the main chemicals that forms acid rain.

Our World in Data

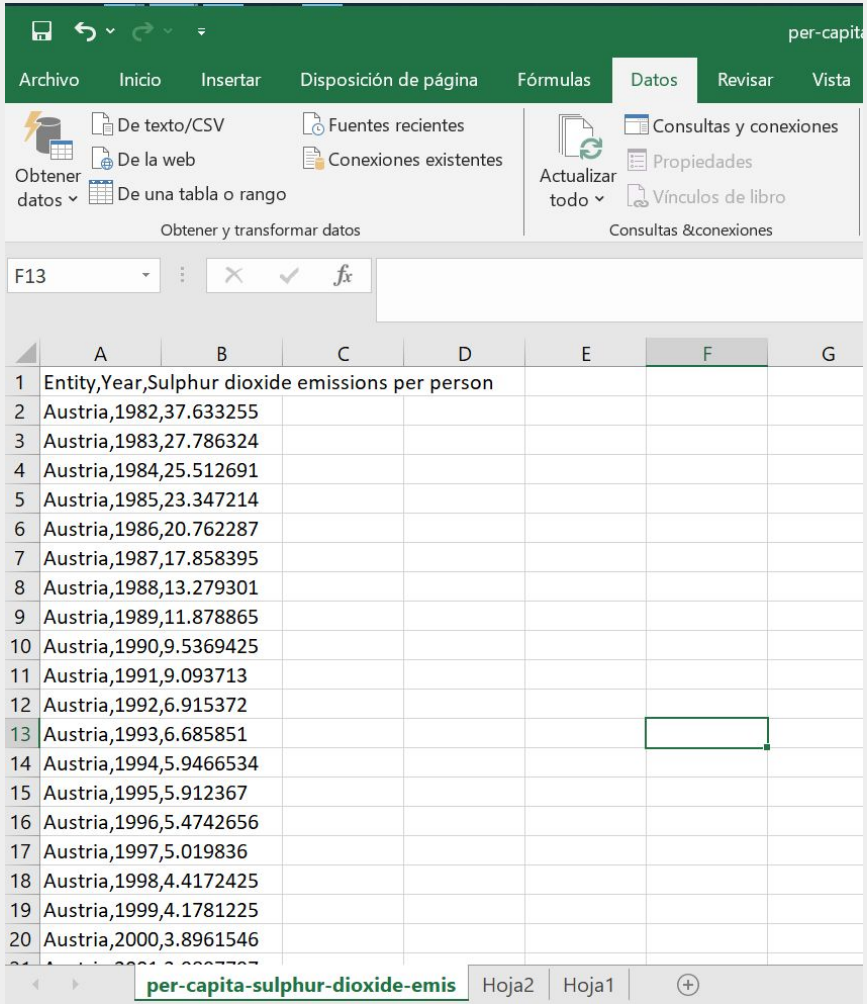
Table | Map | Chart

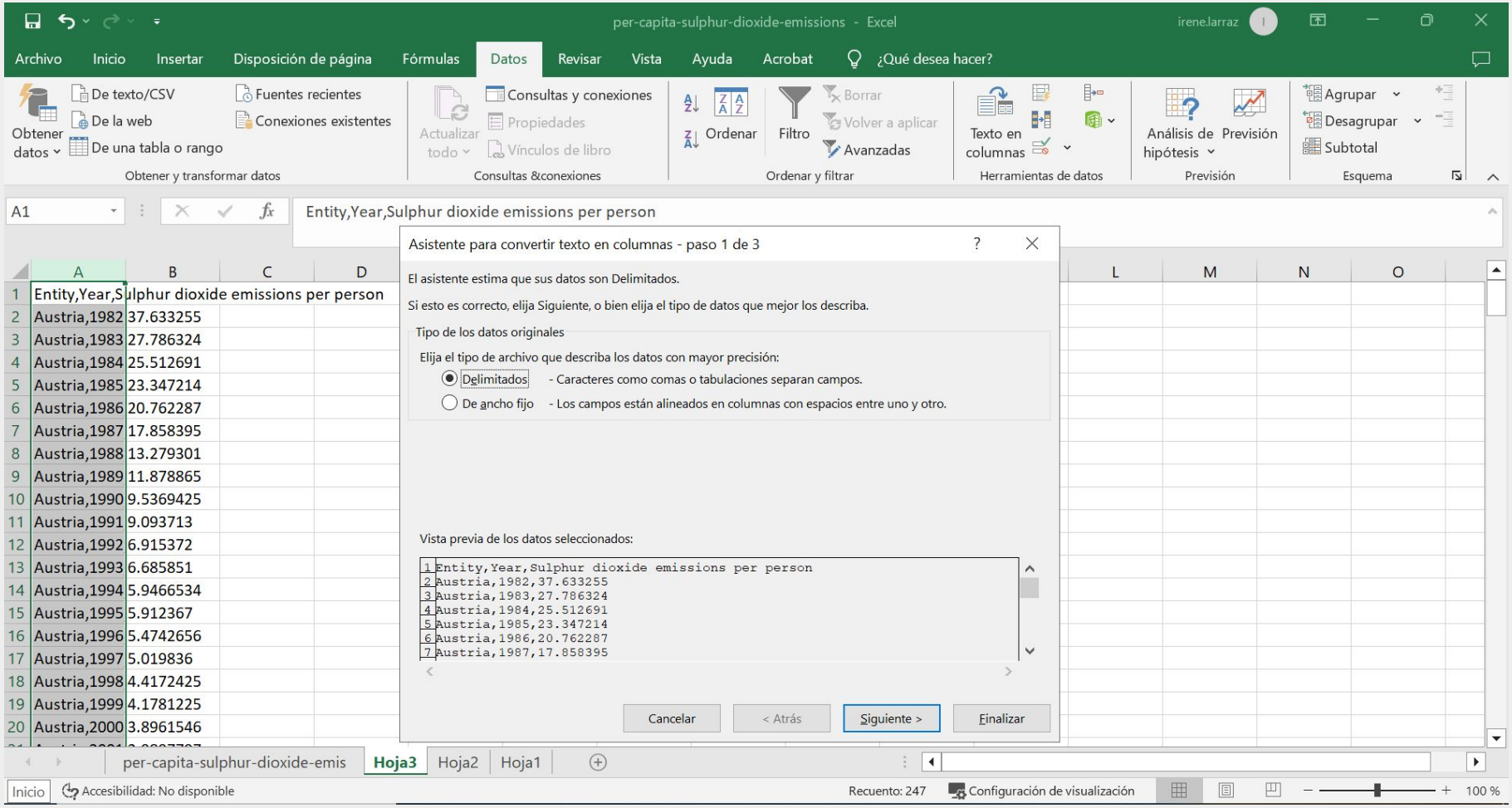
Edit countries and regions | Settings



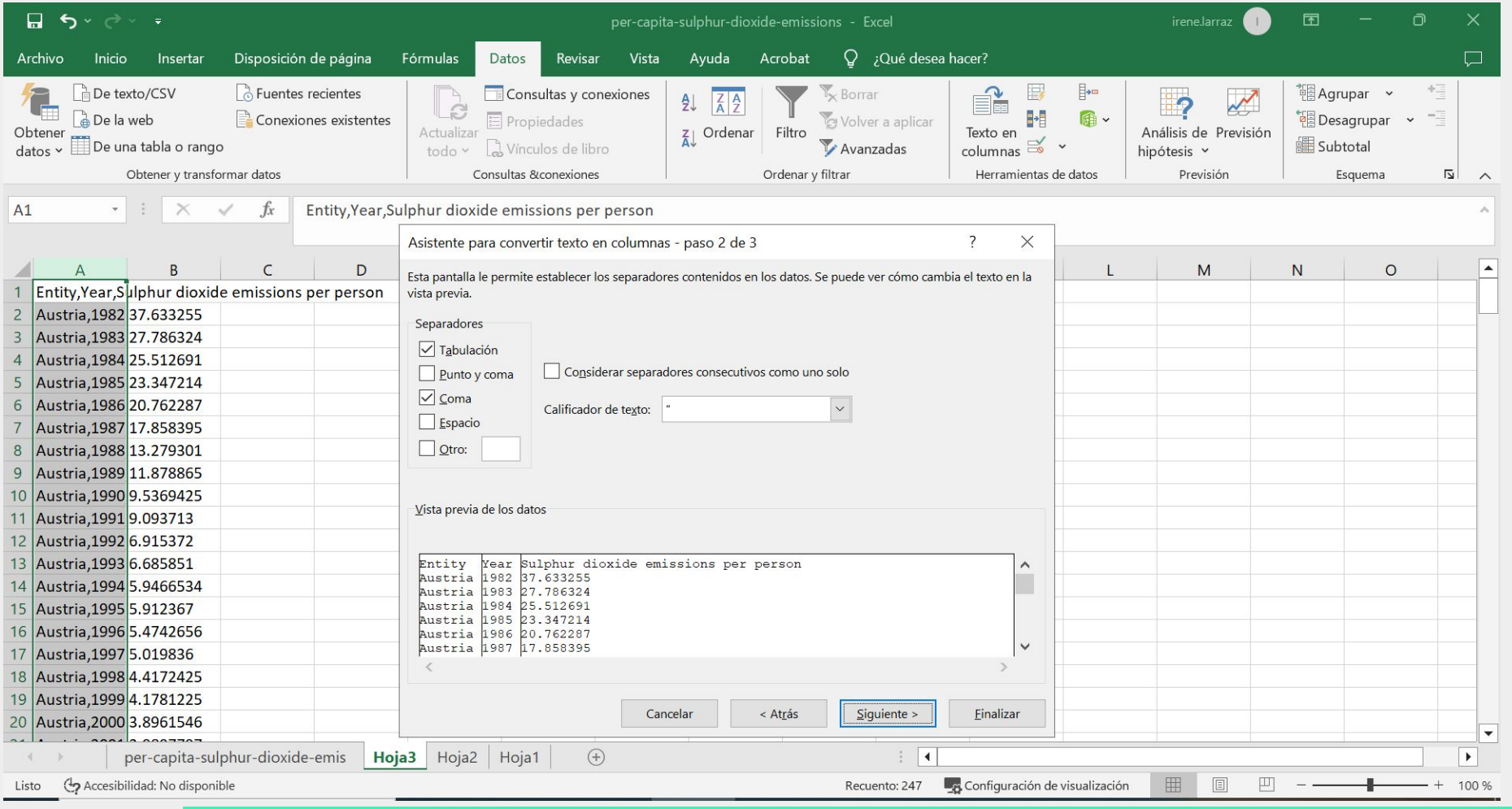
1750 — 2022

Data source: Community Emissions Data System (CEDS) 2024. – Learn more about this data


per-capita
Archivo
Inicio
Insertar
Disposición de página
Fórmulas
Datos
Revisar
Vista
Obtener datos
De texto/CSV
De la web
De una tabla o rango
Fuentes recientes
Conexiones existentes
Obtener y transformar datos
Actualizar todo
Consultas y conexiones
Propiedades
Vínculos de libro
Consultas &conexiones
F13
Entity,Year,Sulphur dioxide emissions per person
Austria,1982,37.633255
Austria,1983,27.786324
Austria,1984,25.512691
Austria,1985,23.347214
Austria,1986,20.762287
Austria,1987,17.858395
Austria,1988,13.279301
Austria,1989,11.878865
Austria,1990,9.5369425
Austria,1991,9.093713
Austria,1992,6.915372
Austria,1993,6.685851
Austria,1994,5.9466534
Austria,1995,5.912367
Austria,1996,5.4742656
Austria,1997,5.019836
Austria,1998,4.4172425
Austria,1999,4.1781225
Austria,2000,3.8961546
per-capita-sulphur-dioxide-emis
Hoja2
Hoja1



	A	B	C	D
1	Entity,Year,Sulphur dioxide emissions per person			
2	Austria,1982	37.633255		
3	Austria,1983	27.786324		
4	Austria,1984	25.512691		
5	Austria,1985	23.347214		
6	Austria,1986	20.762287		
7	Austria,1987	17.858395		
8	Austria,1988	13.279301		
9	Austria,1989	11.878865		
10	Austria,1990	9.5369425		
11	Austria,1991	9.093713		
12	Austria,1992	6.915372		
13	Austria,1993	6.685851		
14	Austria,1994	5.9466534		
15	Austria,1995	5.912367		
16	Austria,1996	5.4742656		
17	Austria,1997	5.019836		
18	Austria,1998	4.4172425		
19	Austria,1999	4.1781225		
20	Austria,2000	3.8961546		



	A	B	C	D	L	M	N	O
1	Entity,Year,Sulphur dioxide emissions per person							
2	Austria,1982	37.633255						
3	Austria,1983	27.786324						
4	Austria,1984	25.512691						
5	Austria,1985	23.347214						
6	Austria,1986	20.762287						
7	Austria,1987	17.858395						
8	Austria,1988	13.279301						
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19	Austria,1999	4.1781225						
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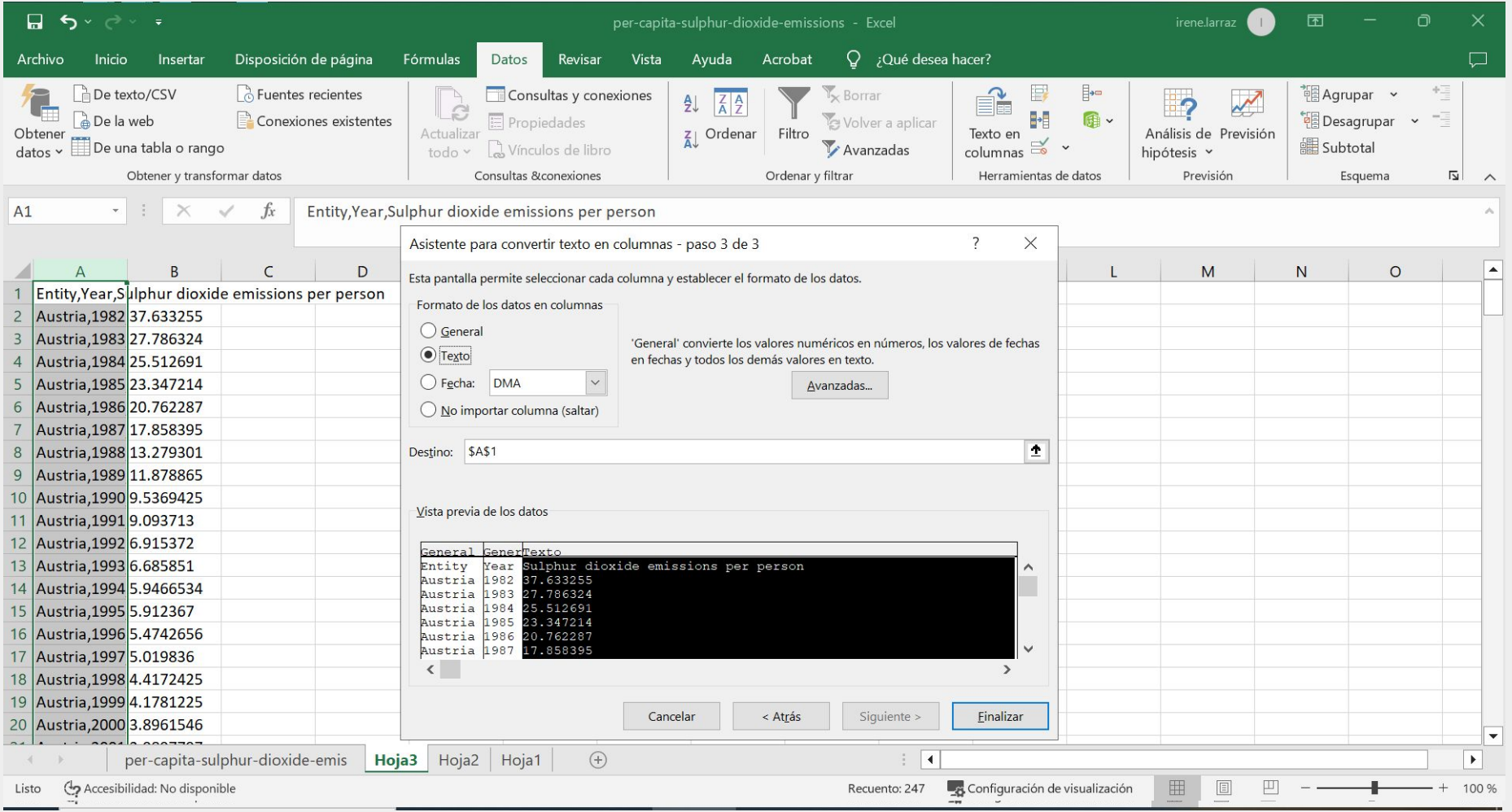
per-capita-sulphur-dioxide-emissions - Excel
irene.larraz
Archivo Inicio Insertar Disposición de página Fórmulas Datos Revisar Vista Ayuda Acrobat ¿Qué desea hacer?
Obtener datos
De texto/CSV
De la web
De una tabla o rango
Fuentes recientes
Conexiones existentes
Obtener y transformar datos
Actualizar todo
Consultas y conexiones
Propiedades
Vínculos de libro
Consultas &conexiones
Ordenar
Filtro
Borrar
Volver a aplicar
Avanzadas
Ordenar y filtrar
Texto en columnas
Herramientas de datos
Análisis de hipótesis
Previsión
Previsión
Agrupar
Desagrupar
Subtotal
Esquema
A1
Entity,Year,Sulphur dioxide emissions per person
Asistente para convertir texto en columnas - paso 3 de 3
Esta pantalla permite seleccionar cada columna y establecer el formato de los datos.
Formato de los datos en columnas
General
Texto
Fecha: DMA
No importar columna (saltar)
'General' convierte los valores numéricos en números, los valores de fechas en fechas y todos los demás valores en texto.
Avanzadas...
Destino: A1
Vista previa de los datos
General General Texto
Entity Year Sulphur dioxide emissions per person
Austria 1982 37.633255
Austria 1983 27.786324
Austria 1984 25.512691
Austria 1985 23.347214
Austria 1986 20.762287
Austria 1987 17.858395
Cancelar
< Atrás
Siguiente >
Finalizar
Entity,Year,Sulphur dioxide emissions per person
Austria,1982 37.633255
Austria,1983 27.786324
Austria,1984 25.512691
Austria,1985 23.347214
Austria,1986 20.762287
Austria,1987 17.858395
Austria,1988 13.279301
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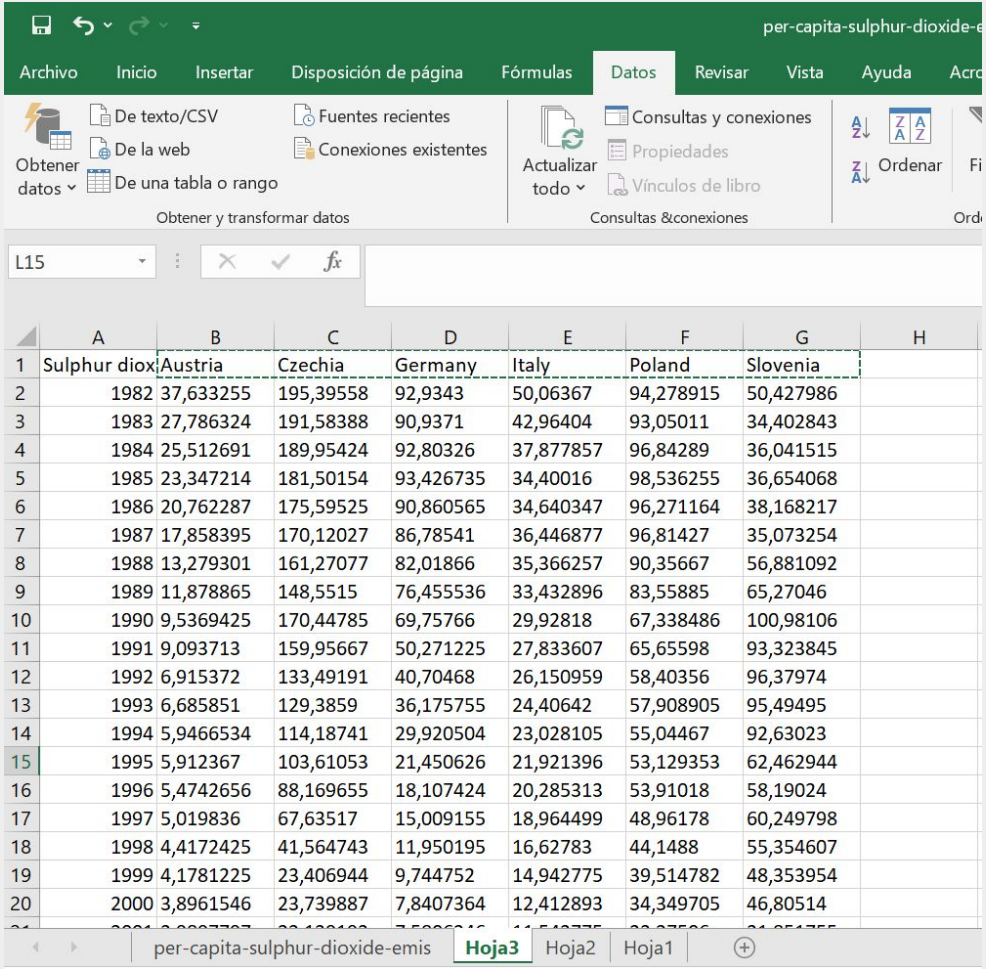
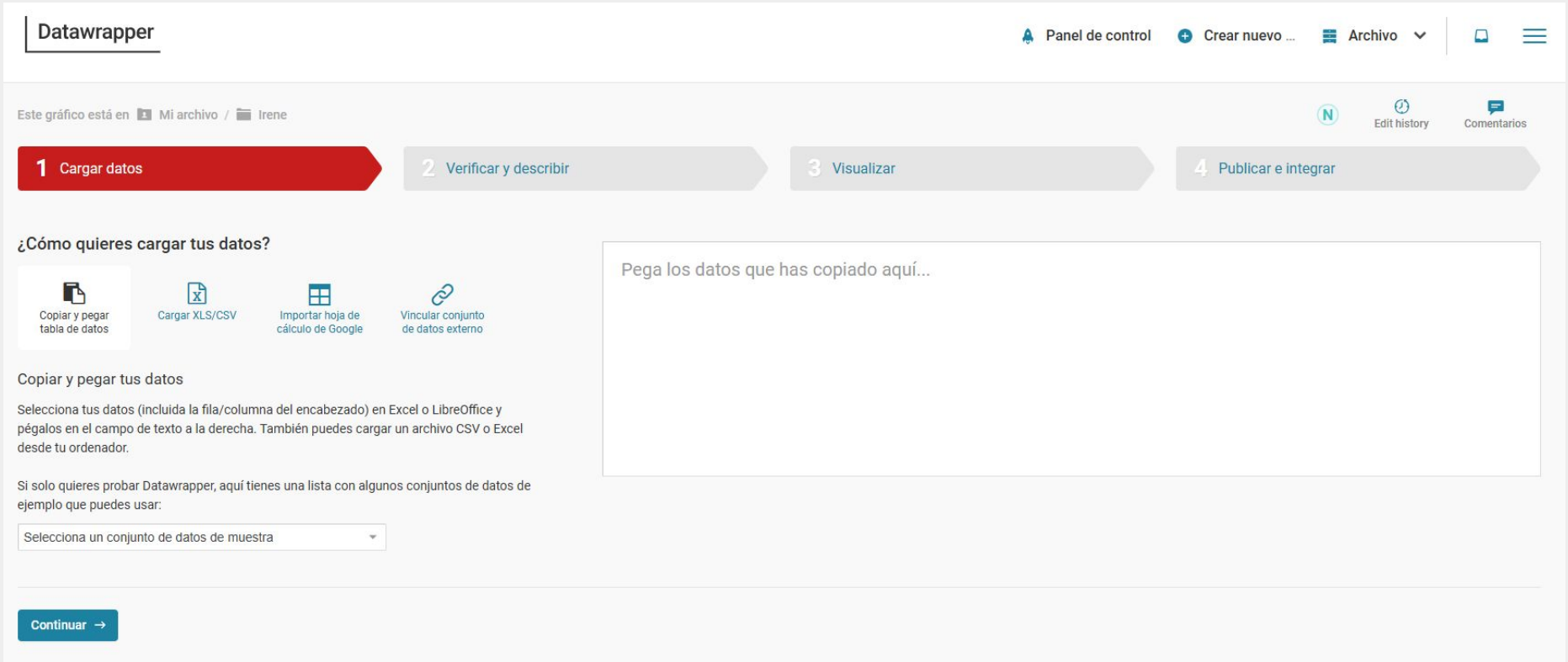
Austria,1995 5.912367
Austria,1996 5.4742656
Austria,1997 5.019836
Austria,1998 4.4172425
Austria,1999 4.1781225
Austria,2000 3.8961546
per-capita-sulphur-dioxide-emis
Hoja3
Hoja2
Hoja1
Listo
Accesibilidad: No disponible
Recuento: 247
Configuración de visualización
100 %



	A	B	C	D	E	F	G	H
1	Sulphur diox	Austria	Czechia	Germany	Italy	Poland	Slovenia	
2	1982	37,633255	195,39558	92,9343	50,06367	94,278915	50,427986	
3	1983	27,786324	191,58388	90,9371	42,96404	93,05011	34,402843	
4	1984	25,512691	189,95424	92,80326	37,877857	96,84289	36,041515	
5	1985	23,347214	181,50154	93,426735	34,40016	98,536255	36,654068	
6	1986	20,762287	175,59525	90,860565	34,640347	96,271164	38,168217	
7	1987	17,858395	170,12027	86,78541	36,446877	96,81427	35,073254	
8	1988	13,279301	161,27077	82,01866	35,366257	90,35667	56,881092	
9	1989	11,878865	148,5515	76,455536	33,432896	83,55885	65,27046	
10	1990	9,5369425	170,44785	69,75766	29,92818	67,338486	100,98106	
11	1991	9,093713	159,95667	50,271225	27,833607	65,65598	93,323845	
12	1992	6,915372	133,49191	40,70468	26,150959	58,40356	96,37974	
13	1993	6,685851	129,3859	36,175755	24,40642	57,908905	95,49495	
14	1994	5,9466534	114,18741	29,920504	23,028105	55,04467	92,63023	
15	1995	5,912367	103,61053	21,450626	21,921396	53,129353	62,462944	
16	1996	5,4742656	88,169655	18,107424	20,285313	53,91018	58,19024	
17	1997	5,019836	67,63517	15,009155	18,964499	48,96178	60,249798	
18	1998	4,4172425	41,564743	11,950195	16,62783	44,1488	55,354607	
19	1999	4,1781225	23,406944	9,744752	14,942775	39,514782	48,353954	
20	2000	3,8961546	23,739887	7,8407364	12,412893	34,349705	46,80514	

Country	Reduction
Italy	-97,5
Austria	-96,8
Germany	-96,7
Czechia	-96,6
Slovenia	-96,4
Poland	-89,5


Datawrapper
Panel de control
Crear nuevo ...
Archivo
Este gráfico está en Mi archivo / Irene
Edit history
Comentarios
1 Cargar datos
2 Verificar y describir
3 Visualizar
4 Publicar e integrar
¿Cómo quieres cargar tus datos?
Copiar y pegar tabla de datos
Cargar XLS/CSV
Importar hoja de cálculo de Google
Vincular conjunto de datos externo
Pega los datos que has copiado aquí...
Copiar y pegar tus datos
Selecciona tus datos (incluida la fila/columna del encabezado) en Excel o LibreOffice y pégalos en el campo de texto a la derecha. También puedes cargar un archivo CSV o Excel desde tu ordenador.
Si solo quieres probar Datawrapper, aquí tienes una lista con algunos conjuntos de datos de ejemplo que puedes usar:
Selecciona un conjunto de datos de muestra
Continuar →

Datawrapper

Panel de control | Crear nuevo ... | Archivo

Este gráfico está en Mi archivo / Irene

Edit history | Comentarios

1 Cargar datos | 2 Verificar y describir | 3 Visualizar | 4 Publicar e integrar

¿Cómo quieres cargar tus datos?

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Selecciona un conjunto de datos de muestra

Sulphur dioxide emissions per person	Austria	Czechia	Germany	Italy	Poland	Slovenia
1982	37,633255	195,39558	92,9343	50,06367	94,278915	50,427986
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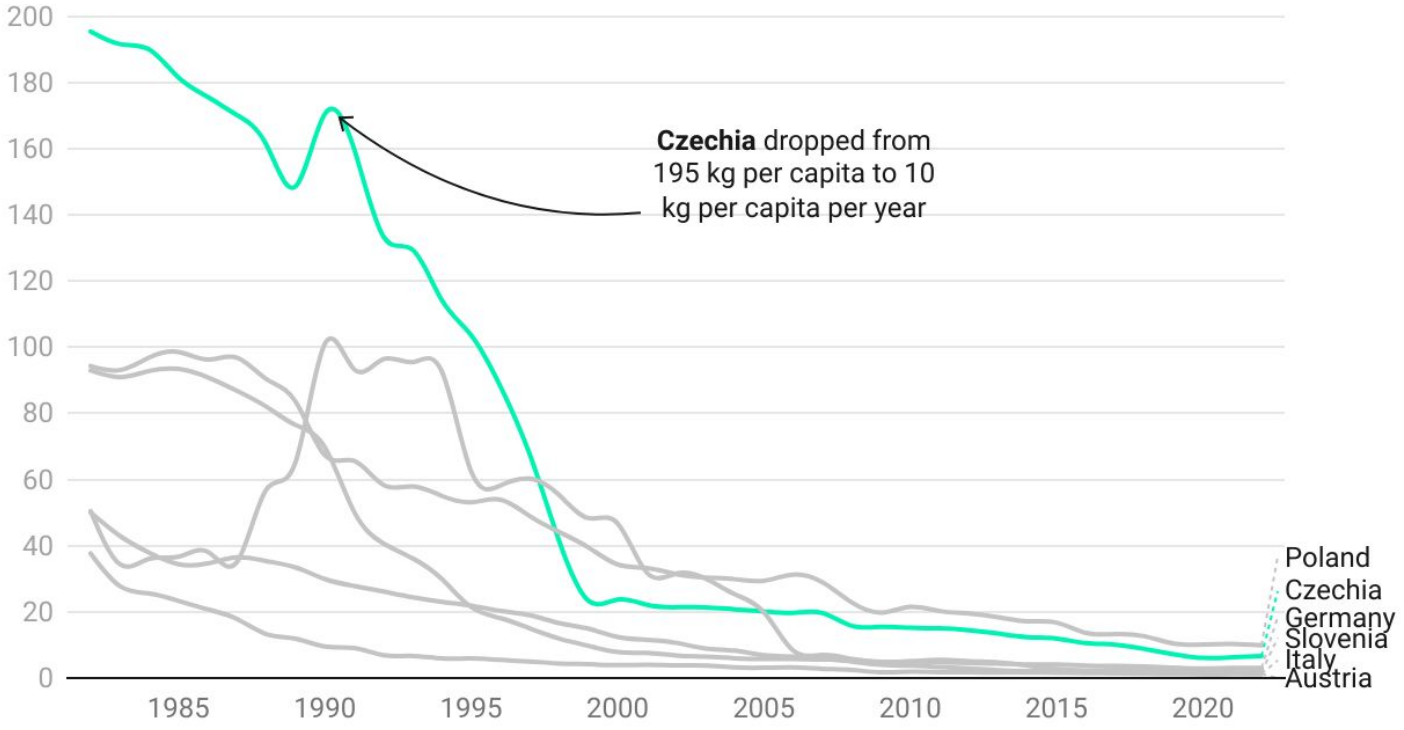
1989	11,878865	148,5515	76,455536	33,432896	83,55885	65,27046
1990	9,5369425	170,44785	69,75766	29,92818	67,338486	100,98106
1991	9,093713	159,95667	50,271225	27,833607	65,65598	93,323845
1992	6,915372	133,49191	40,70468	26,150959	58,40356	96,37974
1993	6,685851	129,3859	36,175755	24,40642	57,908905	95,49495

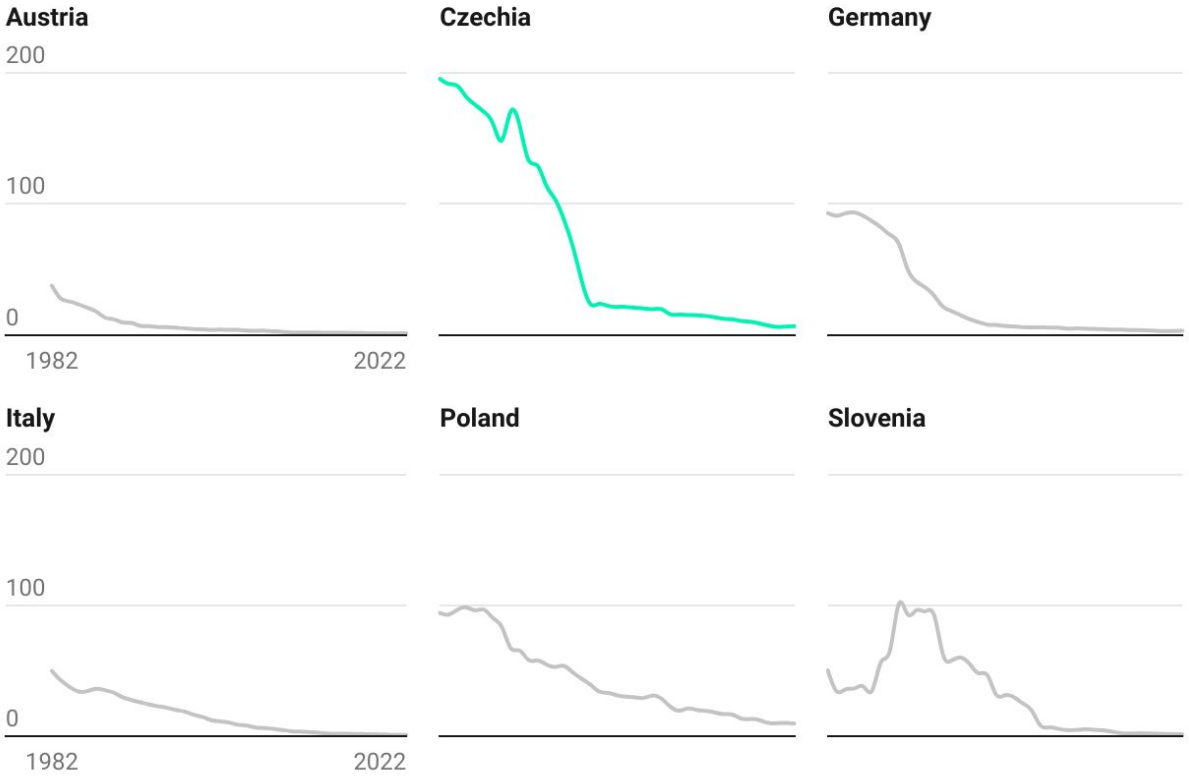
Continuar →

Per capita sulphur dioxide emissions

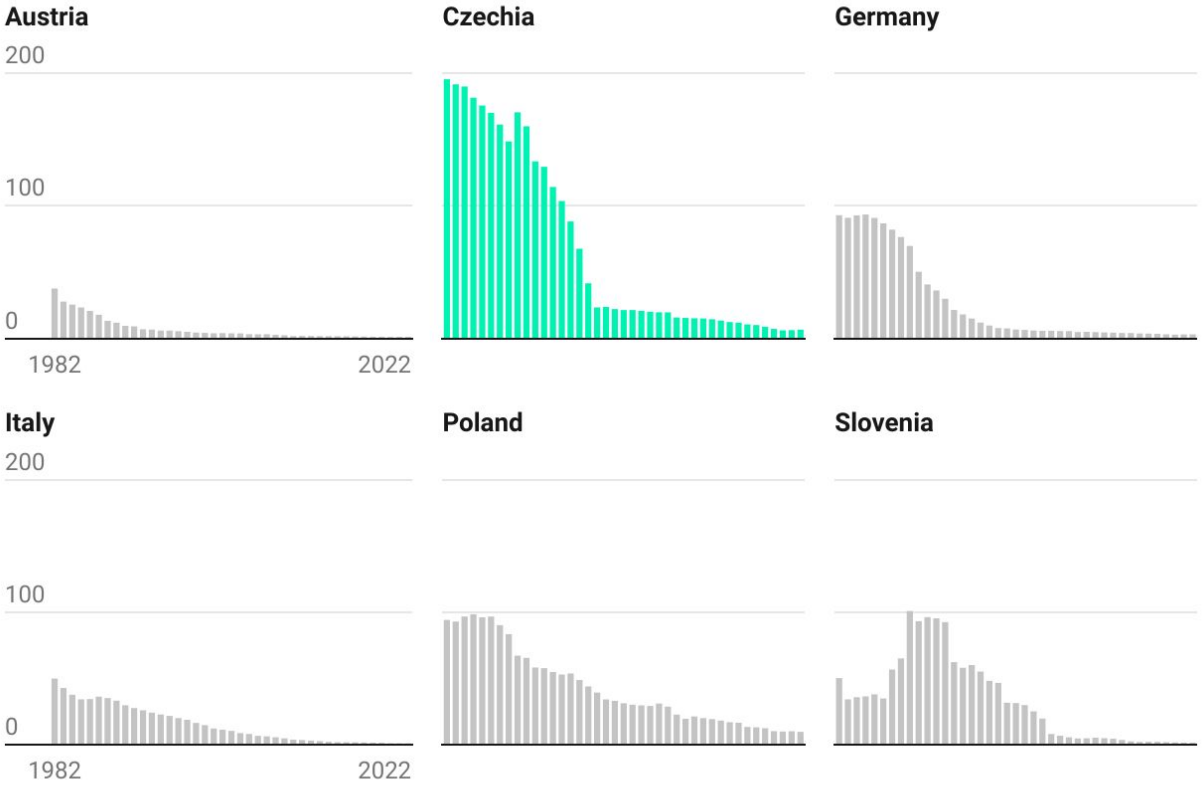


Creado con Datawrapper

Per capita sulphur dioxide emissions

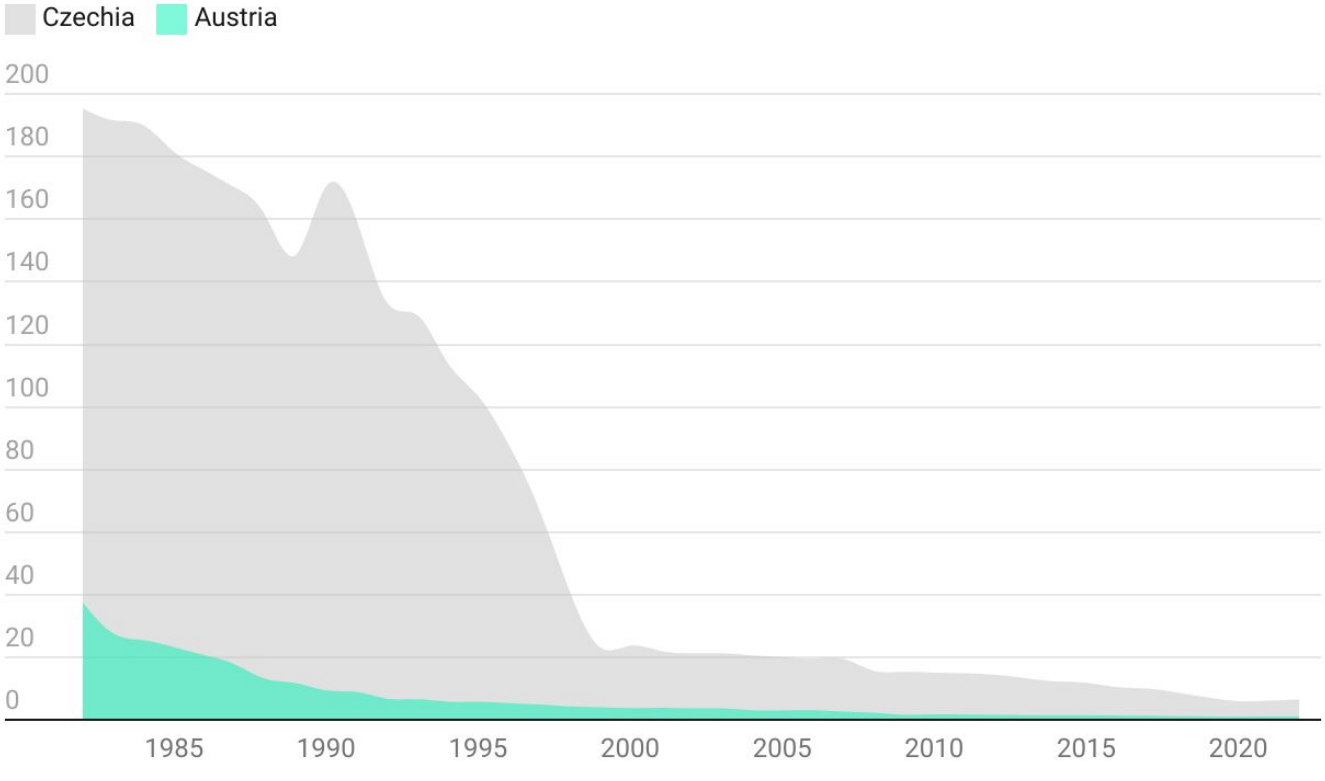


Per capita sulphur dioxide emissions



Creado con Datawrapper

Per capita sulphur dioxide emissions



Creado con Datawrapper

What data do you have?

Any story to share?

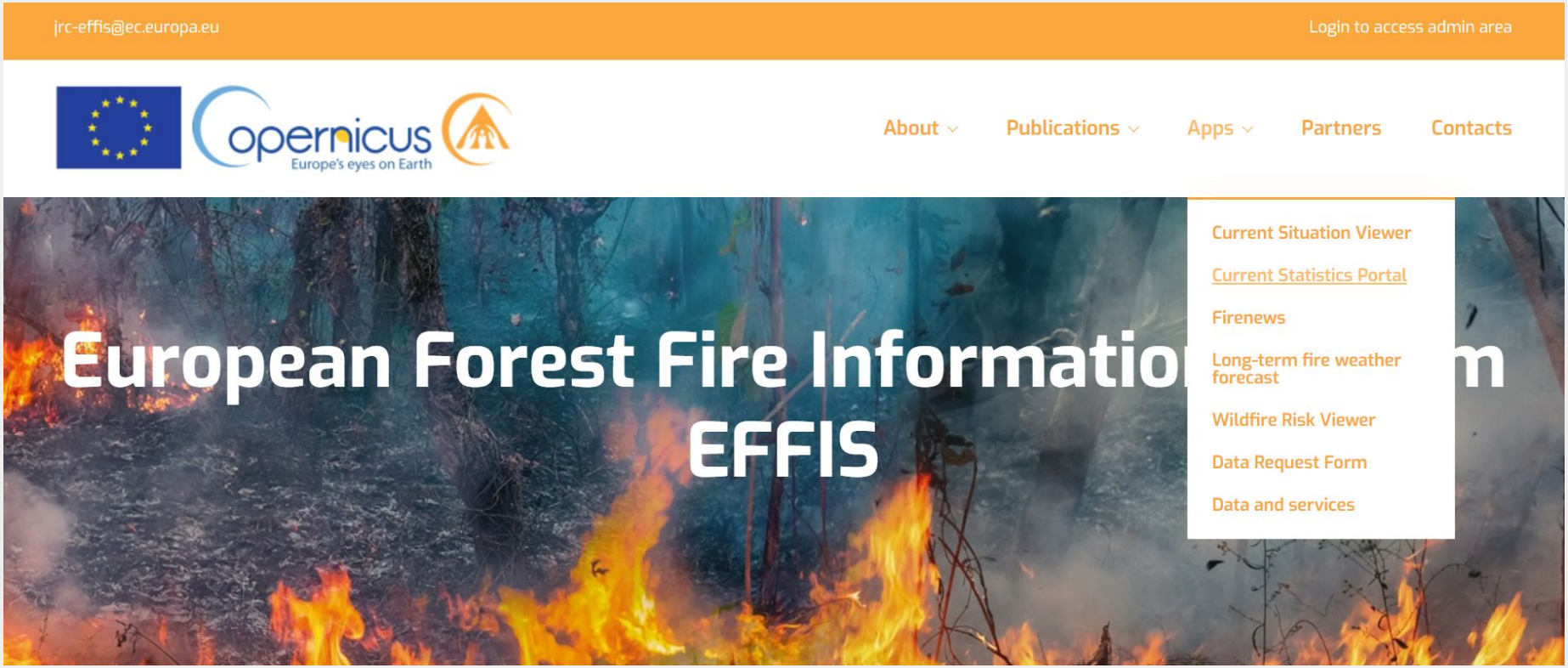
Any graphic you'd like to improve?

Exercise 2

Spain and Portugal share forest fires every summer along their border. Their teams must coordinate, and Interreg has launched a new project to address this need. To explain why it's necessary, we will show the number of fires that take place in this region.

- What specific data will we focus on?
- What story do we want to tell?
- What visuals best tell this story?

Data: https://forest-fire.emergency.copernicus.eu/apps/effis.statistics/estimates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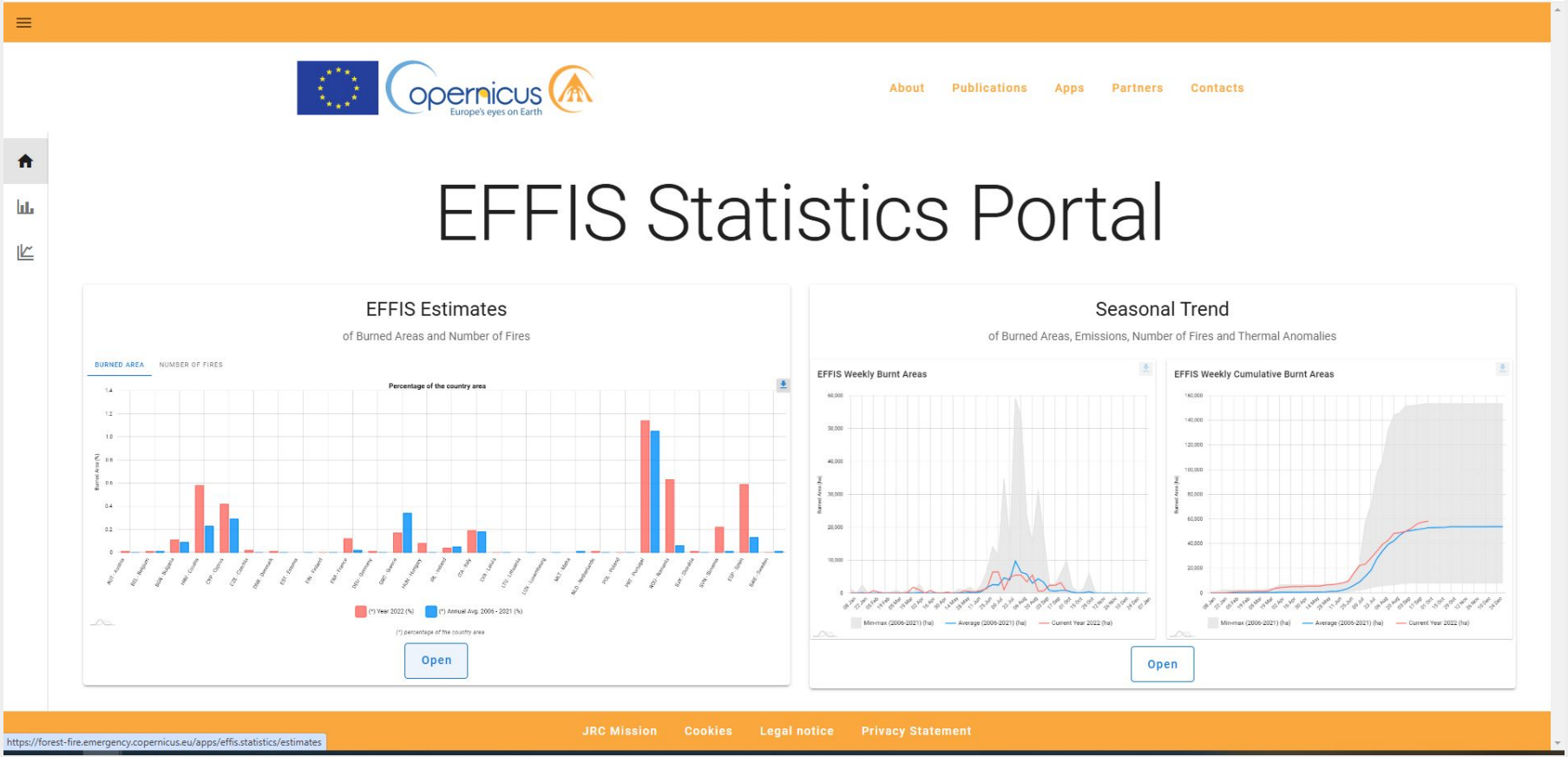
Login to access admin area
opernicus
Europe's eyes on Earth
About
Publications
Apps
Partners
Contacts
Current Situation Viewer
Current Statistics Portal
Firenews
Long-term fire weather forecast
Wildfire Risk Viewer
Data Request Form
Data and services
European Forest Fire Informatio m
EFFIS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Contacts
EFFIS Statistics Portal
EFFIS Estimates
of Burned Areas and Number of Fires
BURNED AREA
NUMBER OF FIRES
Percentage of the country area
Open
Seasonal Trend
of Burned Areas, Emissions, Number of Fires and Thermal Anomalies
EFFIS Weekly Burnt Areas
EFFIS Weekly Cumulative Burnt Areas
Open
JRC Mission
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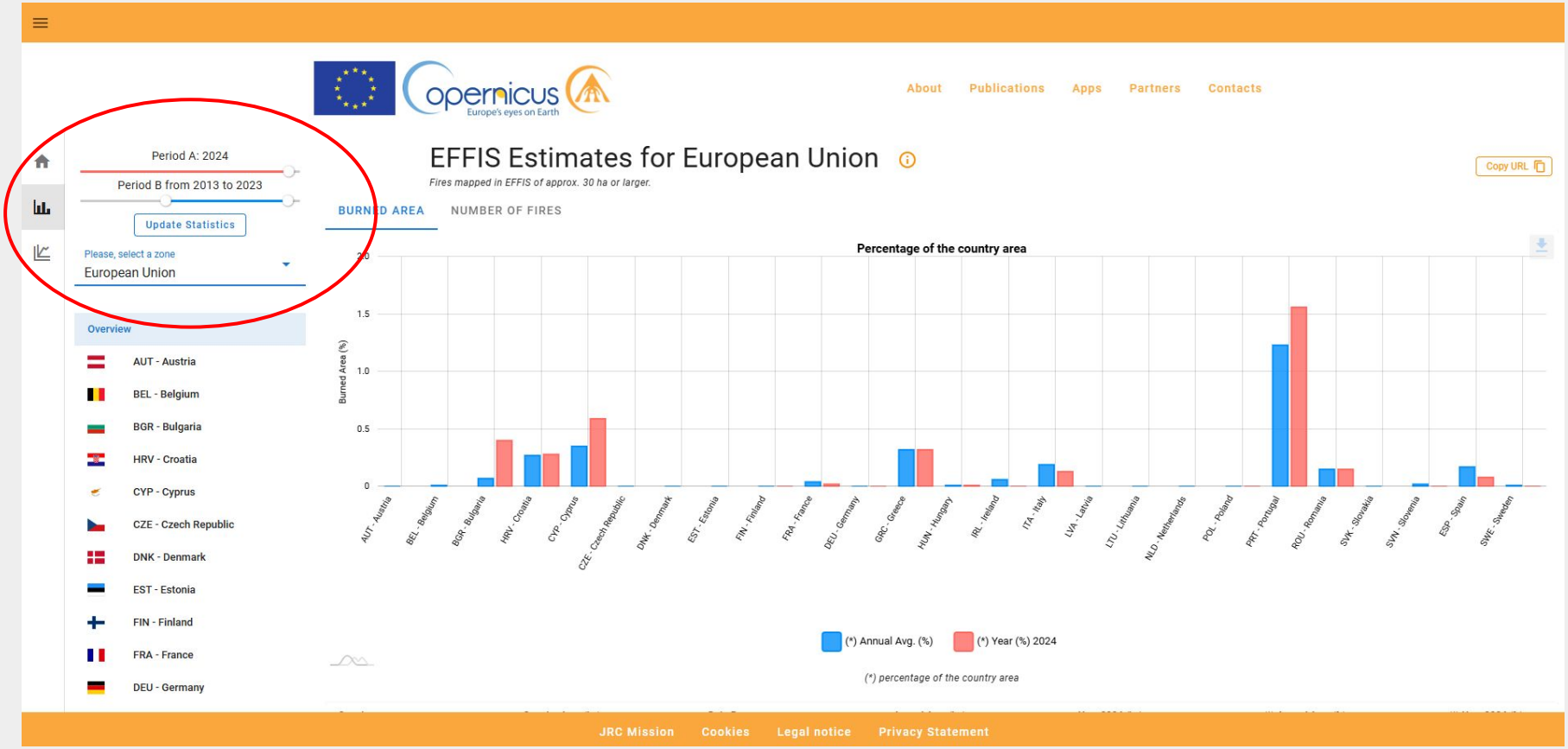
https://forest-fire.emergency.copernicus.eu/apps/effis.statistics/estimates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Period A: 2024
Period B from 2013 to 2023
Update Statistics
Please, select a zone
European Union
Overview
AUT - Austria
BEL - Belgium
BGR - Bulgaria
HRV - Croatia
CYP - Cyprus
CZE - Czech Republic
DNK - Denmark
EST - Estonia
FIN - Finland
FRA - France
DEU - Germany
EFFIS Estimates for European Union
Fires mapped in EFFIS of approx. 30 ha or larger.
Copy URL
BURNED AREA
NUMBER OF FIRES
Percentage of the country area
Burned Area (%)
2.0
1.5
1.0
0.5
0
AUT - Austria
BEL - Belgium
BGR - Bulgaria
HRV - Croatia
CYP - Cyprus
CZE - Czech Republic
DNK - Denmark
EST - Estonia
FIN - Finland
FRA - France
DEU - Germany
GRC - Greece
HUN - Hungary
IRL - Ireland
ITA - Italy
LVA - Latvia
LTU - Lithuania
NLD - Netherlands
POL - Poland
PRT - Portugal
ROU - Romania
SVK - Slovakia
SVN - Slovenia
ESP - Spain
SWE - Sweden
(*) Annual Avg. (%)
(*) Year (%) 2024
(*) percentage of the country area
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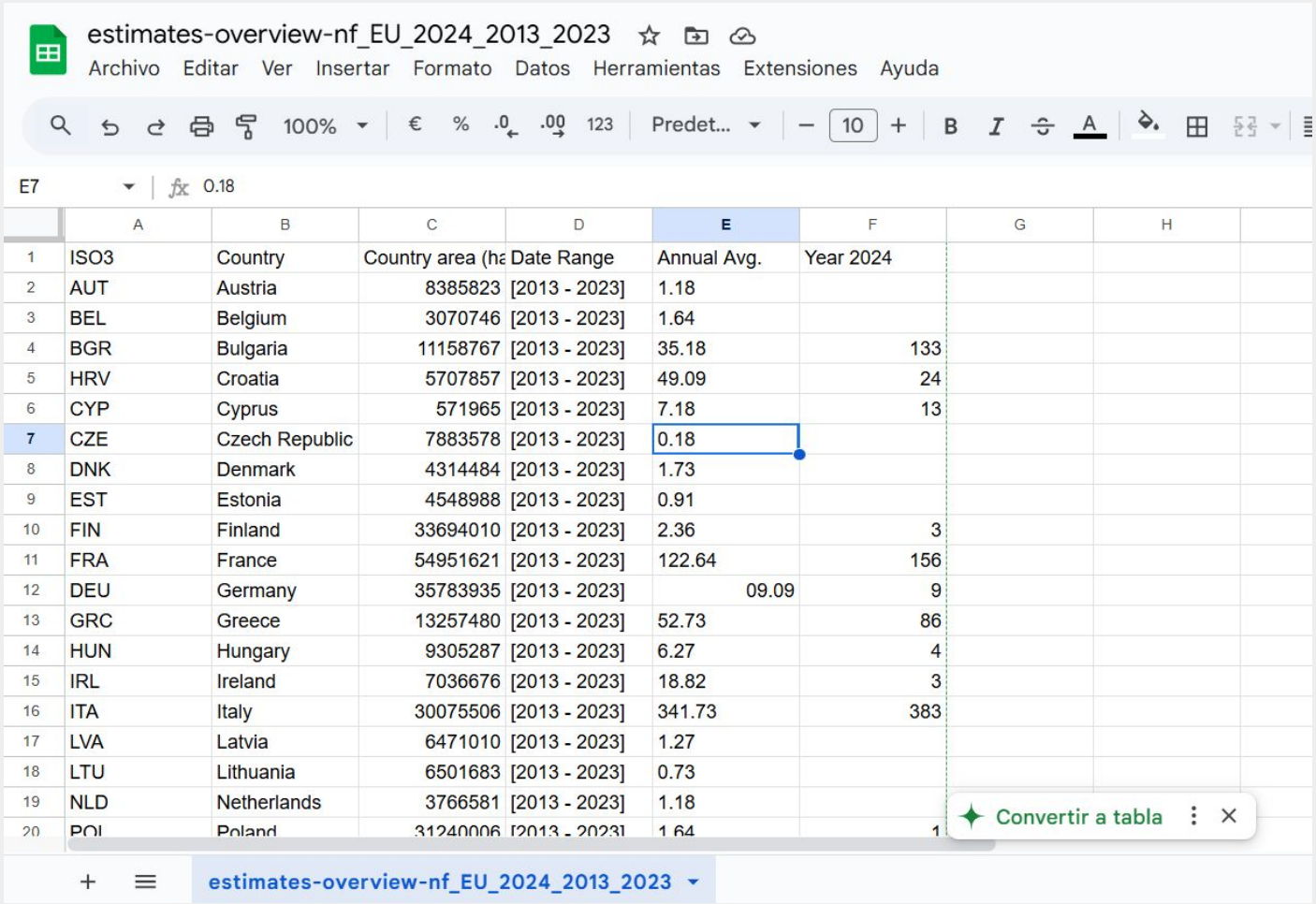
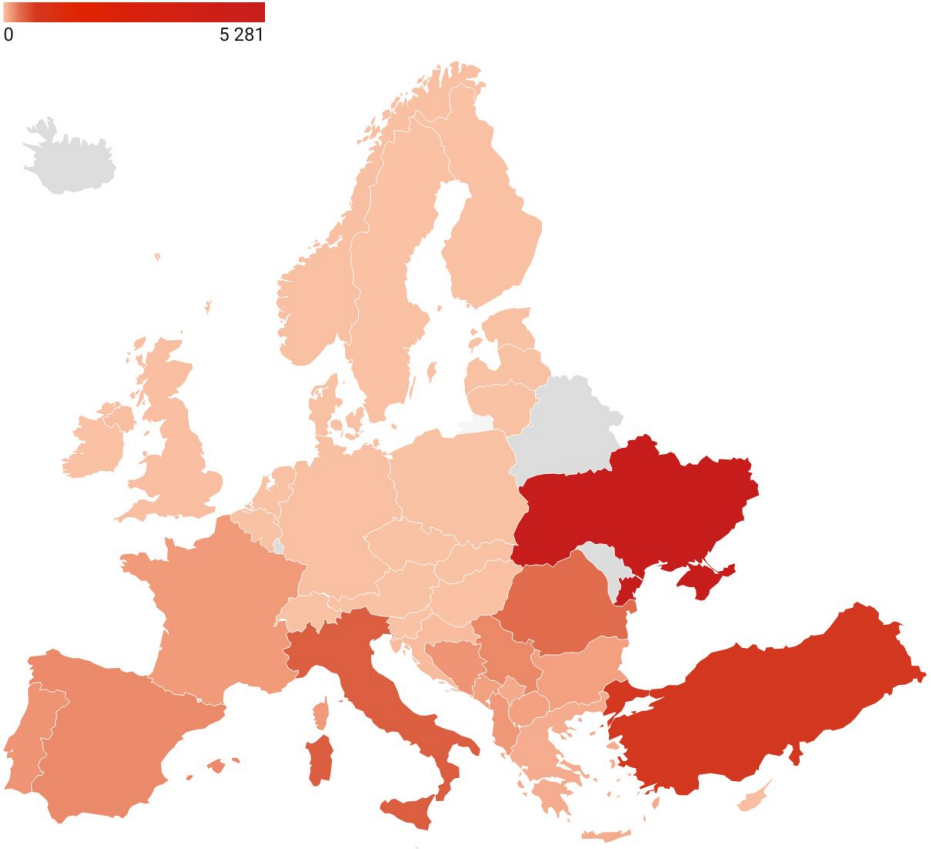


	A	B	C	D	E	F	G	H
1	ISO3	Country	Country area (ha	Date Range	Annual Avg.	Year 2024		
2	AUT	Austria	8385823	[2013 - 2023]	1.18			
3	BEL	Belgium	3070746	[2013 - 2023]	1.64			
4	BGR	Bulgaria	11158767	[2013 - 2023]	35.18	133		
5	HRV	Croatia	5707857	[2013 - 2023]	49.09	24		
6	CYP	Cyprus	571965	[2013 - 2023]	7.18	13		
7	CZE	Czech Republic	7883578	[2013 - 2023]	0.18			
8	DNK	Denmark	4314484	[2013 - 2023]	1.73			
9	EST	Estonia	4548988	[2013 - 2023]	0.91			
10	FIN	Finland	33694010	[2013 - 2023]	2.36	3		
11	FRA	France	54951621	[2013 - 2023]	122.64	156		
12	DEU	Germany	35783935	[2013 - 2023]	09.09	9		
13	GRC	Greece	13257480	[2013 - 2023]	52.73	86		
14	HUN	Hungary	9305287	[2013 - 2023]	6.27	4		
15	IRL	Ireland	7036676	[2013 - 2023]	18.82	3		
16	ITA	Italy	30075506	[2013 - 2023]	341.73	383		
17	LVA	Latvia	6471010	[2013 - 2023]	1.27			
18	LTU	Lithuania	6501683	[2013 - 2023]	0.73			
19	NLD	Netherlands	3766581	[2013 - 2023]	1.18			
20	POL	Poland	31240006	[2013 - 2023]	1.64	1		

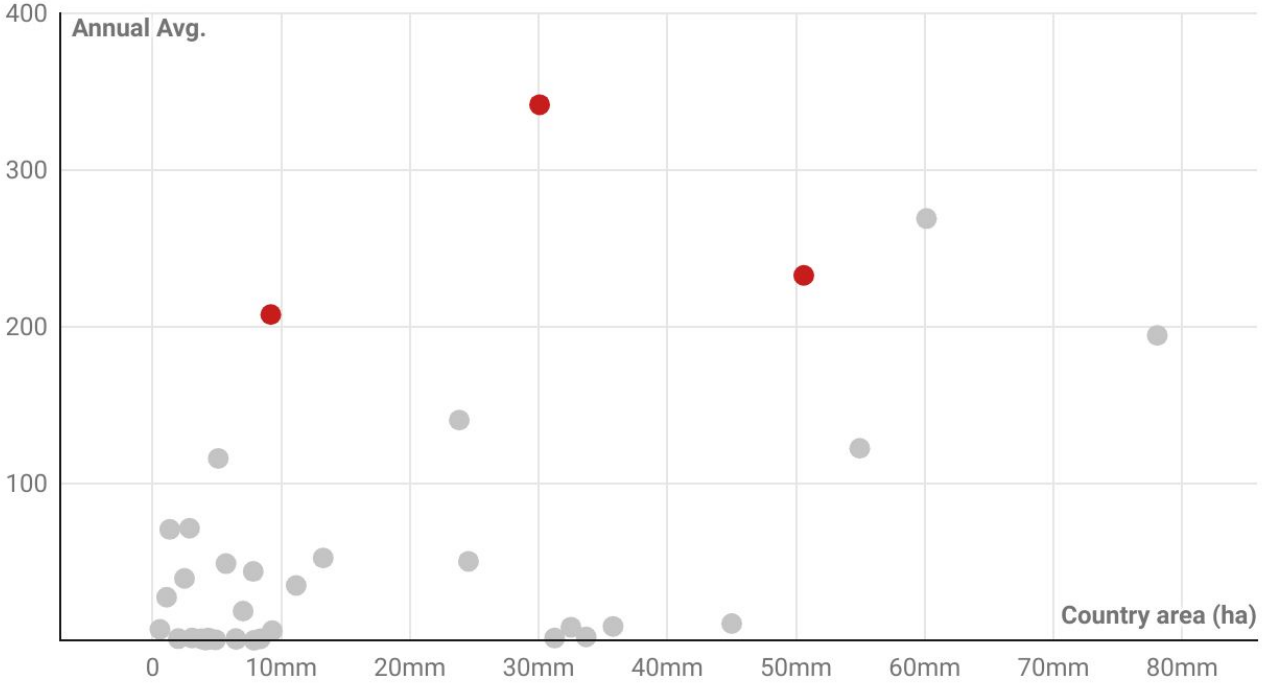
Number of wilfdfires in 2024



Fuente: European Forest Fire Information System • Creado con Datawrapper

Relationship between number of fires per country and its hectares

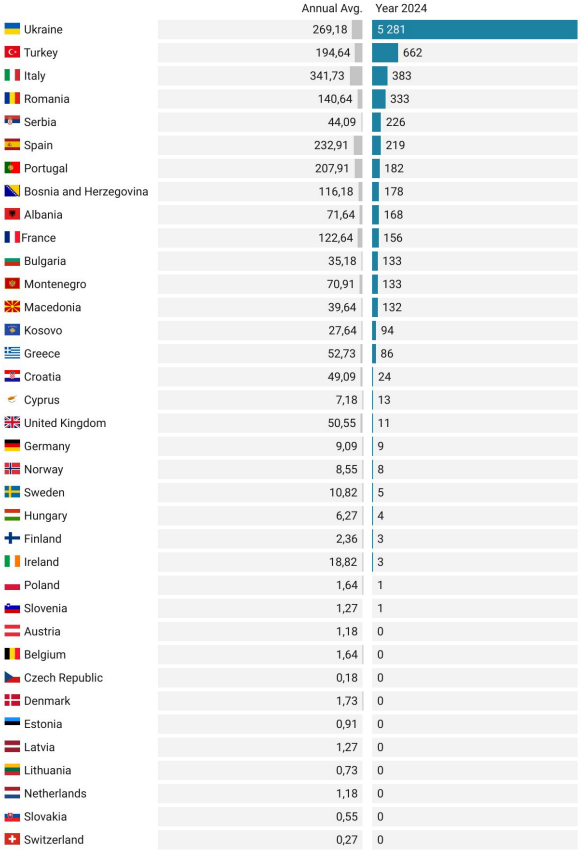
Data relating to the years 2013-2023



Fuente: European Forest Fire Information System • Creado con Datawrapper

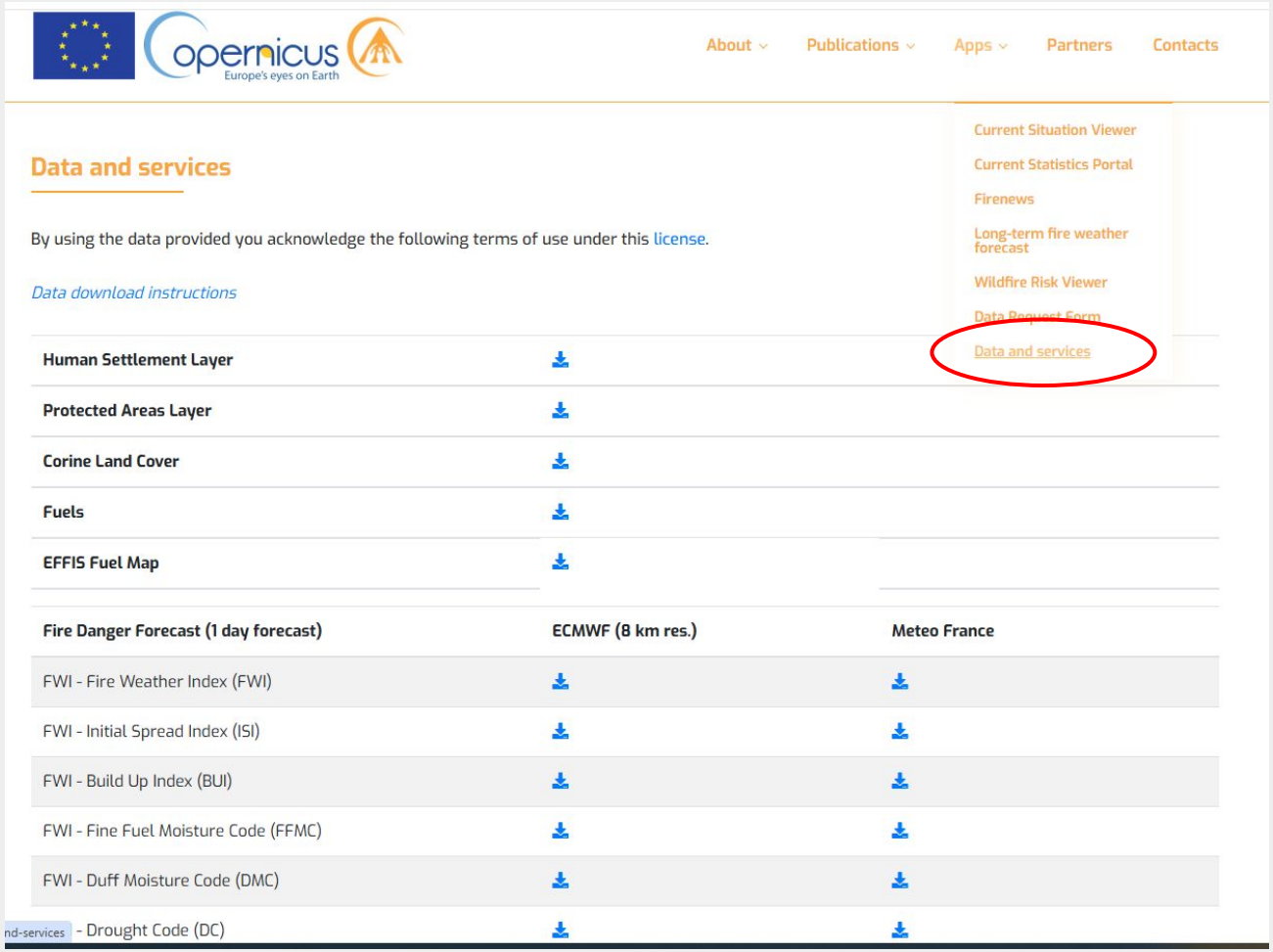
Fires recorded in 2024 compared to the annual average of the last decade

Data for the last decade includes data between 2013 and 2023



Fuente: European Forest Fire Information System • Creado con Datawrapper

BONUS TRACK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Current Situation Viewer
Current Statistics Portal
Firenews
Long-term fire weather forecast
Wildfire Risk Viewer
Data and services
Data and services
By using the data provided you acknowledge the following terms of use under this license.
Data download instructions
Human Settlement Layer
Protected Areas Layer
Corine Land Cover
Fuels
EFFIS Fuel Map
Fire Danger Forecast (1 day forecast)
ECMWF (8 km res.)
Meteo France
FWI - Fire Weather Index (FWI)
FWI - Initial Spread Index (ISI)
FWI - Build Up Index (BUI)
FWI - Fine Fuel Moisture Code (FFMC)
FWI - Duff Moisture Code (DMC)
- Drought Code (DC)

Untitled2.ipynb

Archivo Editar Ver Insertar Entorno de ejecución Herramientas Ayuda

+ Código + Texto

```
import geopandas as gpd
from google.colab import files
import os
import zipfile

# Fuente de los datos: https://forest-fire.emergency.copernicus.eu/applications/data-and-services

# Cargar el ZIP.
uploaded = files.upload()

# Extraer el ZIP en una carpeta y cargarlo en una variable.
for filename in uploaded.keys():
    if filename.endswith(".zip"):
        with zipfile.ZipFile(filename, "r") as zip_ref:
            zip_ref.extractall("/content/shp")

shp_folder = "/content/shp/"
shp_files = [f for f in os.listdir(shp_folder) if f.endswith(".shp")]

if shp_files:
    shp_path = os.path.join(shp_folder, shp_files[0])
    print(f"Archivo .shp encontrado: {shp_path}")

data = gpd.read_file(shp_path)
```

```
[ ] # Ver los primeros registros del archivo.
    print(data.head())
```

```
[ ] # Vemos los países que hay en la base de datos para elegir cuáles queremos filtrar.
    paises = data["COUNTRY"].unique()
    print(paises)
```

```
[ ] # Filtramos los países por su nomenclatura en la columna COUNTRY.
    paises_filtrados = ["PT", "ES"] ## Portugal y España.

    gdf_filtrado = data[data["COUNTRY"].isin(paises_filtrados)]

    # Ponemos un formato de coordenadas que sirva para hacer los mapas.
```

Burnt areas in the Iberian Peninsula
by Newtral Miguel

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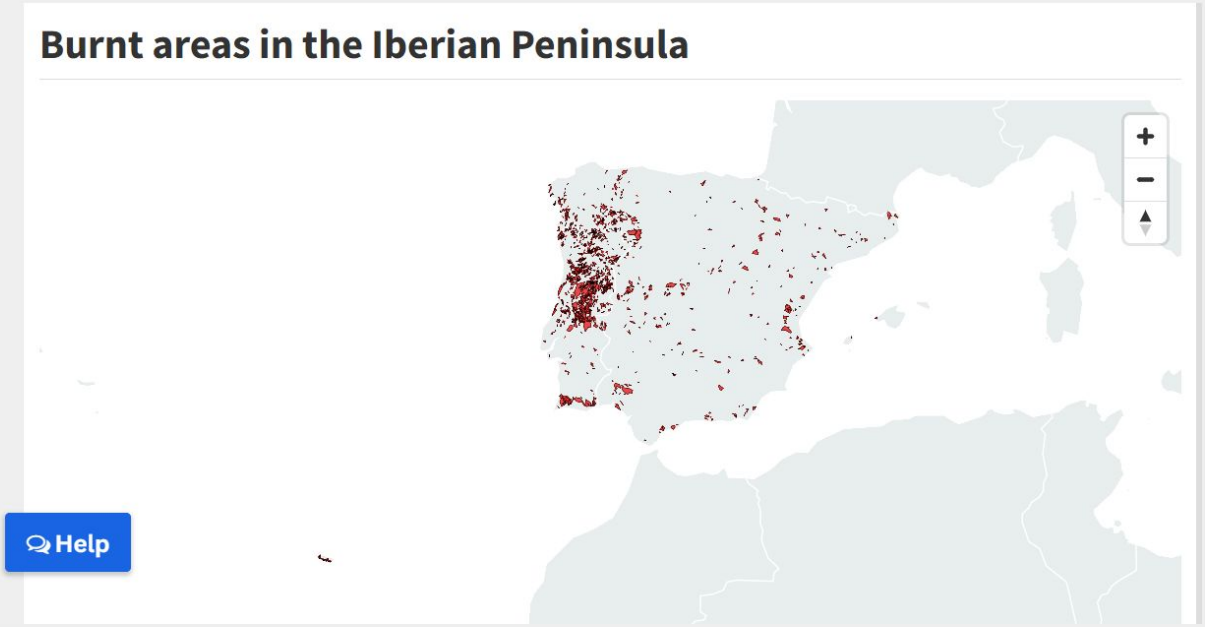
Preview | Data



3D map
v9.1.4

Theme
No theme

Base map

Map type
Vector | Raster | Projection

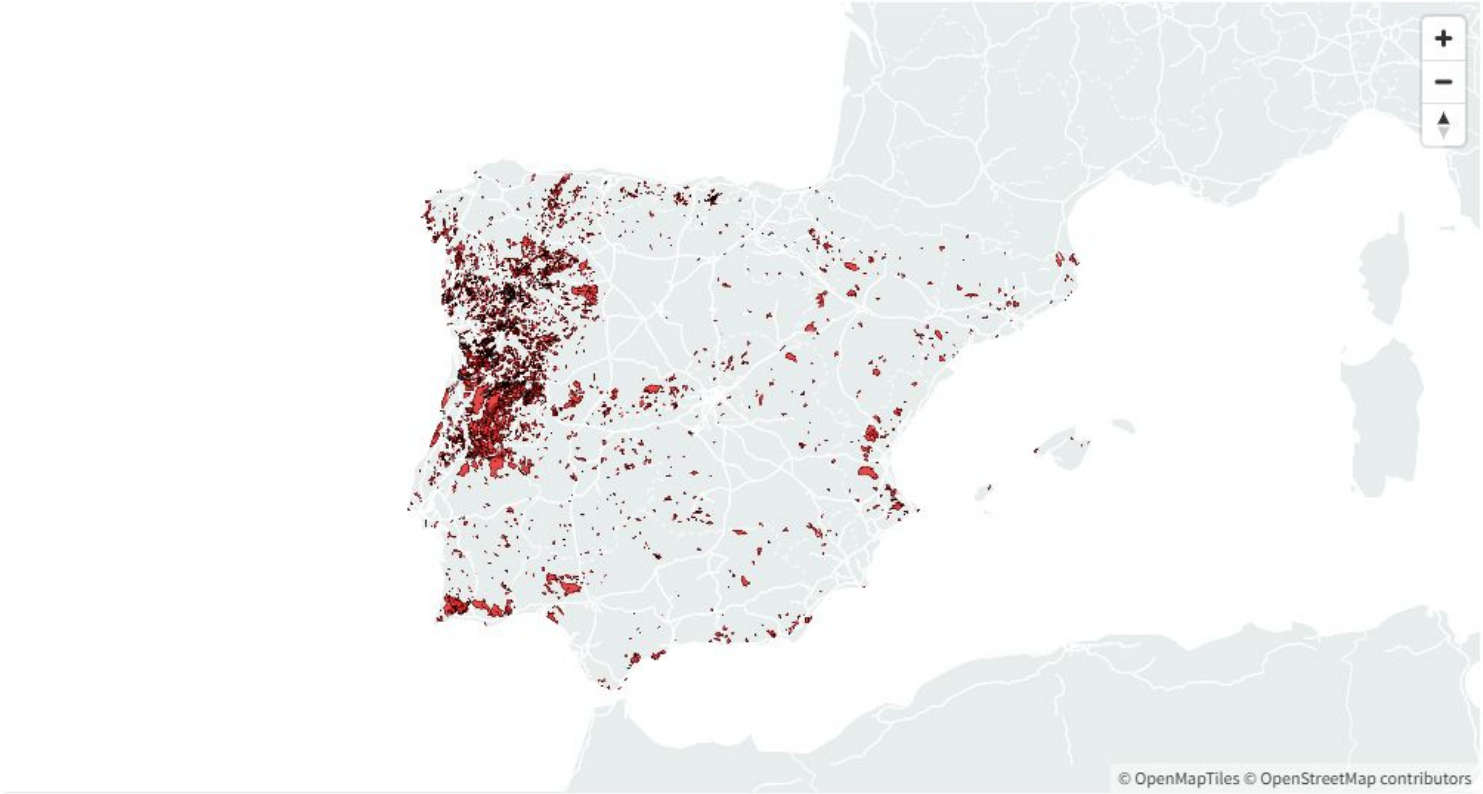
Map style
Flourish Light
Customize layers

Viewport and interaction

Graticules

Search for setting

Burnt areas in the Iberian Peninsula



Fuente: EFFIS • Gráfico: Newtral.es

Newtral

Questions
Doubts
Suggestions
Ideas

¡Gracias!

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irene.larraz@newtral.es