



# Powerful charts

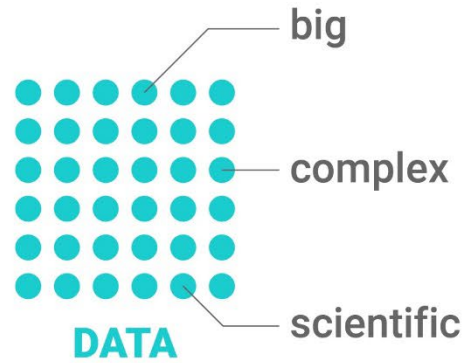
An introduction to data visualization

*Koen Van den Eeckhout - Baryon*

At Baryon, we turn **complex information**  
into **powerful visuals**

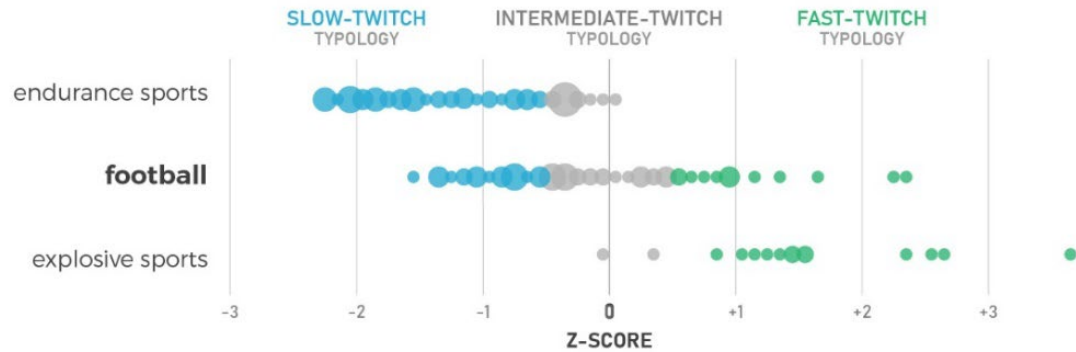
complex  
information

powerful  
visuals

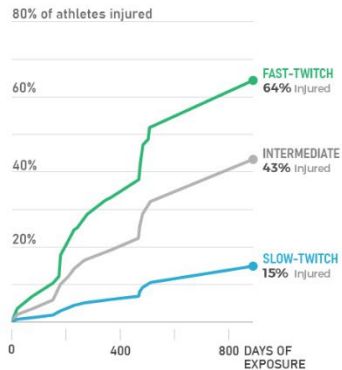


# Data-heavy reports

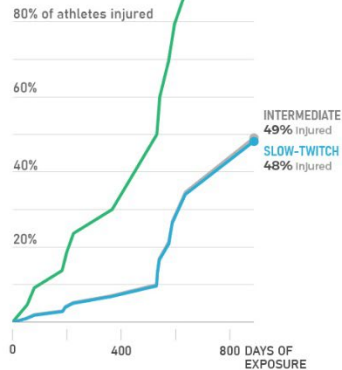
Client: Ghent University



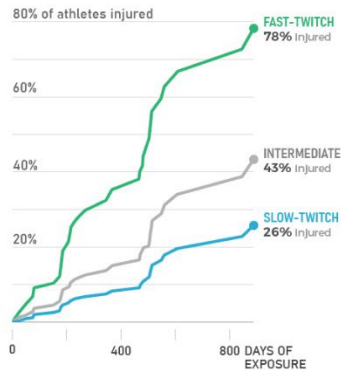
## ORIGINAL COHORT



## REPLICATION COHORT



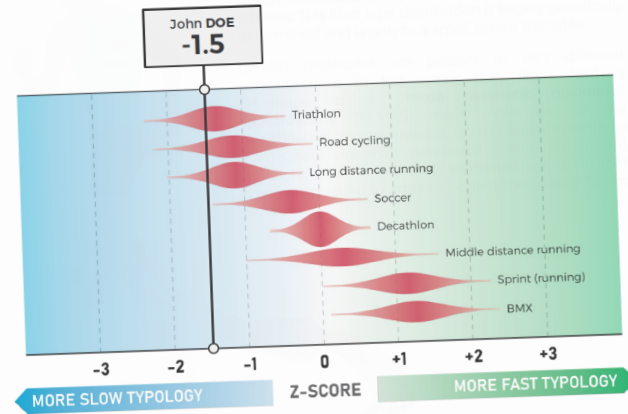
## COMBINED COHORT



## 5 How to translate your results to sport?

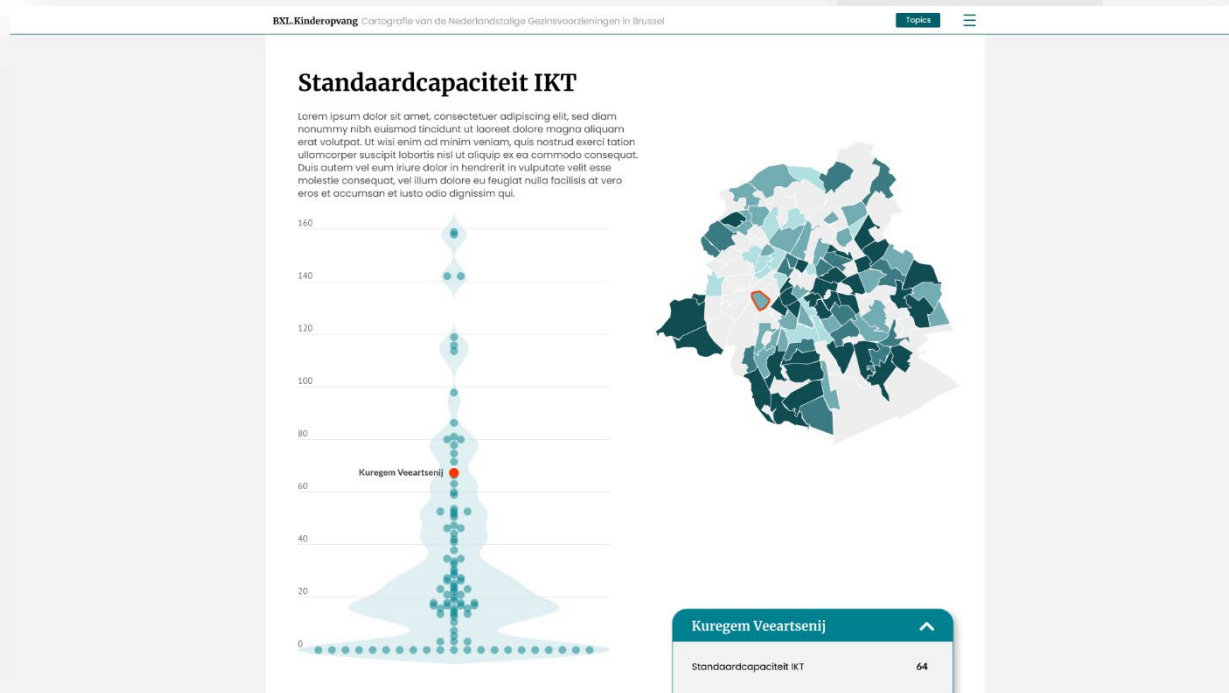
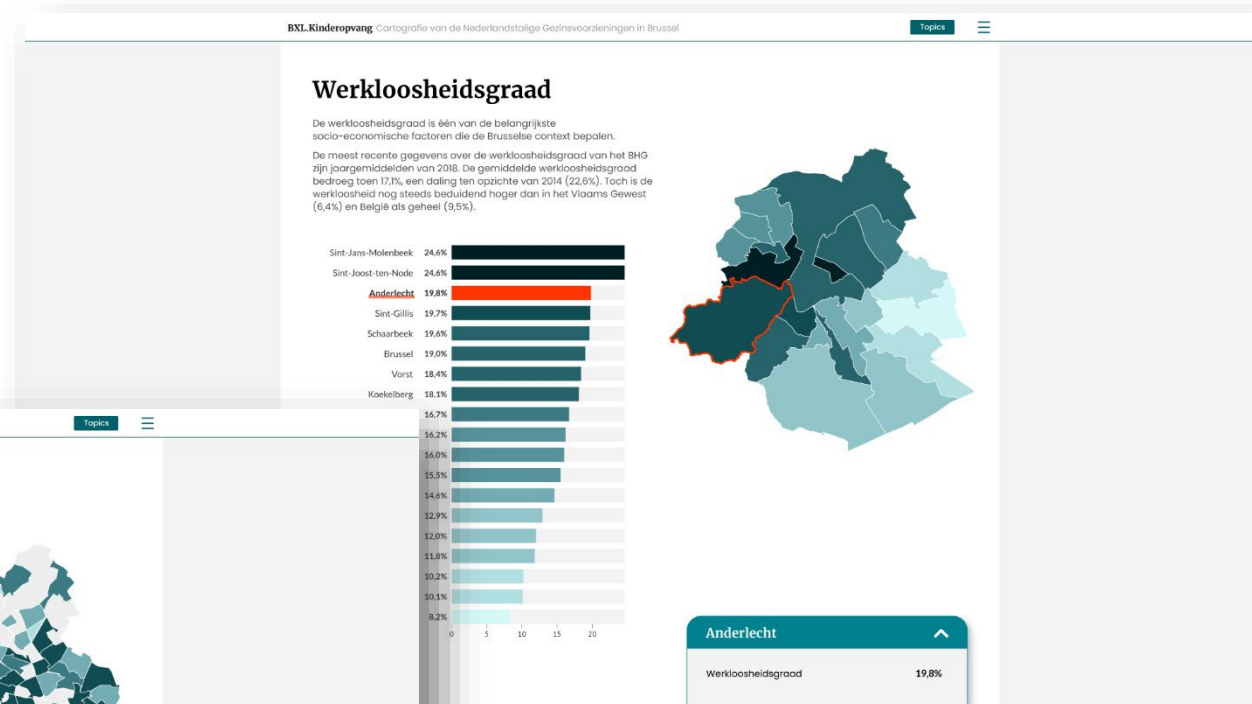
Your muscle typology compared to elite athletes in different sports

Over the past 10 years, we generated a large database of muscle typologies from elite athletes in various sports. The vertical line in the diagram below indicates your personal muscle fiber typology, relative to the values of these elite athletes in other sports.



# Insightful dashboards

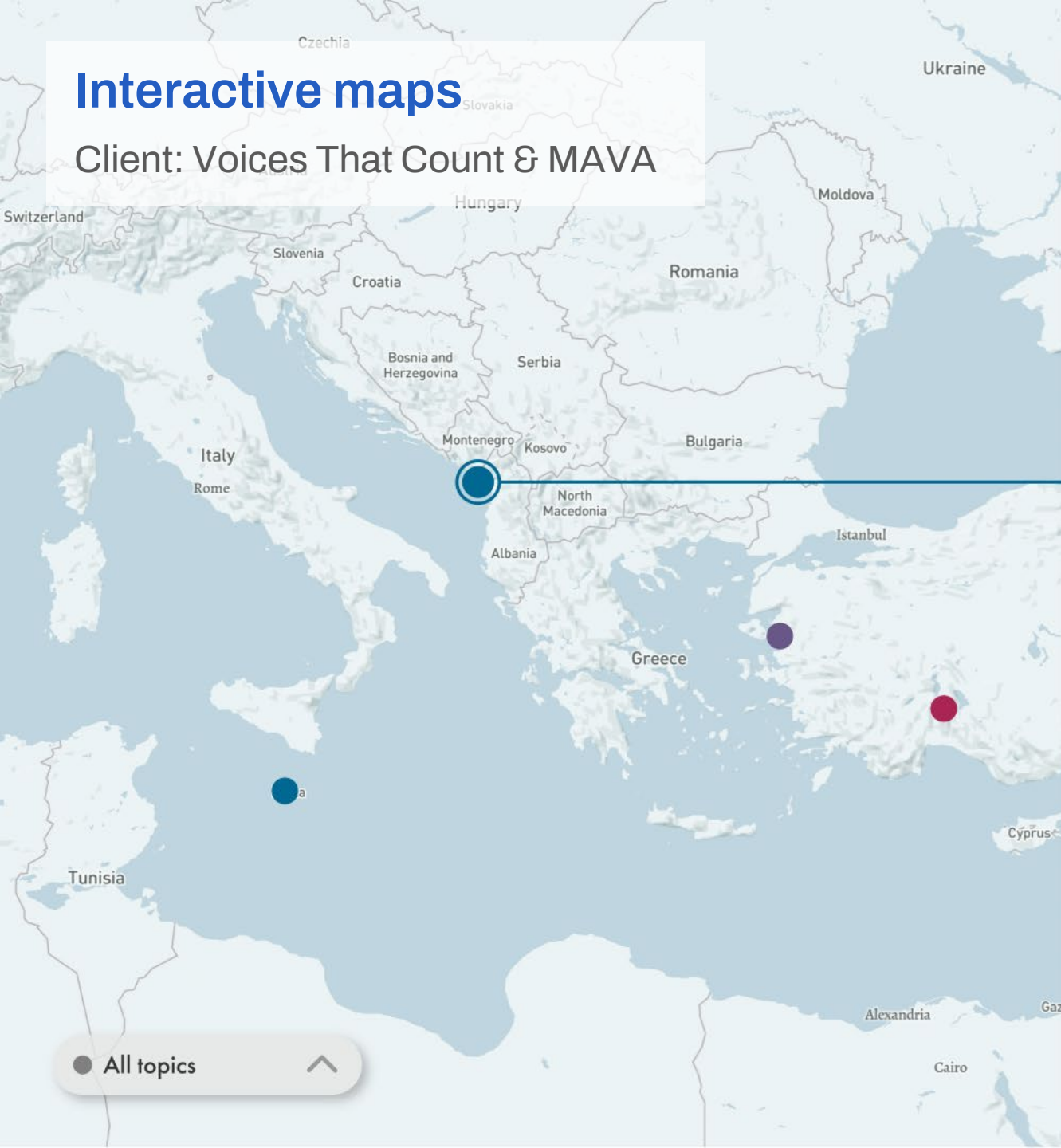
Clients: Ghent University & VGC



<https://dashboard.vgc.be/>

# Interactive maps

Client: Voices That Count & MAVA



● All topics



Freshwater or wetlands



## #SaveSalina

We have been working for the protection of Ulcinj Salina for more than 15 years, all the way and time supported by MAVA. We have achieved our main goal of the site's formal legal protection but it still lacks proper management and concrete action on its restoration.

Each year, during this battle against a massive construction project (planned hotels, golf terrains and marina) we had witnessed flamingos creating their nests and unfortunately failing at it (due to poor water management and destroyed infrastructure). Seeing them making their nests again and again so effortlessly, not giving up against all odds just gave us so much hope: never to give up, to constantly dust ourselves up and try again. Flamingos are still not successfully nesting but we ensured sanctuary for many endangered bird species. Today Salina is one of the closing benchmarks of

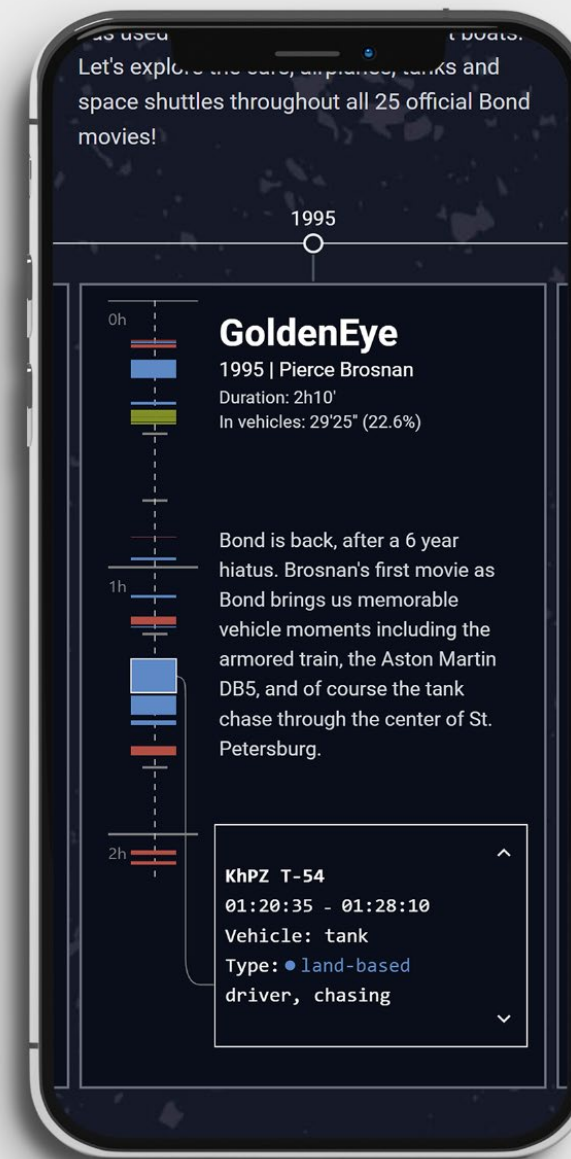
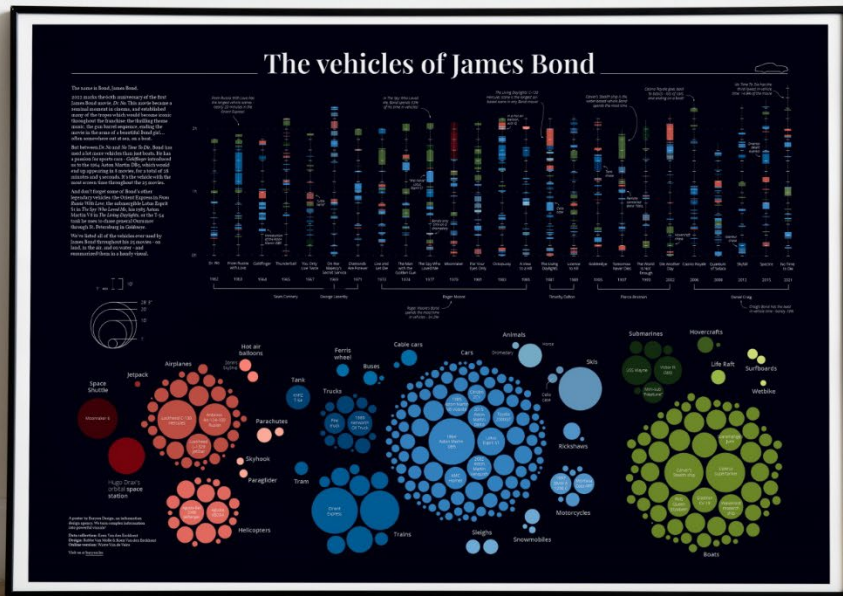
Location  
**Montenegro**

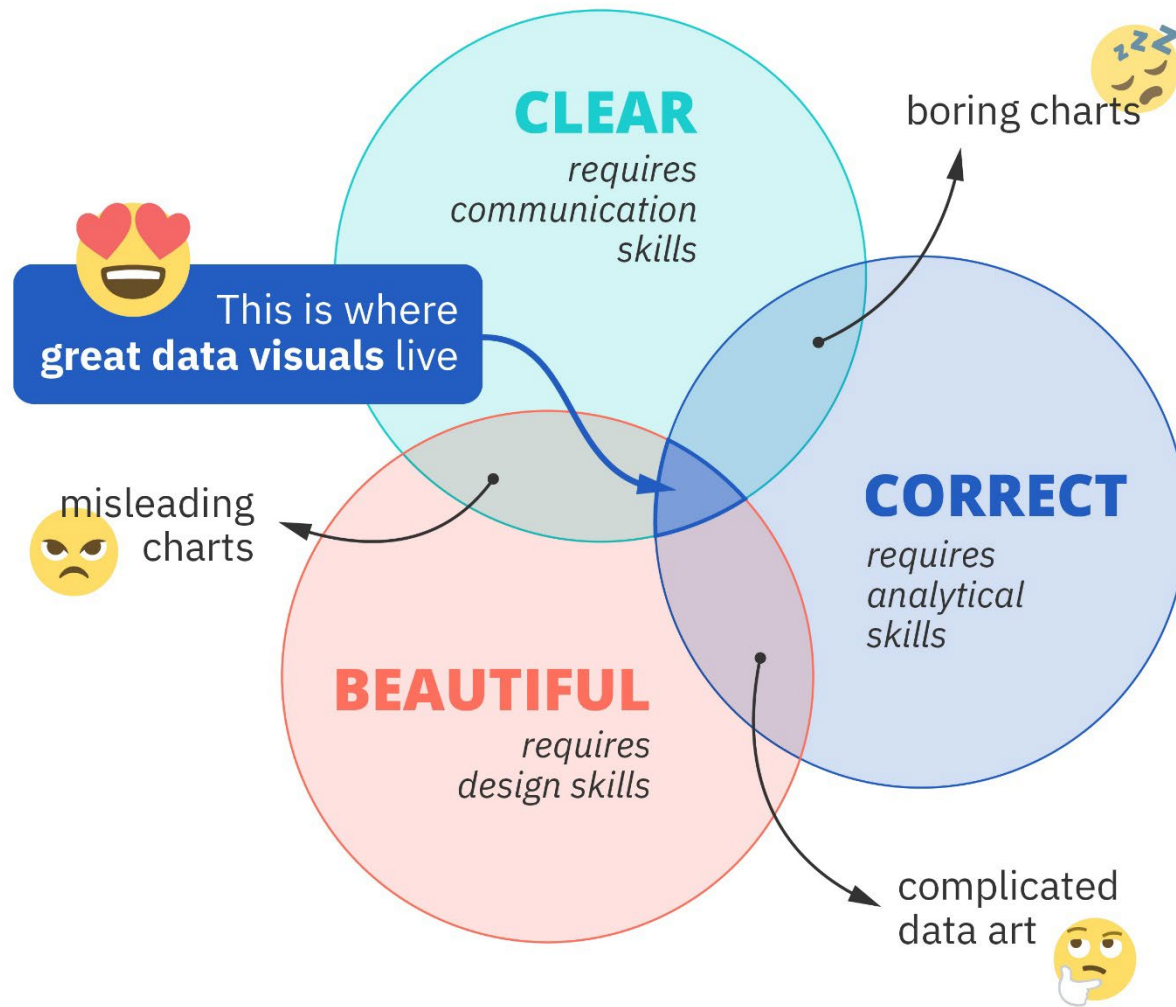
Region  
**Mediterranean**

Organisation  
**Center for Protection and Research of Birds (CZIP Montenegro)**

Author  
**Jovana Janjušević**

Iran







## 5 ways to tell a story

Choose the right chart

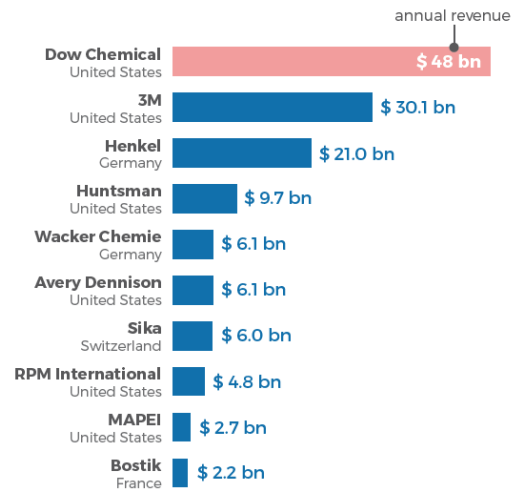
Less is more

Use color in a clever way

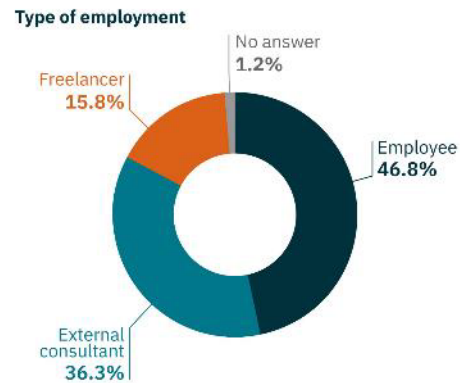
Add helpful annotations

Break the rules

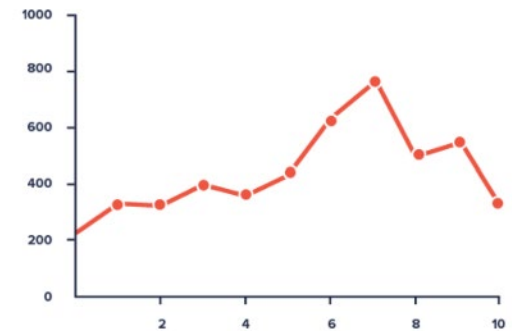




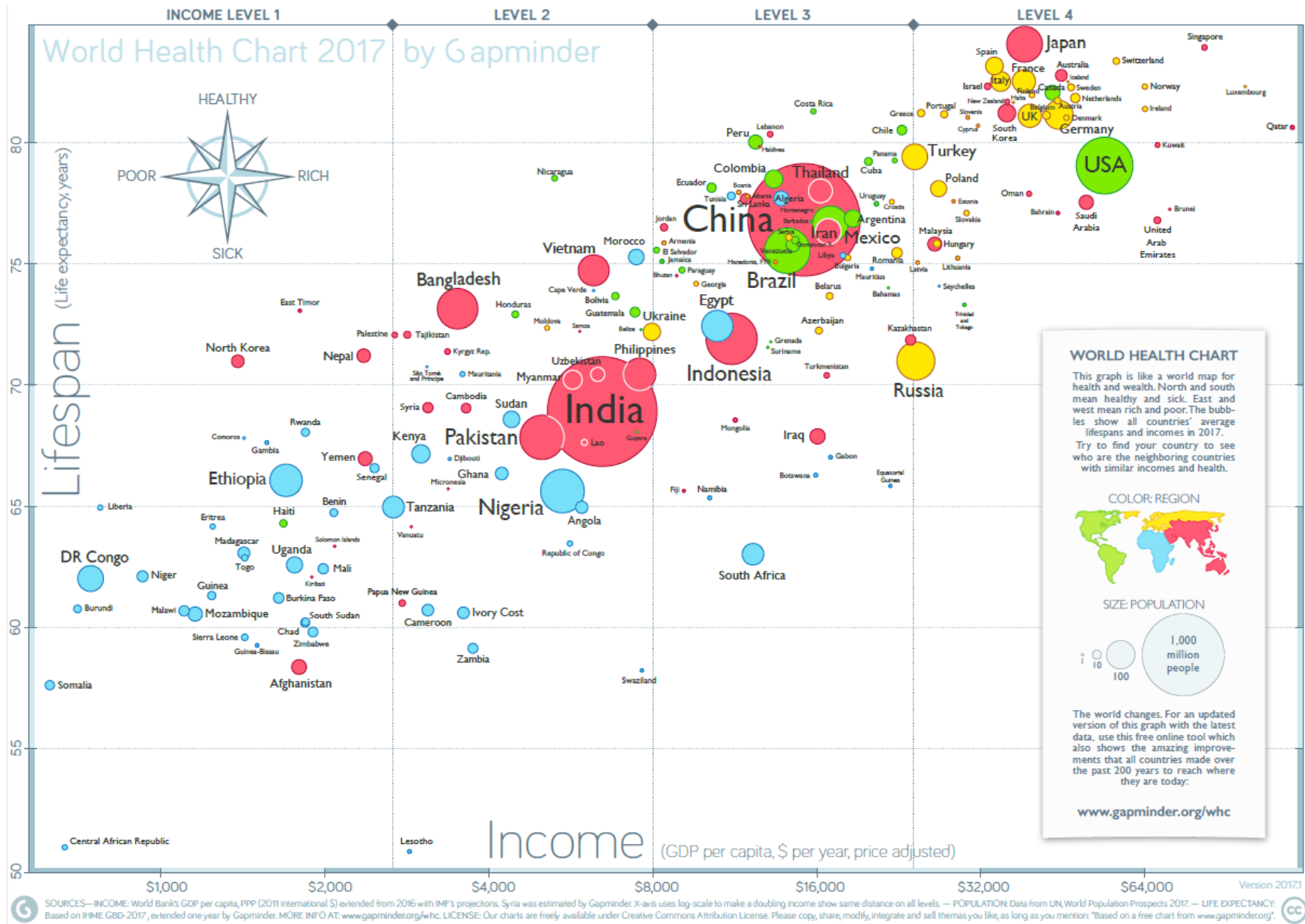
**Bar charts**  
Comparisons



**Pie charts**  
Part-to-whole  
comparisons



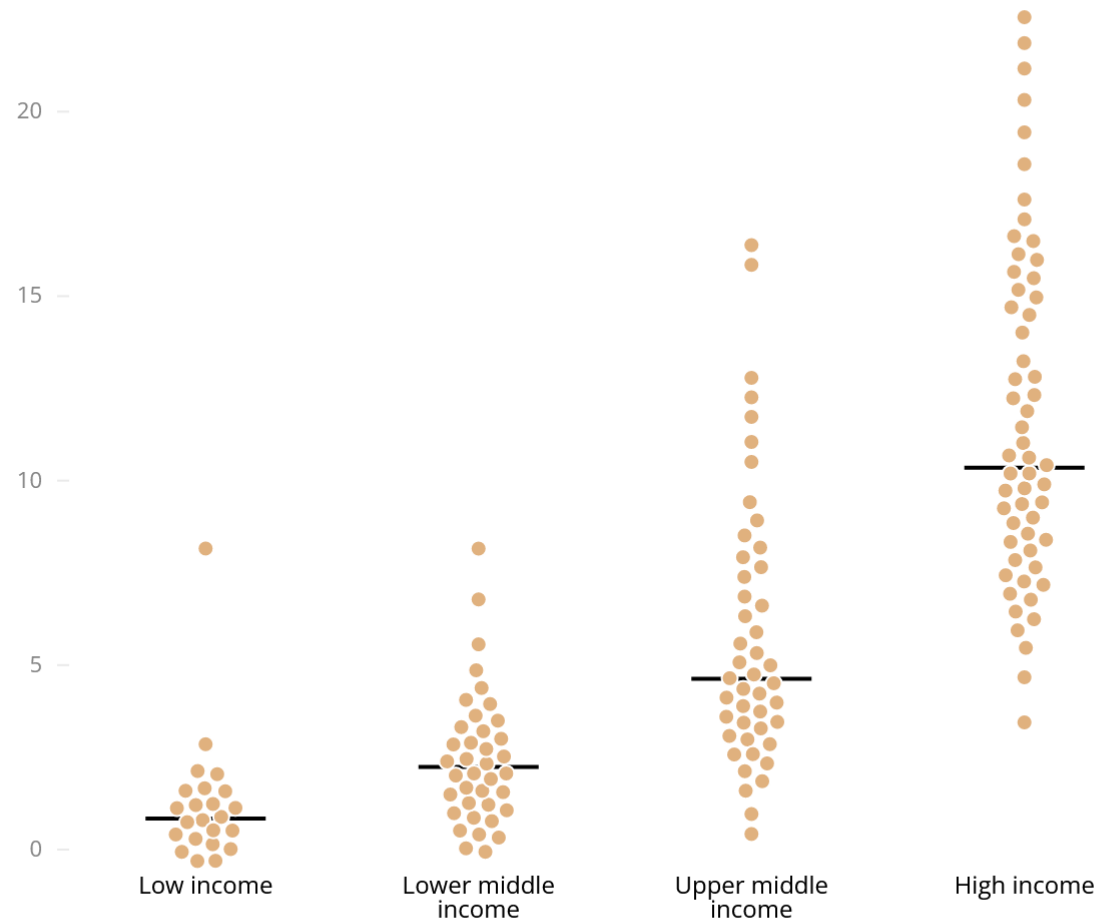
**Line charts**  
Evolutions



SOURCES—INCOME: World Bank's GDP per capita, PPP (2011 International \$) extended from 2016 with IMF's projections. Syria was estimated by Gapminder. X-axis uses log-scale to make a doubling income show same distance on all levels. — POPULATION: Data from UN World Population Prospects 2017. — LIFE EXPECTANCY: Based on IHME GBD-2017, extended one year by Gapminder. MORE INFO AT: [www.gapminder.org/whc](http://www.gapminder.org/whc). LICENSE: Our charts are freely available under Creative Commons Attribution License. Please copy, share, modify, integrate and sell them as you like, as long as you mention "Based on a free chart from www.gapminder.org".

**Bubble chart**

## Nurses and physicians per 1,000 people



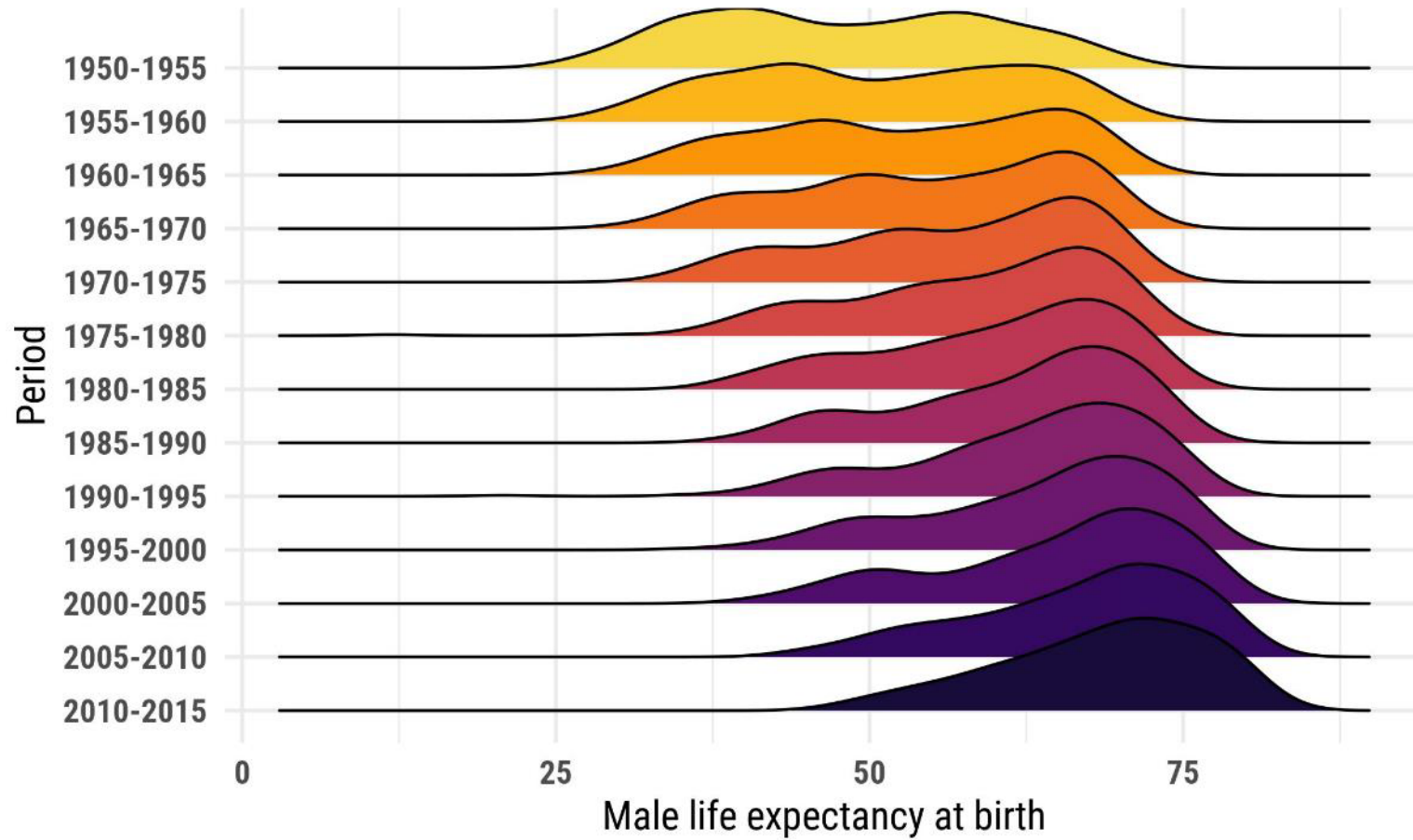
Note: Most recent value available; "Nurses" refers to nurses and midwives

Source: [World Development Indicators](#), [World Health Organization](#)

**Beeswarm**  
plot

## Global convergence in male life expectancy at birth since 1950

UNPD World Population Prospects 2015 Revision, via wpp2015



@ikashnitsky

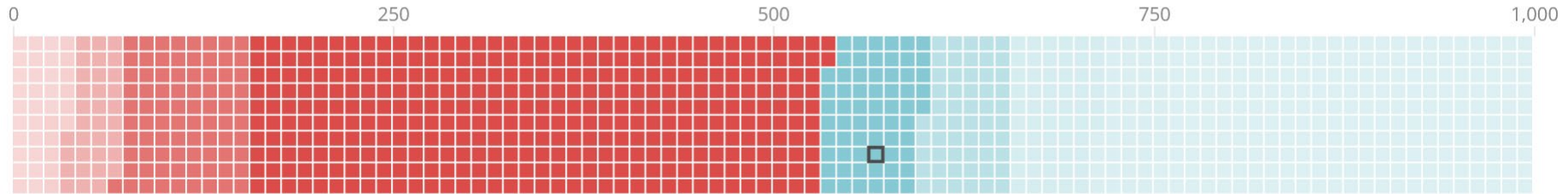
**Ridgeline**  
plot

# Guinea

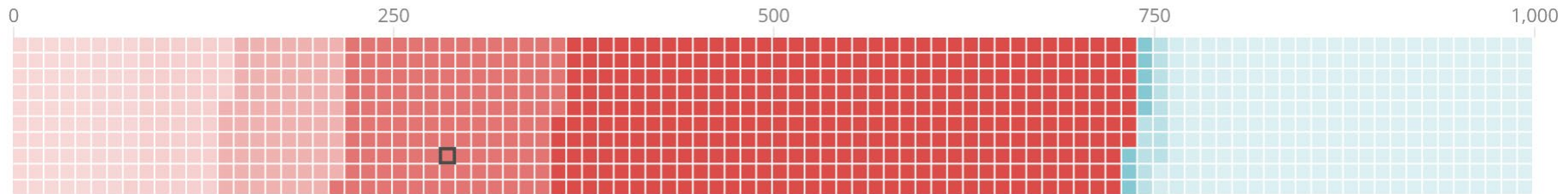
- Household answered "Yes"
- Household answered "No"

Probability of food insecurity  
Low High

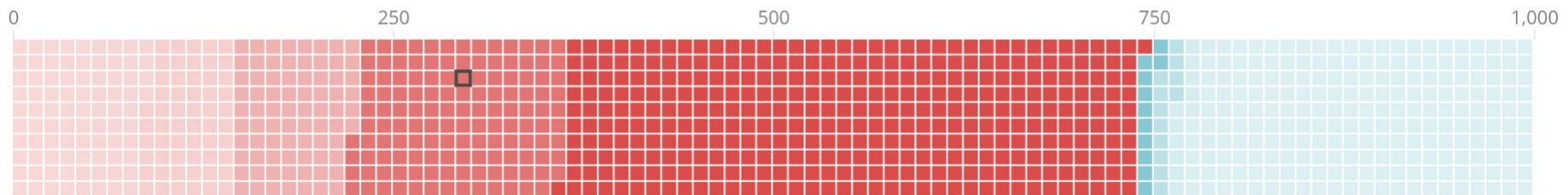
## You went without eating for a whole day?



## You ate less than you thought you should?



## You were worried you would not have enough food to eat?



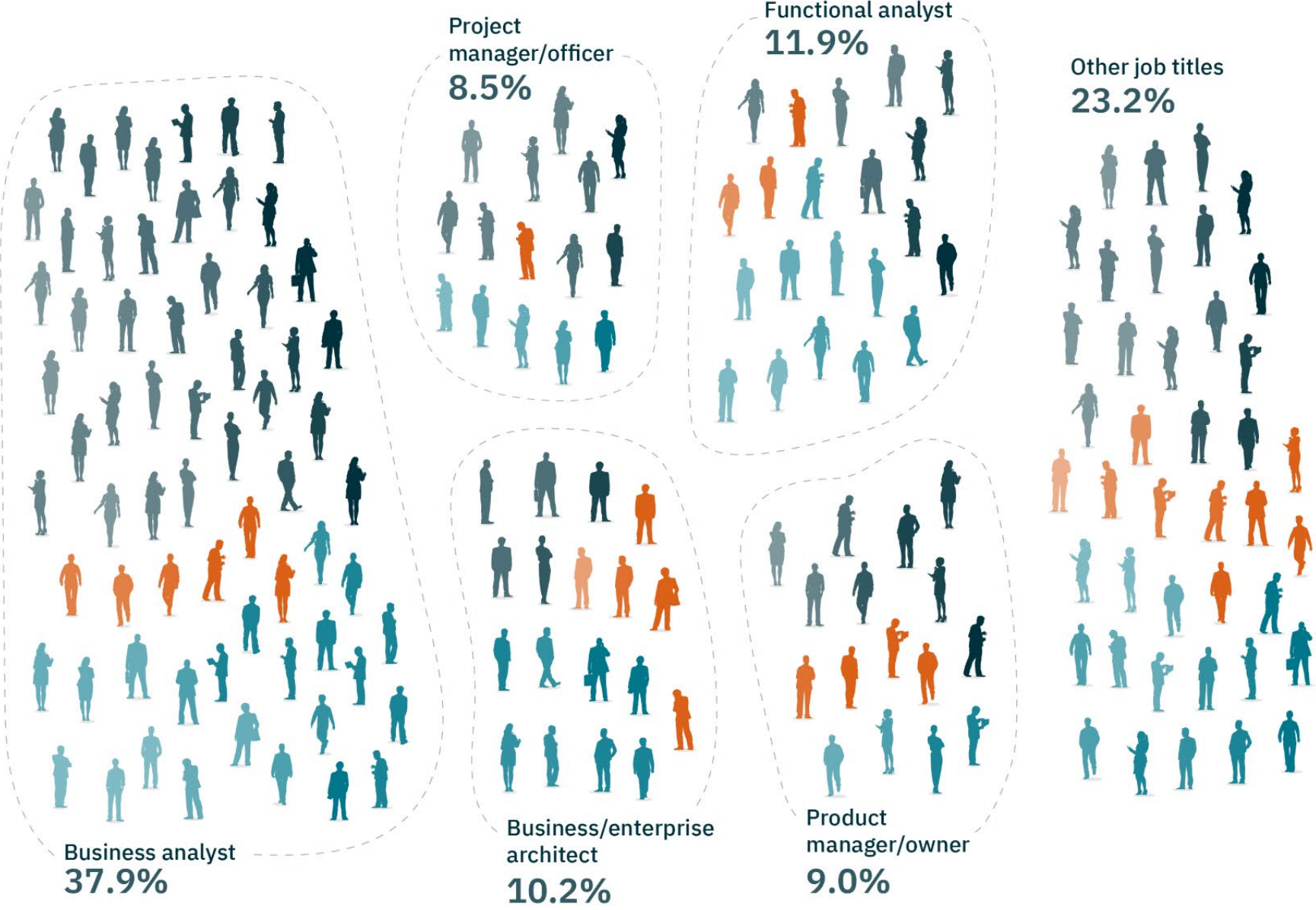
Note: The data is displayed for the most recent survey year (2017-2018).

Source: [Food Insecurity Experience Scale](#), Food and Agriculture Organization (FAO)

Waffle  
chart

# What's in a name?

The BA title



## Question

What is your title?

*n* = 177







## 5 ways to tell a story

Choose the right chart

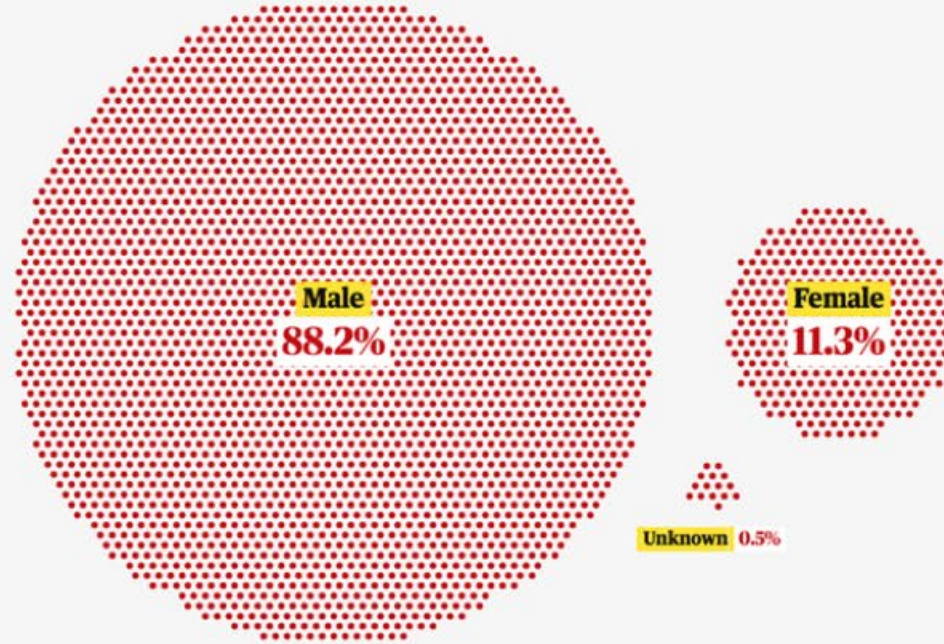
Less is more

Use color in a clever way

Add helpful annotations

Break the rules

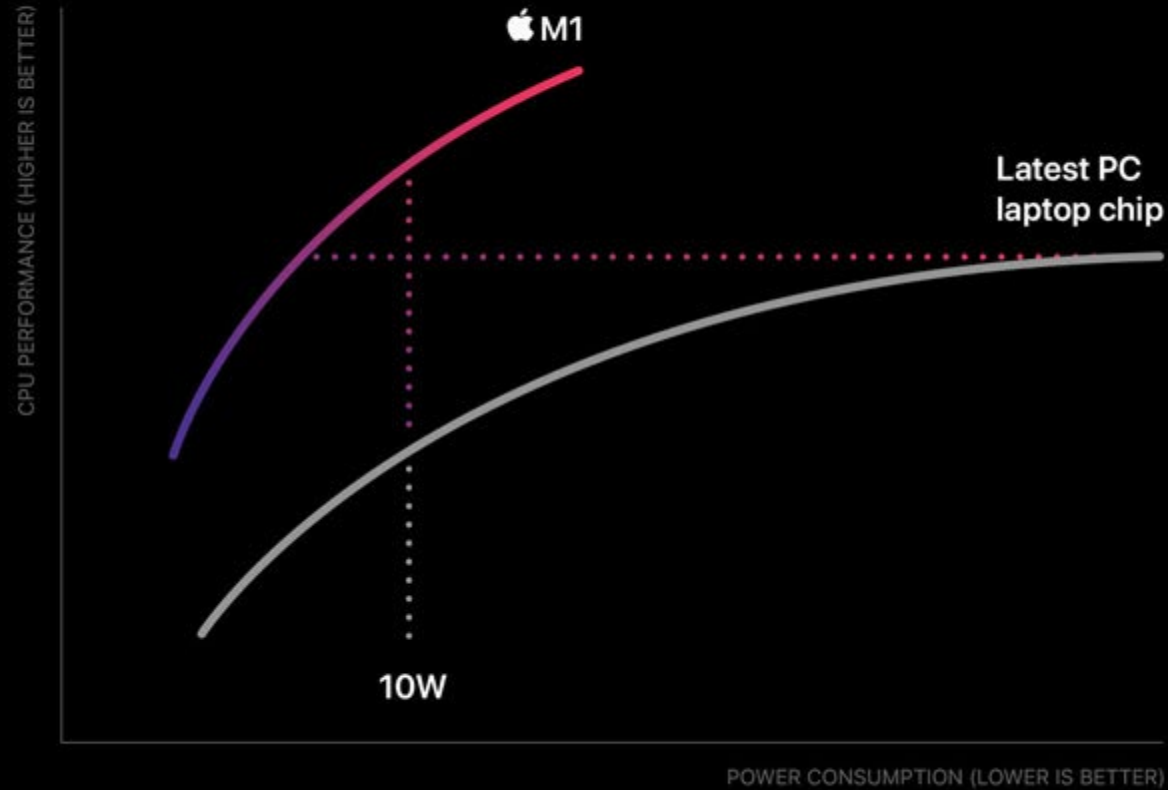




### Far more men were arrested than women

Court documents do not record gender so we made educated guesses based on individuals' first names and the pronouns used in the documents.

## CPU performance vs. power

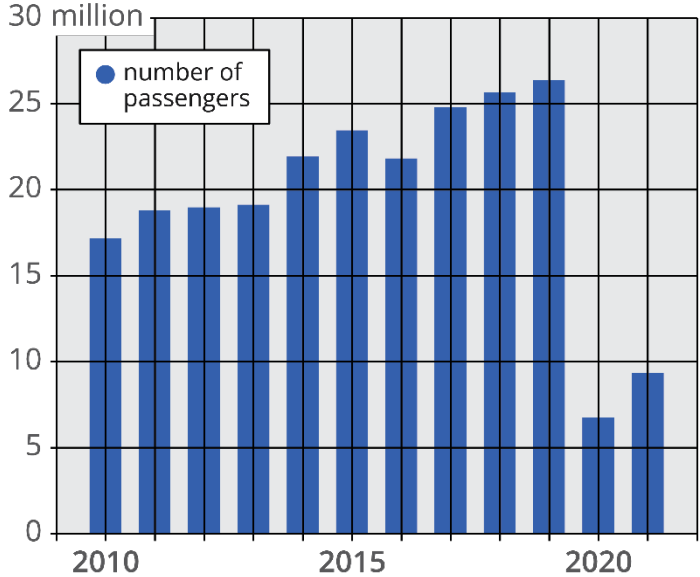


Up to  
**2x**  
faster CPU  
performance<sup>1</sup>

Matches peak PC  
performance using  
**25%**  
of the power<sup>1</sup>

### Yearly passengers in Brussels Airport

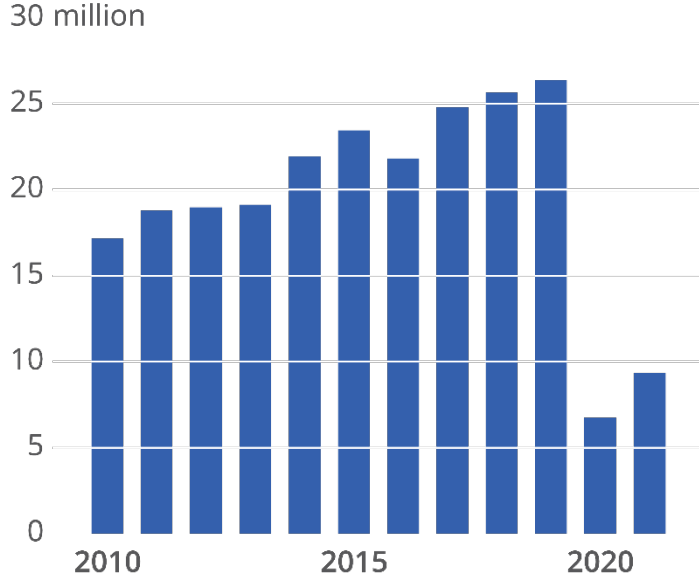
Data: Brussels Airport, Statistics Flanders



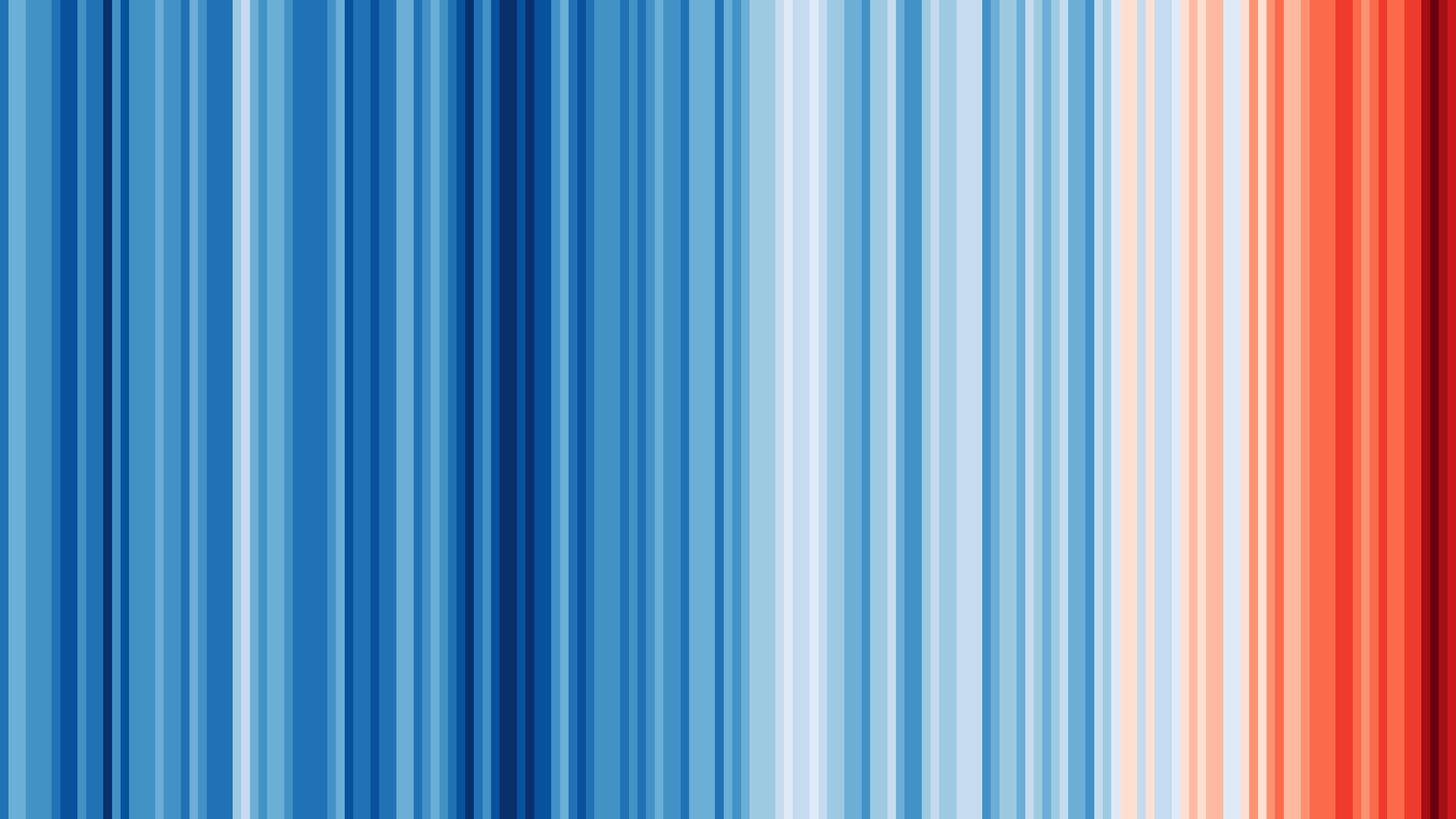
**Low** signal-to-noise ratio

### Yearly passengers in Brussels Airport

Data: Brussels Airport, Statistics Flanders



**High** signal-to-noise ratio





## 5 ways to tell a story

Choose the right chart

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Use color in a clever way

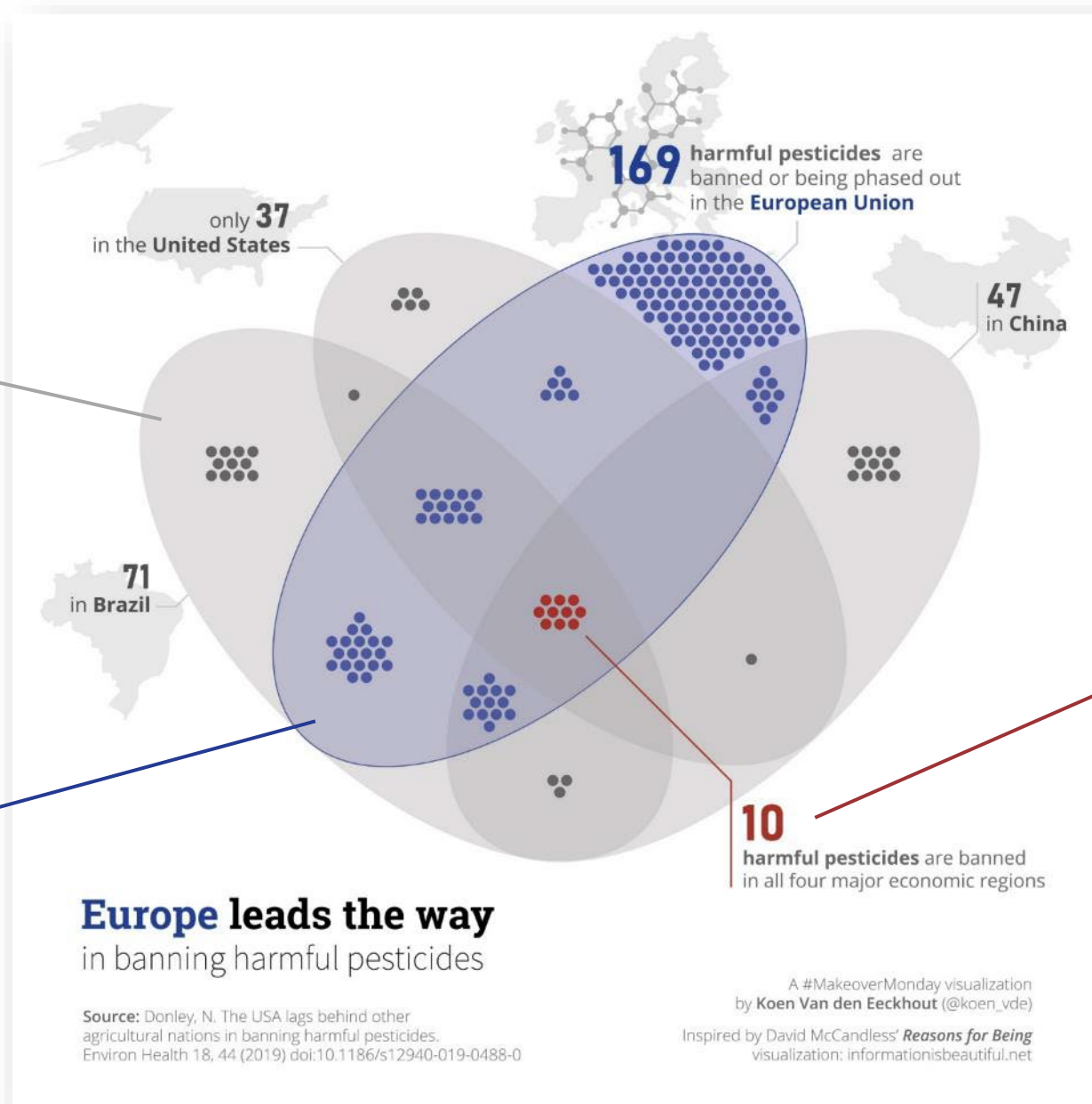
Add helpful annotations

Break the rules

background  
color

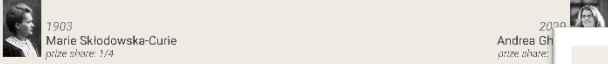
thematic  
color

accent  
color

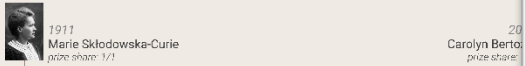




**Medicine**  
213 men, 12 women (5.3%)



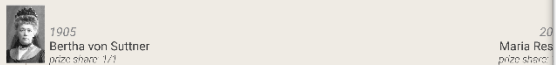
**Physics**  
218 men, 4 women (1.8%)



**Chemistry**  
183 men, 8 women (4.2%)



**Literature**  
102 men, 17 women (14.3%)



**Peace**  
92 men, 30 organisations, 18 women (12.9%)



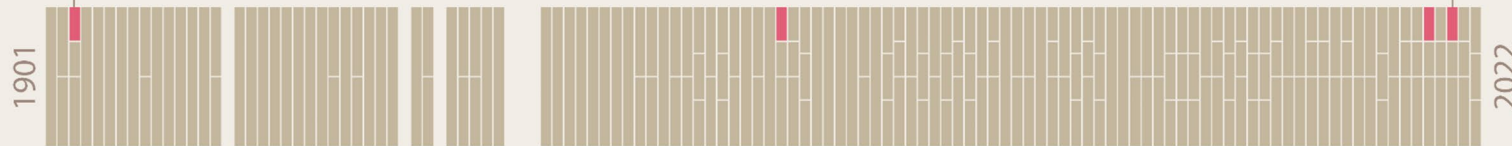
**Economics**  
90 men, 2 women (2.2%)

## Women of the Nobel Prize

The Nobel Prize exists since 1901. In those 122 years, the Prize was awarded 898 times to a man, but only 61 times to a woman. 2009 was a record year, with 5 women winning a Prize.

In 2022, only 2 women received the Prize: Annie Ernaux won the Literature Prize, and Carolyn Bertozzi won the Chemistry Prize together with Morten Meldal and K. Barry Sharpless, for their groundbreaking work on click chemistry and bioorthogonal chemistry - chemical reactions that can occur inside of living systems.

Source: nobelprize.org  
Infographic design: Koen Van den Eeckhout (@koen\_vde | www.baryon.be)



**Physics**  
218 men, 4 women (1.8%)

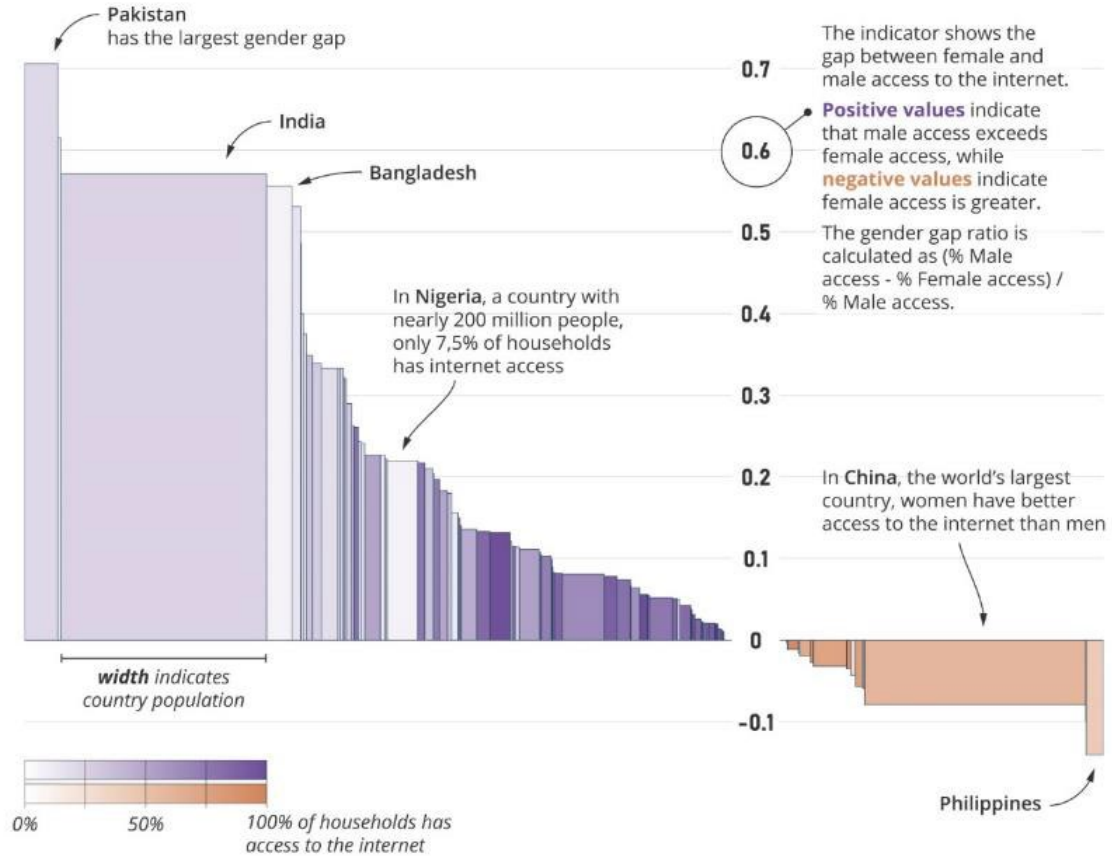


# Women of the Nobel Prize

Infographic design: Koen Van den Eeckhout (@koen\_vde | www.baryon.be)  
Source: nobelprize.org

# The digital divide

In most countries, **men** have better access to the internet than **women**



Source: The Economist Intelligence Unit Inclusive Internet Index 2020, International Telecommunication Union, Gallup World Poll

A #MakeoverMonday visualization by **Koen Van den Eeckhout** (@koen\_vde)



## Unemployment rate in selected countries

January-August 2020, sorted by the unemployment rate in January.

country	Jan ▲	Feb	Mar	Apr	May	Jun	Jul	Aug
Japan	2.4%	2.4%	2.5%	2.6%	2.9%	2.8%	2.9%	3.0%
Netherlands	3.0%	2.9%	2.9%	3.4%	3.6%	4.3%	4.5%	4.6%
Germany	3.4%	3.6%	3.8%	4.0%	4.2%	4.3%	4.4%	4.4%
Mexico	3.6%	3.6%	3.2%	4.8%	4.3%	5.4%	5.2%	5.0%
<b>US</b>	<b>3.6%</b>	<b>3.5%</b>	<b>4.4%</b>	<b>14.7%</b>	<b>13.3%</b>	<b>11.1%</b>	<b>10.2%</b>	<b>8.4%</b>
South Korea	4.0%	3.3%	3.8%	3.8%	4.5%	4.3%	4.2%	3.2%
Denmark	4.9%	4.9%	4.8%	4.9%	5.5%	6.0%	6.3%	6.1%
Belgium	5.1%	5.0%	5.0%	5.1%	5.0%	5.0%	5.0%	5.1%
Australia	5.3%	5.1%	5.2%	6.4%	7.1%	7.4%	7.5%	6.8%
<b>Canada</b>	<b>5.5%</b>	<b>5.6%</b>	<b>7.8%</b>	<b>13.0%</b>	<b>13.7%</b>	<b>12.3%</b>	<b>10.9%</b>	<b>10.2%</b>
Finland	6.8%	6.9%	7.0%	7.3%	7.5%	7.8%	8.0%	8.1%

Source: [OECD](#) • [Get the data](#) • Created with [Datawrapper](#)



## 5 ways to tell a story

Choose the right chart

Less is more

Use color in a clever way

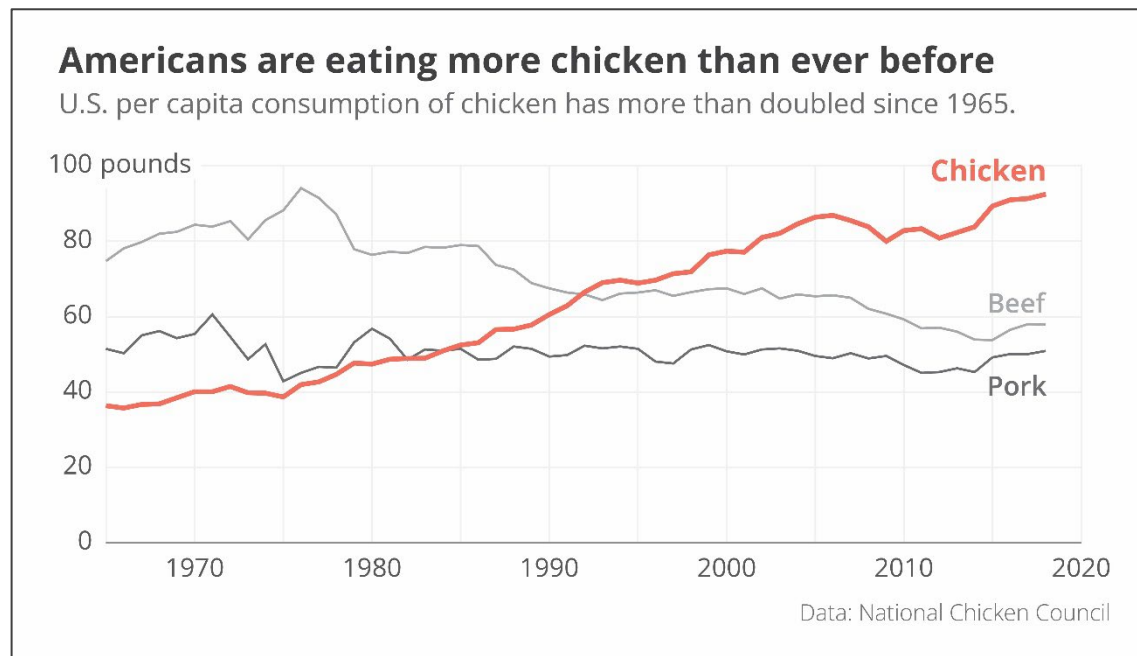
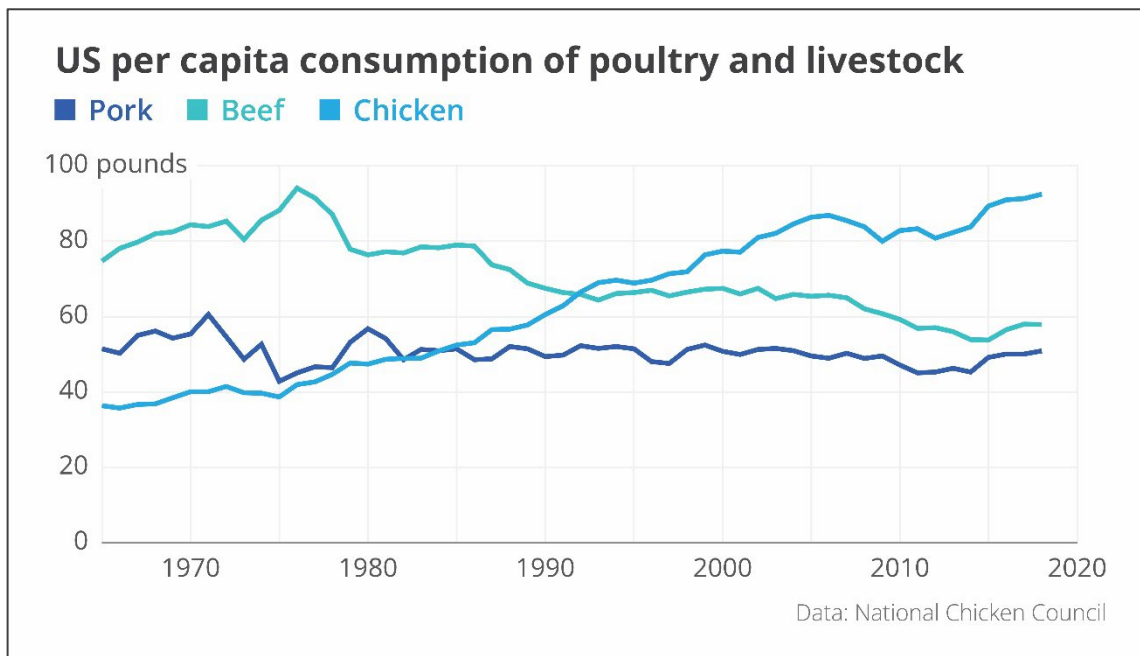
Add helpful annotations

Break the rules

~~data~~

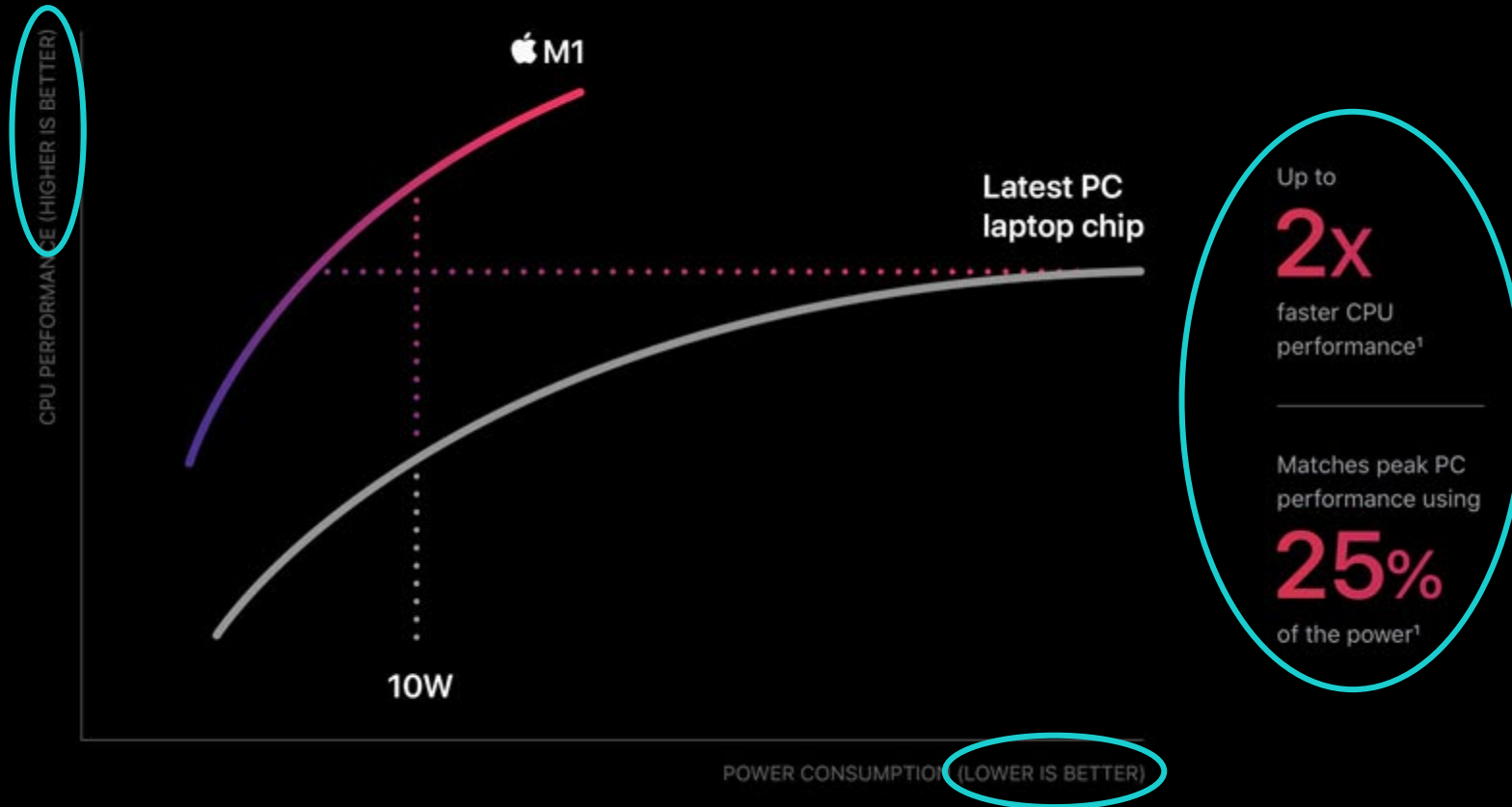


story

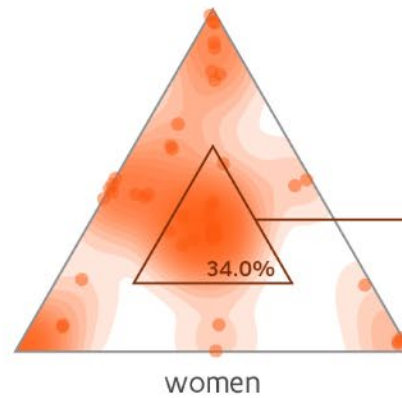
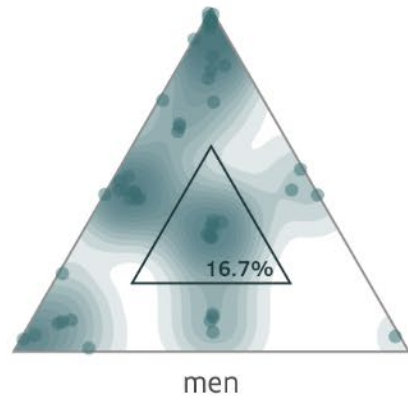
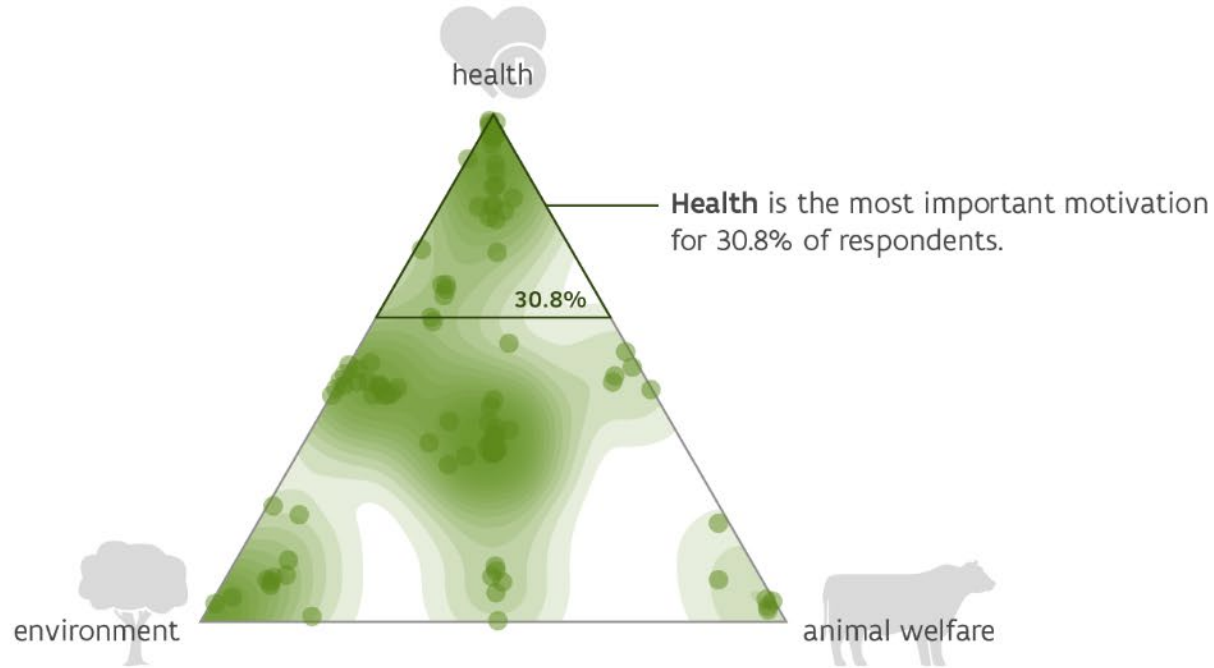


A good chart shows the data,  
**a great chart tells a story.**

## CPU performance vs. power



# What motivated me to change my eating habits...



The motivations of female respondents are more balanced than those of male respondents. For 34%, **all three motivations** are equally important.

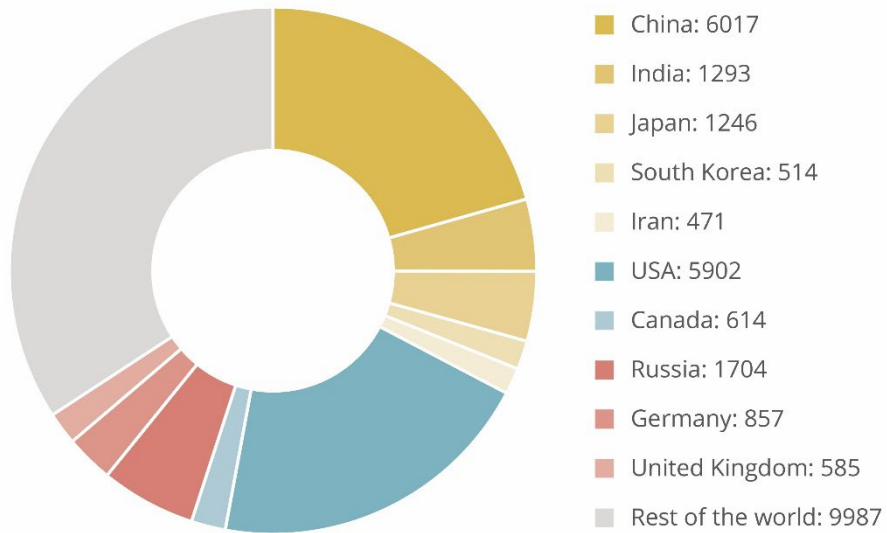


# Quick tip

## Direct labeling

### World carbon dioxide emissions from the consumption and flaring of fossil fuels

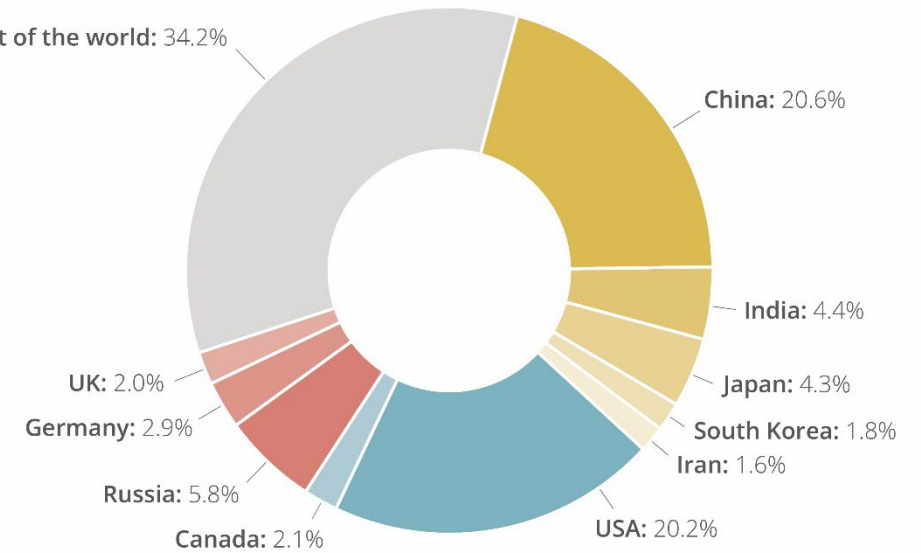
Million metric tons of carbon dioxide, in 2006



Source: Energy Emission Administration

### Global share of CO<sub>2</sub> emissions (2006)

Carbon dioxide emissions are dominated by China and the USA



Source: Energy Emission Administration



## 5 ways to tell a story

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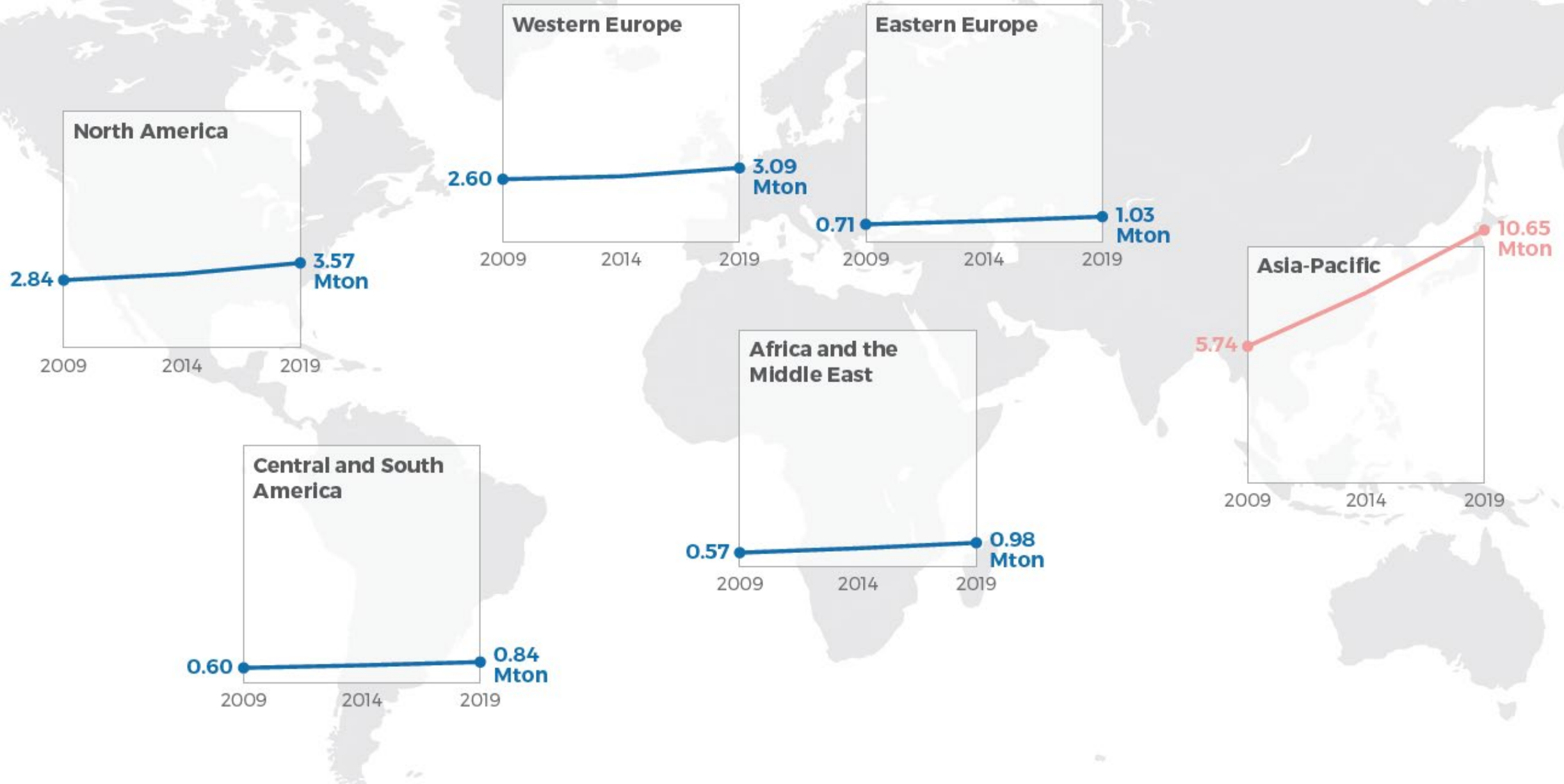
Use color in a clever way

Add helpful annotations

Break the rules



# Asia-Pacific will continue to be the biggest demand region





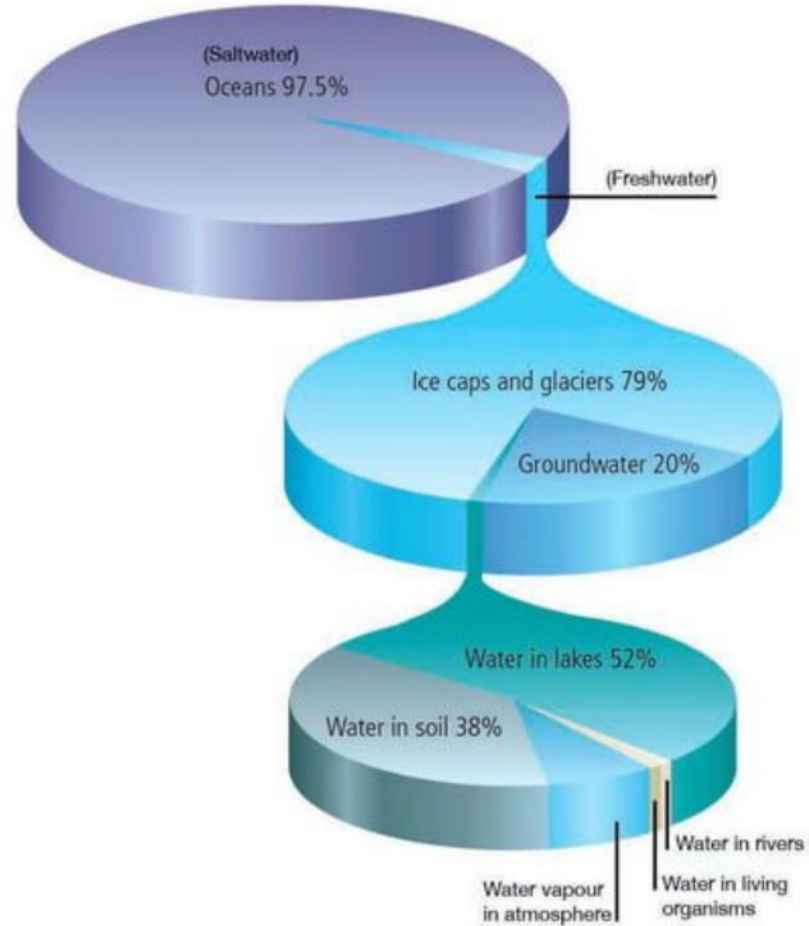
Koen Van den Eeckhout

Turning your complex data into powerful visual stories 📊 \*\*Hiring\*\*

1d • 🌐

📖 There's ALWAYS an exception... even for 3D pie charts!

🚫 No, 3D pie charts don't work. They're a bad idea. Because you can ...see more



👍👏❤️ Mark Verbeke and 68 others

5 comments



Like



Comment



Share



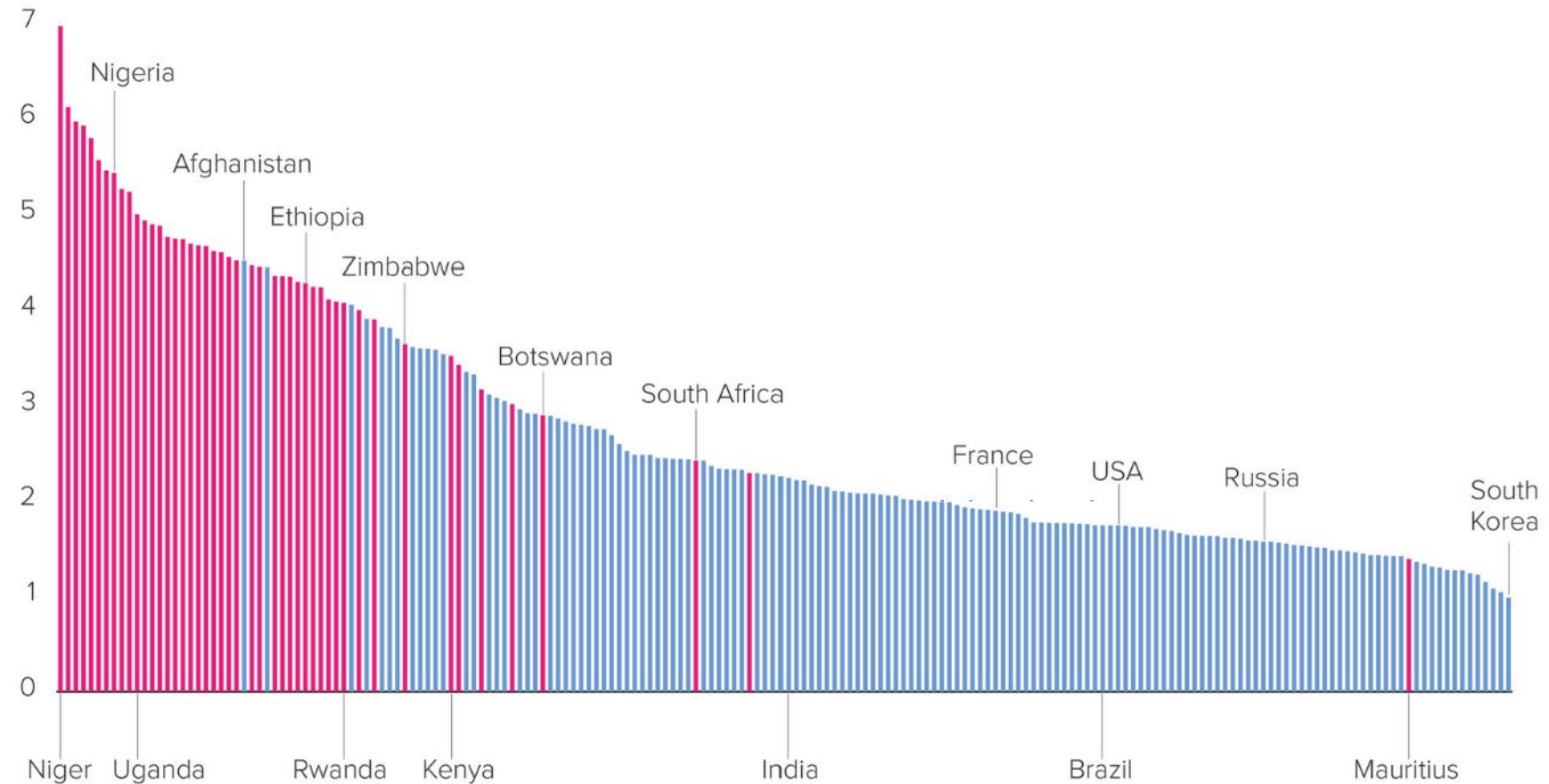
Send

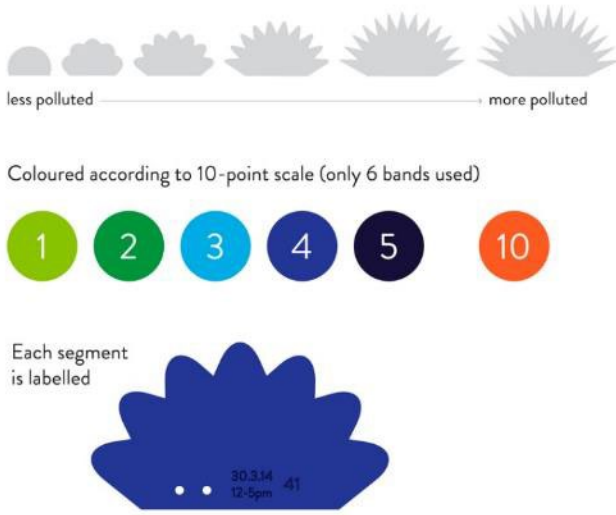
📊 4,918 views of your post in the feed

## The future is African

**Sub-Saharan Africa** has the highest fertility rates in the world, but declining infant mortality and increasing prosperity

Fertility rates (children per woman), 2018





[stefanieposavec.com/airtransformed](http://stefanieposavec.com/airtransformed)



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# Information Design Canvas

## Questions to ask yourself before starting an Information Design project

Are you stuck? Need some help planning your information design project? Looking for an expert opinion or help to get you from A to Z? We're here to help! Visit [baryon.be](http://baryon.be) or contact us at [koen@baryon.be](mailto:koen@baryon.be).



Make sure to ask for our **companion guidebook** to assist you in filling out this Canvas!



### Information

#### What information do you have available?

• What data and/or information is available?



• In what form and size is the data available? Where is it stored?

• How often is the information updated?

• From which and how many sources is the information collected?

• Is the data already cleaned or not?

• Is the data confidential or not?

### Goals

#### What do you want to achieve?

• Is your goal to inform/support decision making, entertain/learn, or both?



• Should the design be explorative, or explanatory?

• What value will this design project bring to your audience?

• What value will this design project bring to you or your company?

### Budget

#### What are you willing to invest?

• What is the budget range available for this project?



• What is the timing for the different steps of the project?

### Audience

#### Who will consume the information?

• Who is your audience?



• Are there multiple audience personas, or just one?

• What are their goals?

• Which decisions do they have to make? What data do they need for that?

• How well do they (already) know the data?

• How much time do they have to process the information?

• How often will they consume the information?

• Which device(s) will they use to access the information?

### Format

#### What should the finished product look like?

• Will the design be printed or digital?



• Should the design be static or dynamic/animated?

• Should the design be interactive, and at what level (tooltips, filtering, navigation, storytelling)?

• What will be the screen or paper size?

• Are there color or styling constraints? E.g. corporate identity?

• Should the style be abstract or figurative?

• Does the final product need to match any existing assets/artwork/style?

• Do you have any inspiring examples?

• What properties or features do you NOT want in your design?

### Technologies

#### What are the tools to make this happen?

• Which technologies (related to your data/information, and this project) do you already use?



• Which technologies is your audience familiar with?

• Will you use off-the-shelf tools, or custom solutions? Are you looking for open-source tools?

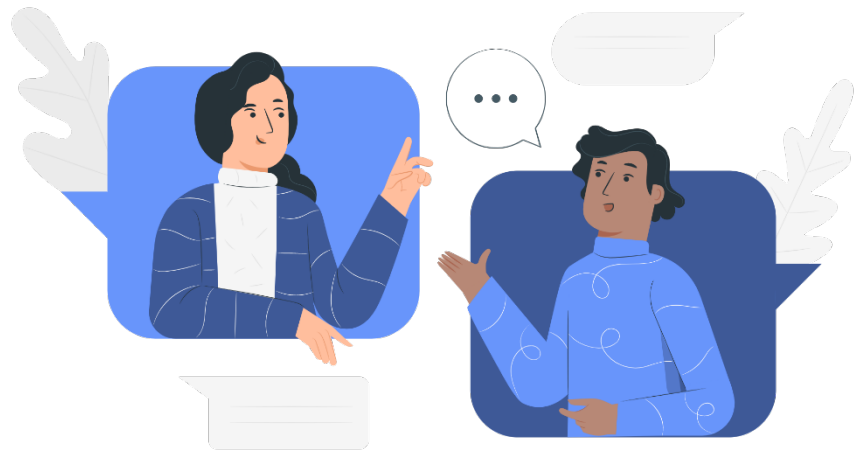
• Who will do the deployment of the final product, such as printing or hosting?

• Who will do the distribution of the final product?

• Who will do the maintenance of the final product?

• What is the budget for the technologies to be used?

• Will you go for internal or external development?



# Thank you!

All the links:

[baryon.be/dataviz-resources](https://baryon.be/dataviz-resources)

Koen Van den Eeckhout – [koen@baryon.be](mailto:koen@baryon.be) - @koen\_vde