Finding the right chart for your story

This section consists of a series of story types and the kinds of charts and maps that work best for telling each story. All of the visuals have been tried and tested in client projects. Our hope is that, if you're ever stuck for ideas, you can flick through these pages and find inspiration. All of the charts use genuine data – the sources are at the bottom of each page.

What you will notice is that there are always several right answers for every story. It depends on what you want to say and who your audience is. For some audiences, you will want simple bar or line charts; for others, something more novel or perhaps no chart at all. In Chapter 2, we discussed the best choices for each audience type.

You will notice that there are many chart types that aren't included in these pages, for example, no marimekko charts, no radial bar charts, no 3D scatter charts. Just because a chart exists, it doesn't mean that it's a useful communication tool. We are not showing you every chart you can use, just the charts that we believe you should.

Another caveat: there is a definite bias towards static charts here. Because this is a book, we have inevitably told stories and used charts that work well in print. If you were making an interactive, you might go more ambitious (think Gapminder) or even less (lots of bar charts, like a corporate dashboard). You would also be more likely to use maps, which come into their own when interactivity is added. We have discussed the kinds of choices you make in interactive storytelling in Chapters 9 and 10.

We have grouped the charts into their primary story type - change over time, comparison, composition and so on. Often charts tell more than one story, for example, a change-over-time chart often compares multiple variables too, or indicates the composition of a marketplace. However, the audience always notices one story first (if you've designed it right). There is always an organising metaphor. So our change-over-time stories are for when you want your audience to notice what's rising or falling (or staying the same) before anything else.

Some of the time, you will be linking several chart types together. For example

you might start with a **comparison** chart: here is the GDP of the G7 countries right now.

then perhaps a **composition** chart: here is the total GDP of the G7 compared to the rest of the world (e.g. in 2019, they had 39% of the world's GDP).

finally **change over time**: here is how the G7's share of global GDP has increased since 1945.

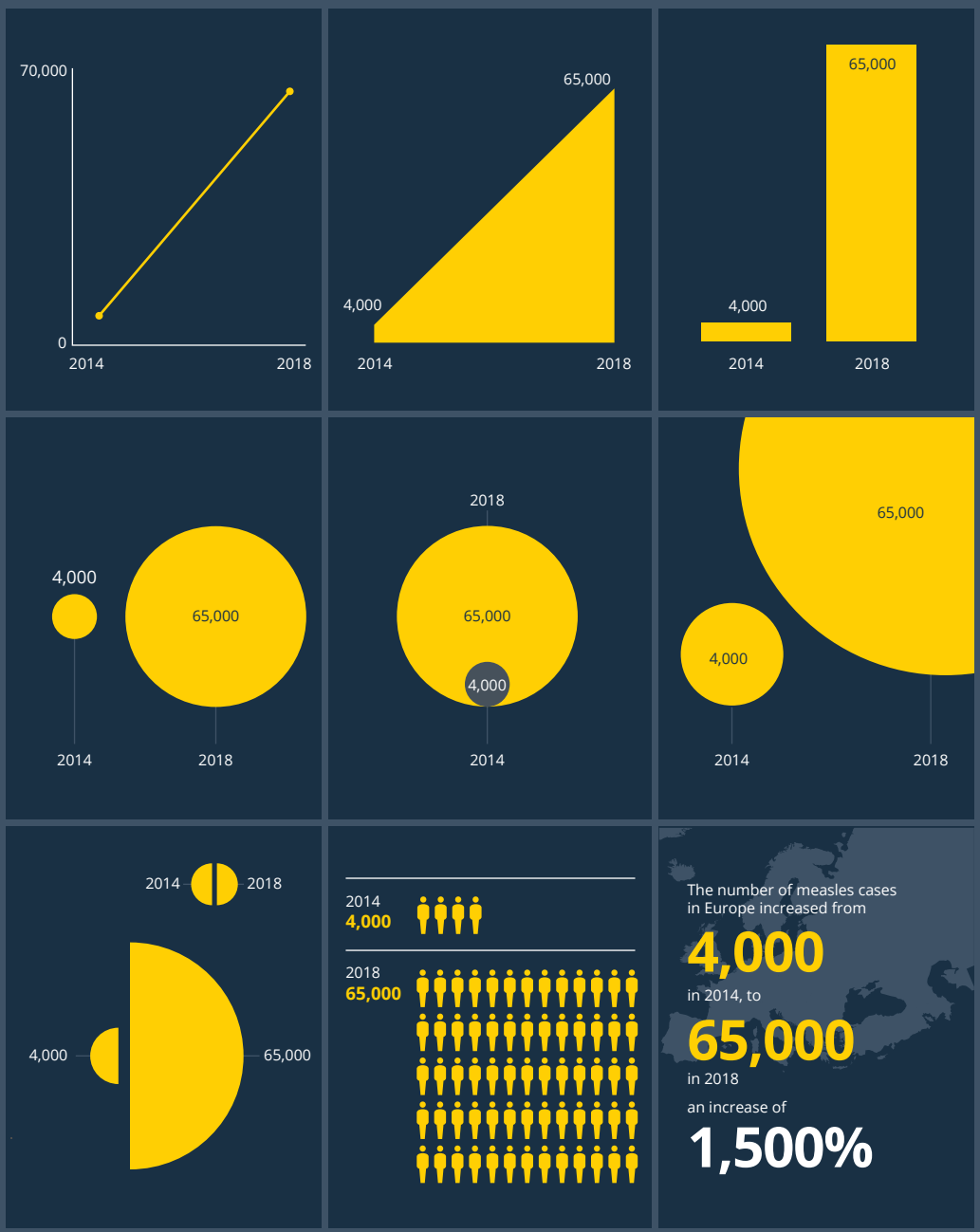
We have put a few of these multi-step stories at the end of this section. Notice that, in each case, we keep each part of the story as a separate chart, and rarely recommend merging disparate story types into one composite visual. This is about communicating to people who know less about the subject than you, and this means small pieces of self-contained and coherent information, progressively disclosed (see Chapter 4 for more on story structure).

We've put the svgs of all these charts here: www.addtwodigital.com/book/downloads. Feel free to use, adapt and modify them, under Creative Commons 4.0. This means you have to credit us, but that's all. The main tools we used were ggplot, Flourish, Raw and Illustrator. We'd highly recommend all four.

Change over time

1. One data series, two years

Number of measles cases in Europe (2014–2018)

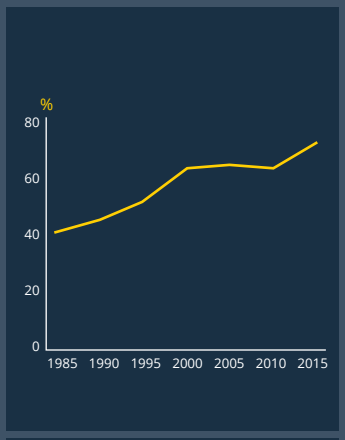


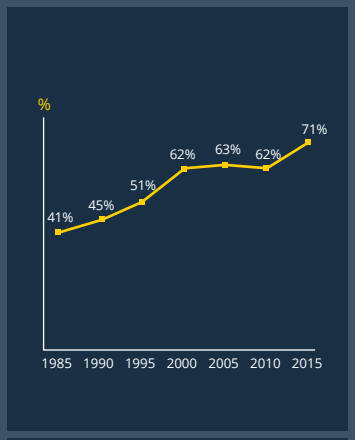
Source: Royal Stastistical Society / WHO

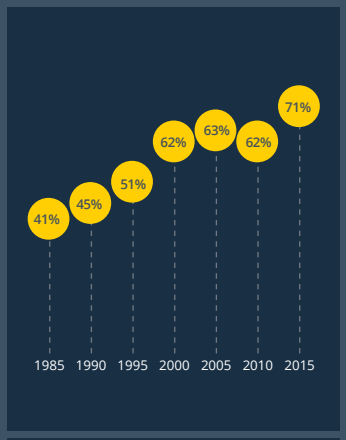
Change over time

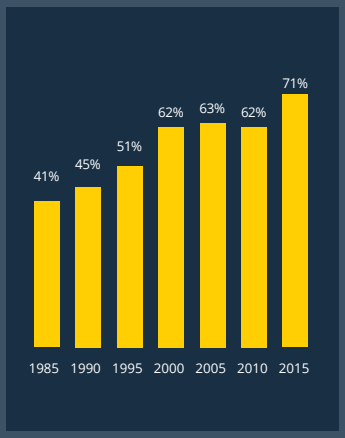
2. One data series, several years

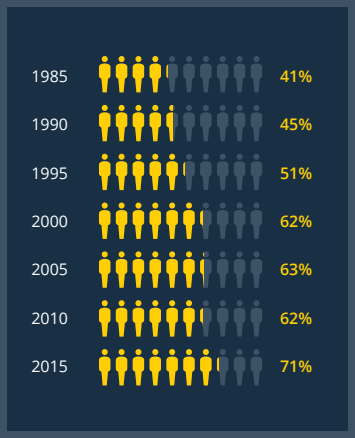
British people who believe there is nothing wrong with sex before marriage (%)

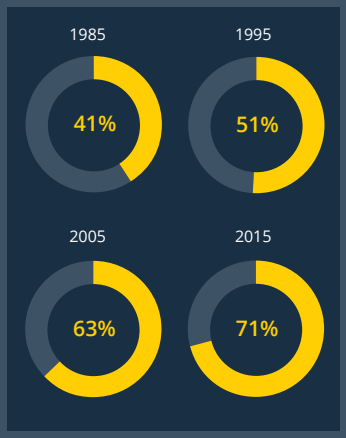


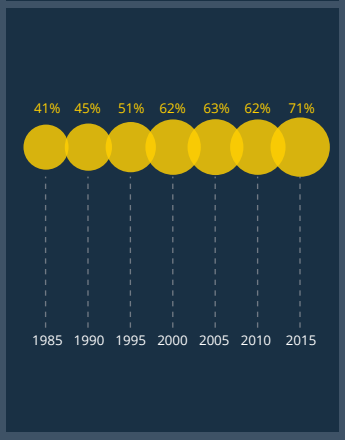


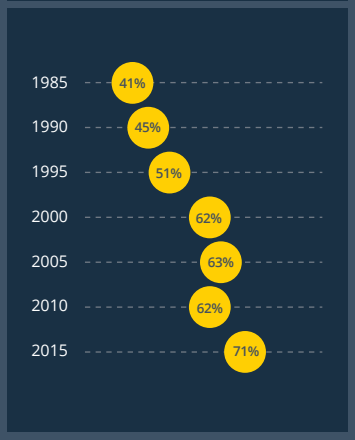










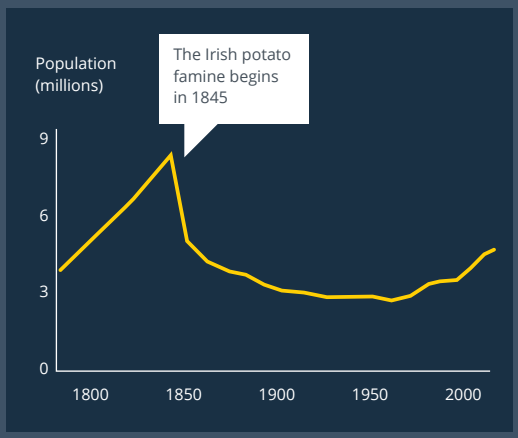


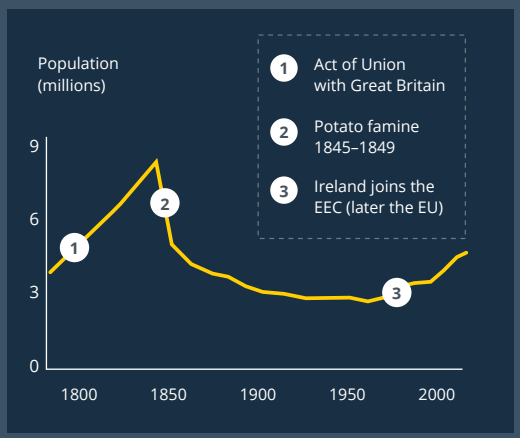
Source: Nat Cen BSA Survey

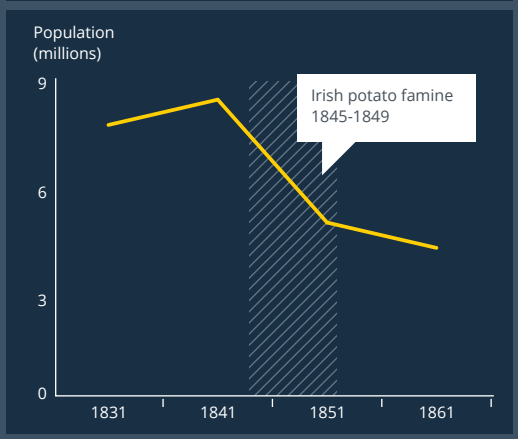
Change over time

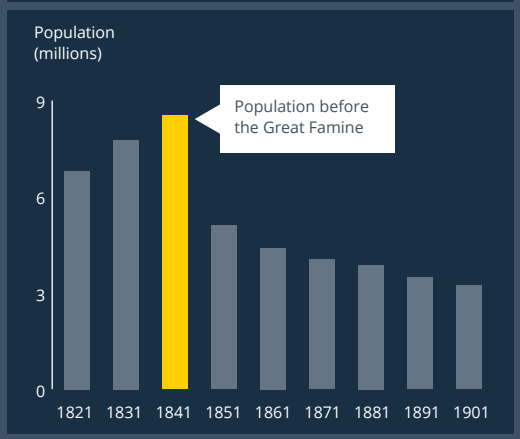
3. One data series, with annotation

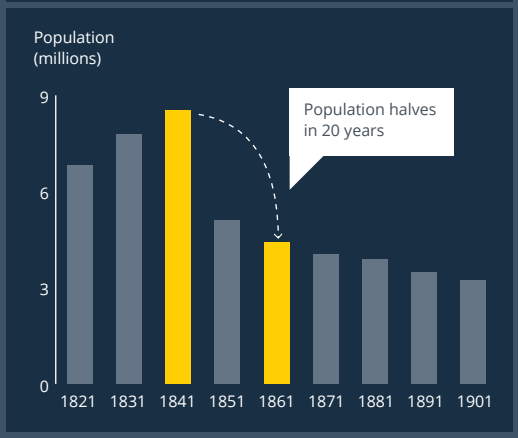
The population of Ireland

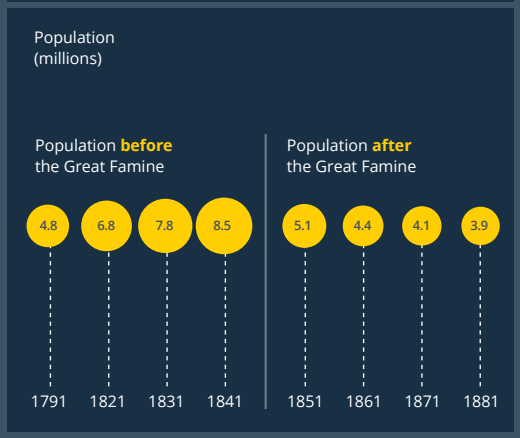










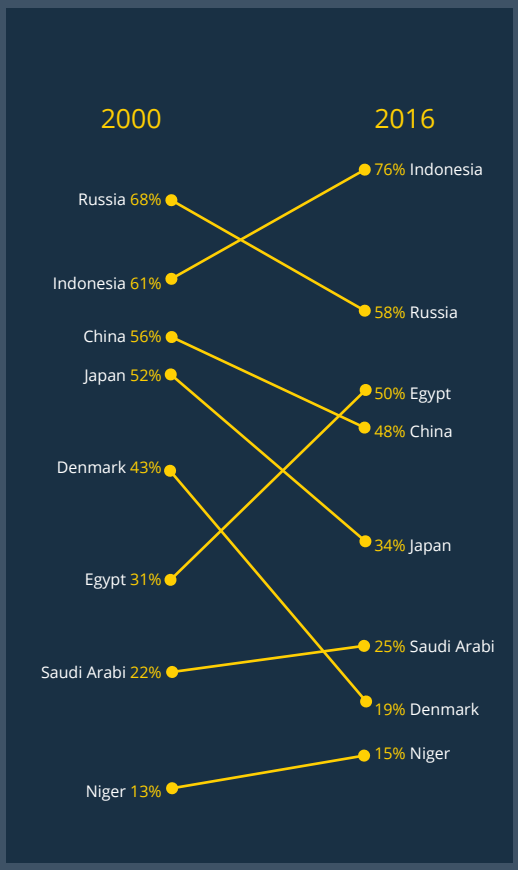


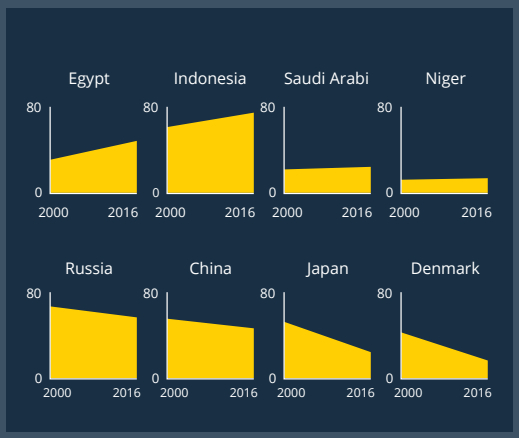
Source: Library Ireland, Annales de Demographie Historique, 1979

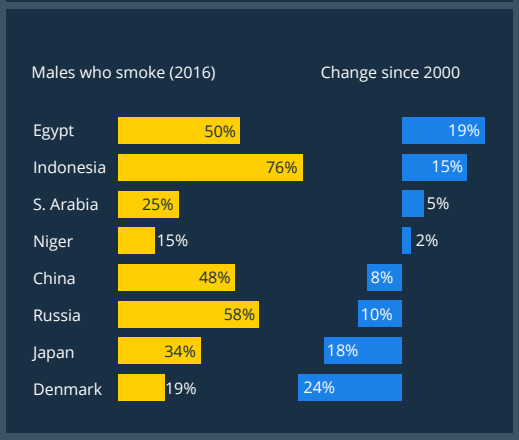
Change over time

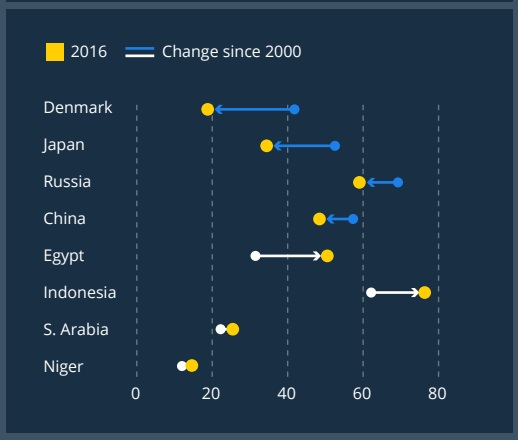
4. Several data series, two years

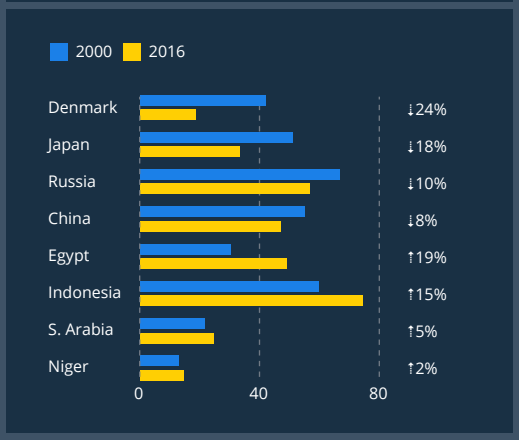
Percentage of adult males who are smokers (2000 vs 2016)









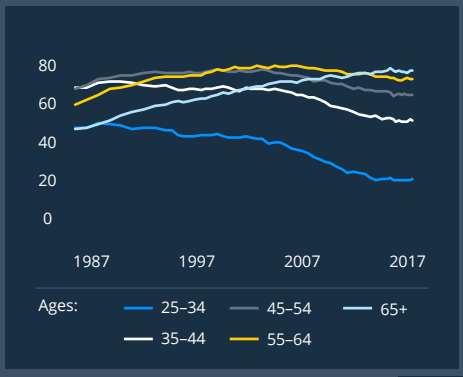


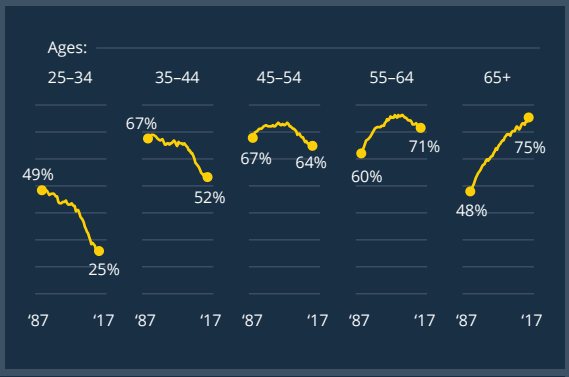
Source: World Bank / WHO

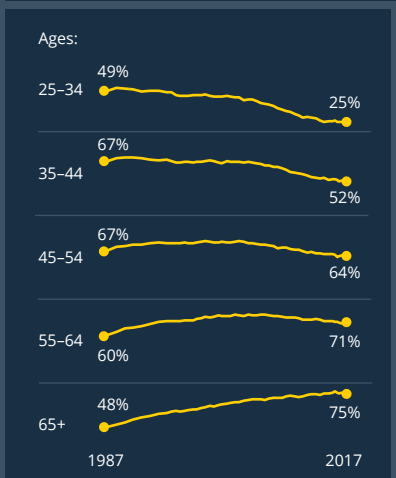
Change over time

5. Several variables, several years

Percentage of British people in each group that own their own home* (1987-2017)

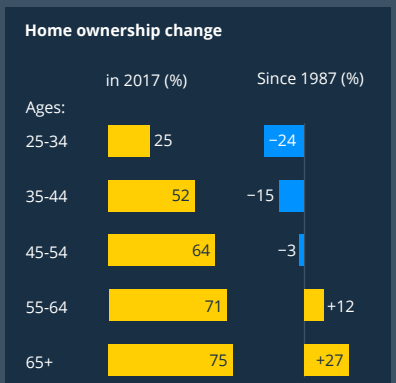






Ages:

	25–34	35–44	45–54	55–64	65+
1987	49	67	67	60	48
1990	51	70	72	66	52
1993	49	68	74	70	57
1996	45	66	74	72	61
1999	46	67	75	75	63
2002	44	67	75	76	67
2005	42	66	74	77	70
2008	35	63	70	76	71
2011	28	57	68	73	74
2014	25	53	66	72	75
2017	25	52	64	71	75



Year

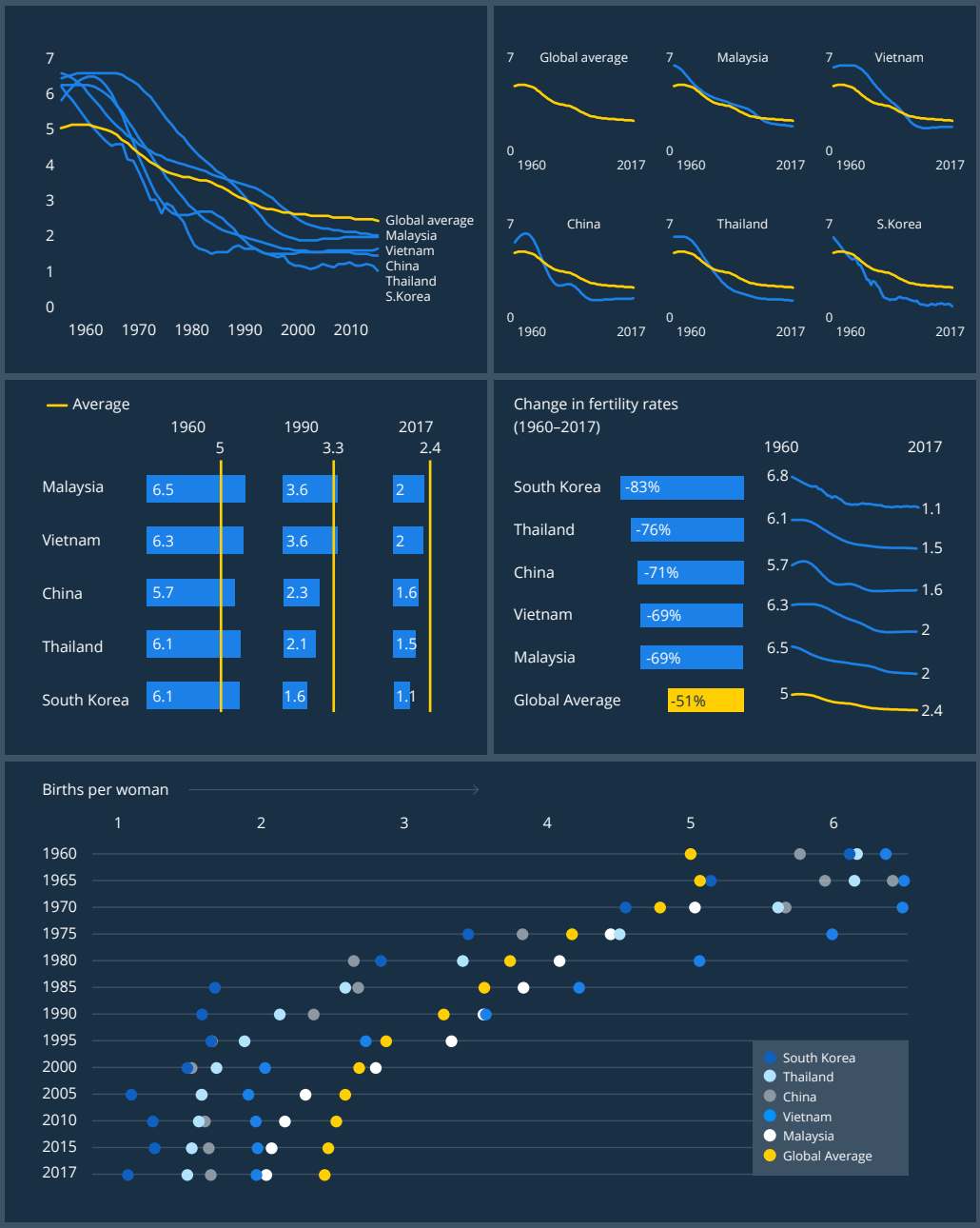
Ages:	'87	'90	'93	'96	'99	'02	'05	'08	'11	'14	'17
25–34	49	51	49	46	45	45	42	35	28	25	25
35–44	67	70	68	66	62	67	66	63	57	53	52
45–54	67	72	74	74	75	75	74	70	68	66	64
55–64	60	66	70	72	75	76	77	76	73	72	71
65+	48	52	57	61	63	67	70	71	72	75	75

Source: Resolution Foundation *Including mortgage holders

Change over time

6. Several variables against an average

Total fertility rates (births per woman), 1960–2017

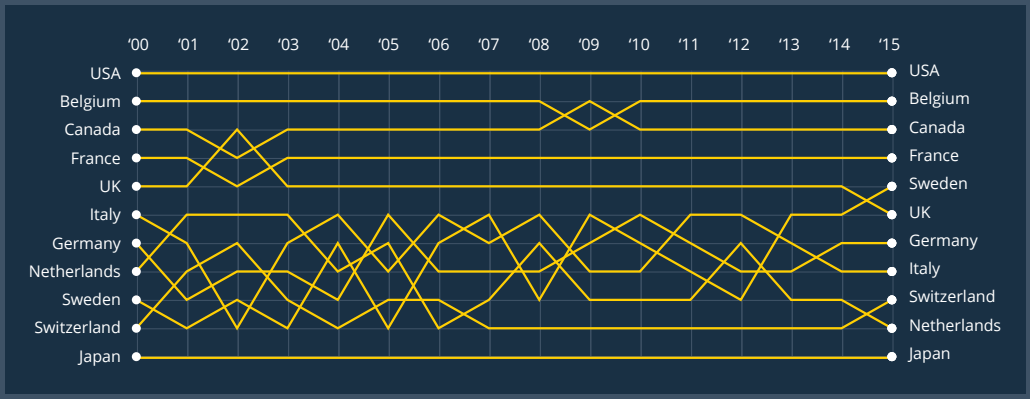


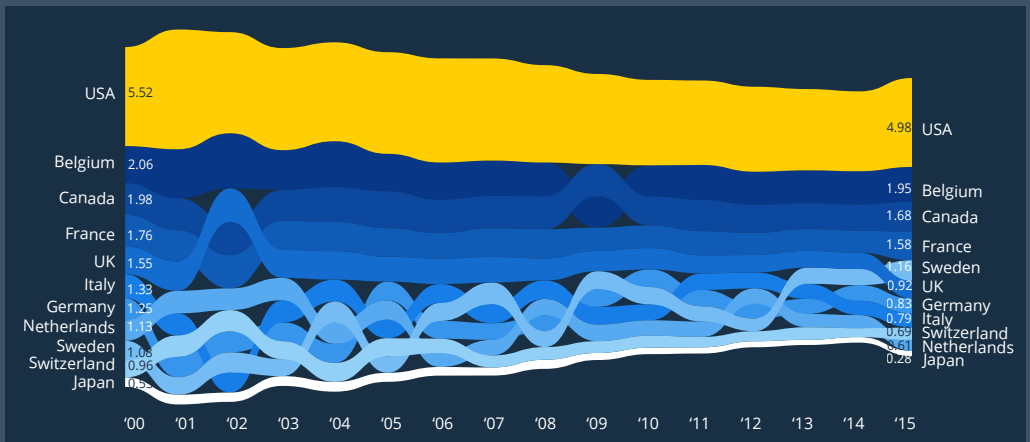
Source: World Bank

Change over time

7. Ranking

Murder rate per 100,000 people in G10 countries, 2010–2015





	Murder rate (per 100,000)	Rank change since 2000
1 USA	4.96	=
2 Belgium	1.95	=
3 Canada	1.68	=
4 France	1.58	=
5 Sweden	1.15	+4
6 UK	0.99	-1
7 Germany	0.83	=
8 Italy	0.79	-2
9 Switzerland	0.69	+1
10 Netherlands	0.61	-2
11 Japan	0.28	=

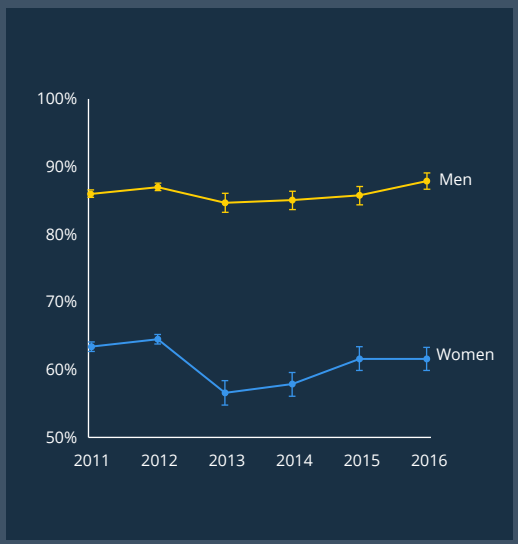
	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
USA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Belgium	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2
Canada	3	3	4	3	3	3	3	3	3	2	3	3	3	3	3	3
France	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4
Sweden	9	10	9	10	7	10	7	6	9	6	7	8	9	6	6	5
UK	5	5	3	5	5	5	5	5	5	5	5	5	5	5	5	6
Germany	7	9	8	8	9	6	8	8	8	7	6	7	8	8	7	7
Italy	6	7	10	7	6	8	6	7	6	8	8	6	6	7	8	8
Switzerland	10	8	7	9	10	9	9	10	10	10	10	10	10	10	10	9
Netherlands	8	6	6	6	8	7	10	9	7	9	9	9	7	9	9	10
Japan	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

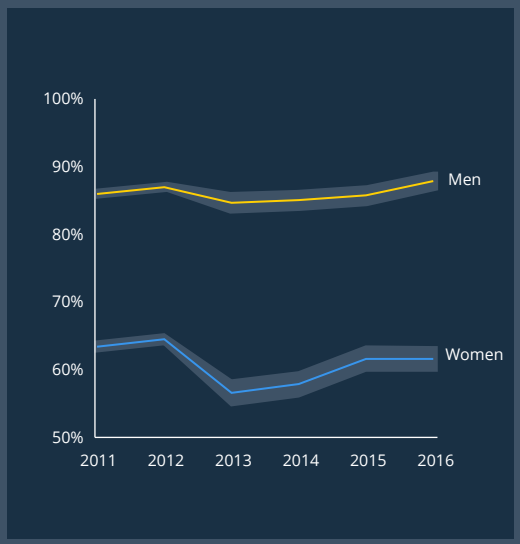
Source: World Bank

Change over time

8. Margin of error

Percentage who feel safe walking alone after dark (England and Wales)

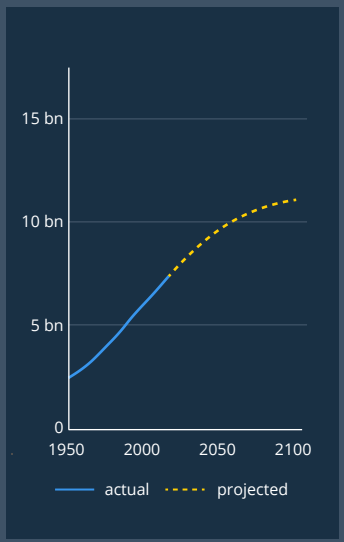


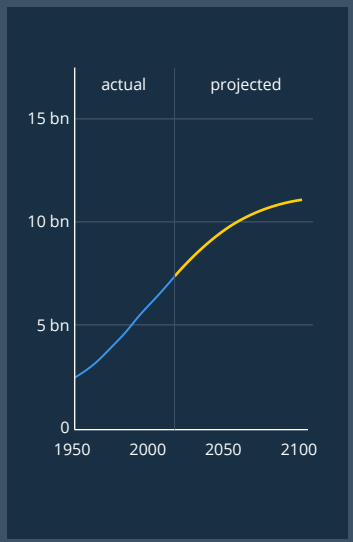


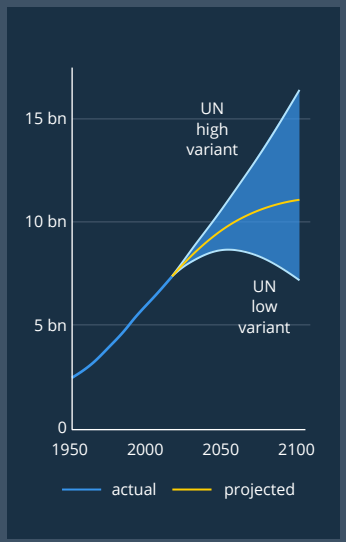
Source: Crime Survey for England and Wales, 95% confidence interval shown.

9. Projections

World population (1900 to 2100)







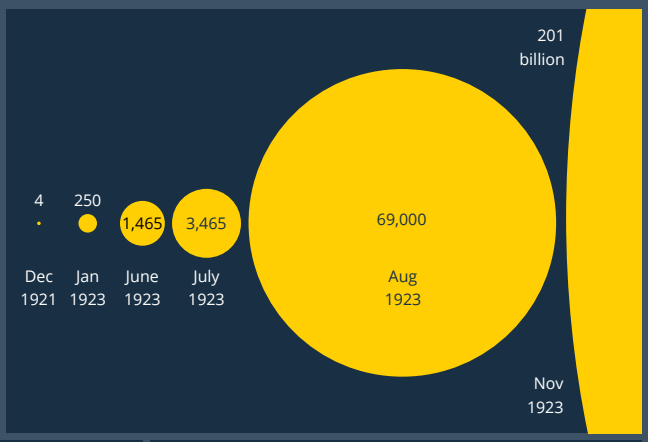
Source: United Nations

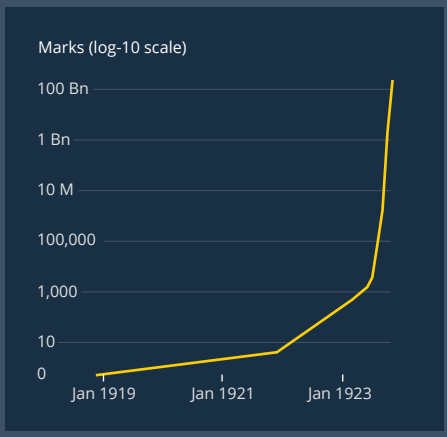
Change over time

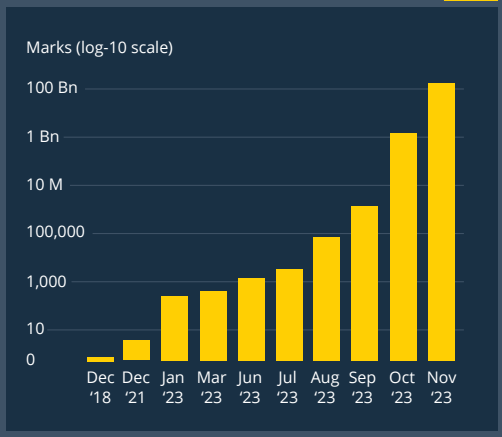
10. Off-the-charts

The price of bread in Berlin, Germany (1918–23)

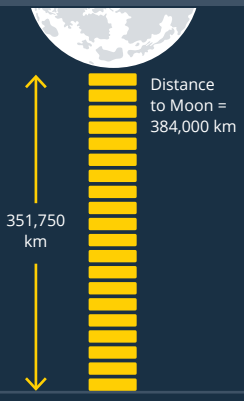
Date	Loaf of bread (Marks)
Dec 1918	0.5
Dec 1921	4
Jan 1923	250
Mar 1923	463
June 1923	1,465
July 1923	3,465
Aug 1923	69,000
Sept 1923	1,512,000
Oct 1923	1,743,000,000
Nov 1923	201,000,000,000

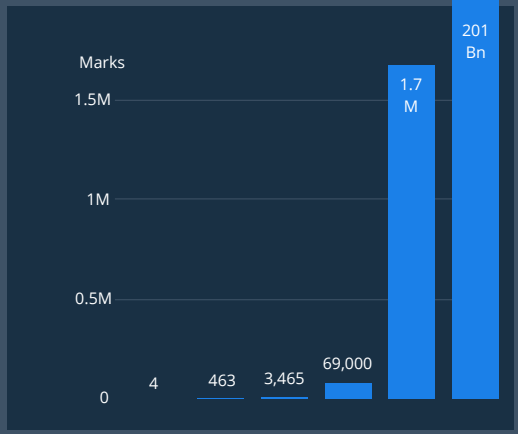






In November 1923, a loaf of bread in Berlin was 201 billion Marks. If you had stacked up 201 billion pre-war silver Marks (each coin = 1.75mm thick), your tower of coins would have (almost) reached the Moon.





continues for 35,000 more pages

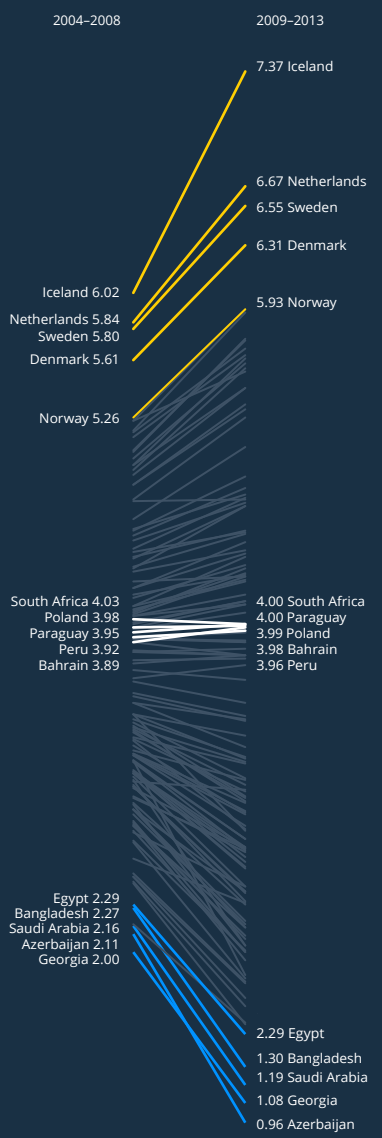
Source: Encyclopaedia Britannica

Change over time

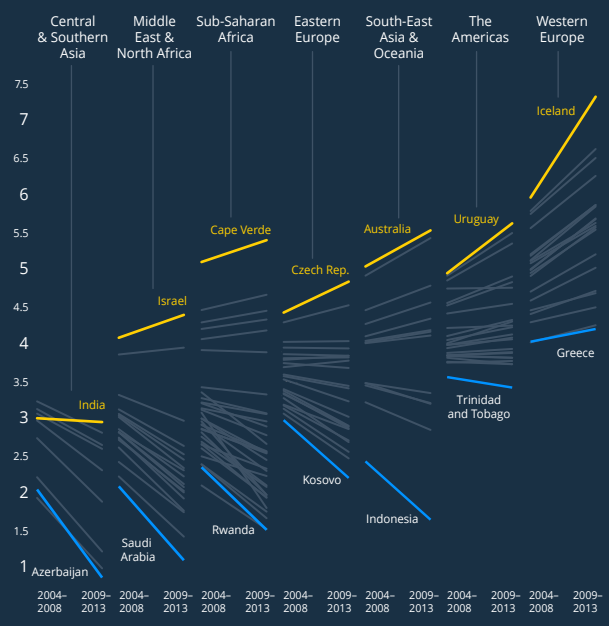
11. Too much data

Social acceptance of LGBT people (indexed) - 2004–08 and 2009–13

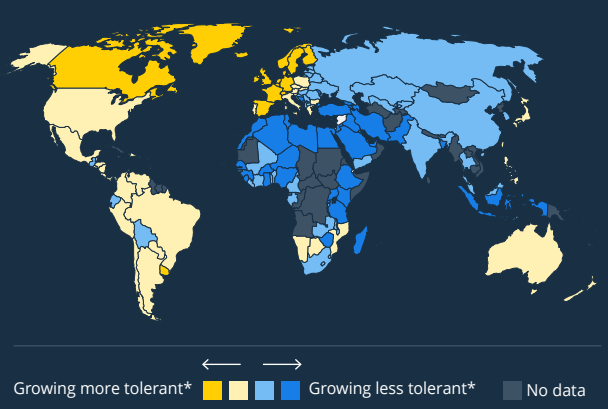
Tolerant and intolerant countries diverge even further



Breakdown of changing attitudes by region



Changing attitudes to LGBT people (2004–08 v. 2009–13)



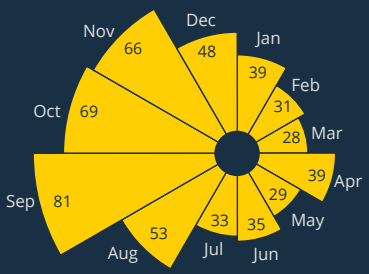
*Dark red = ≥ 0.5 increase, Pink 0 to 0.49 increase, Light blue 0 to –0.49 decrease, Dark blue ≤ –0.5 decrease

Source: Williams Institute, Global Acceptance Index

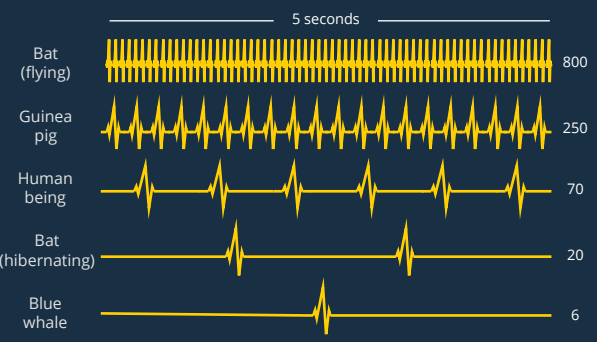
Change over time

12. Miscellaneous

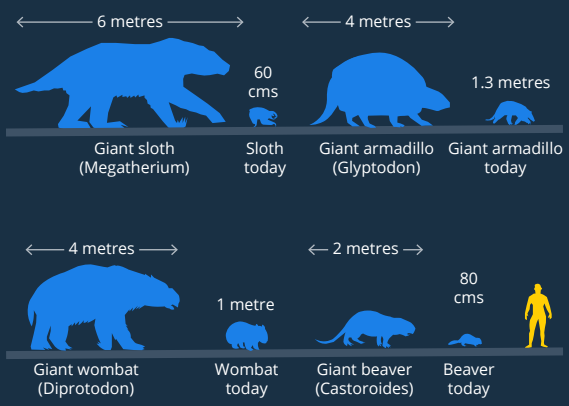
Global searches for football by month (indexed, 2008–18)



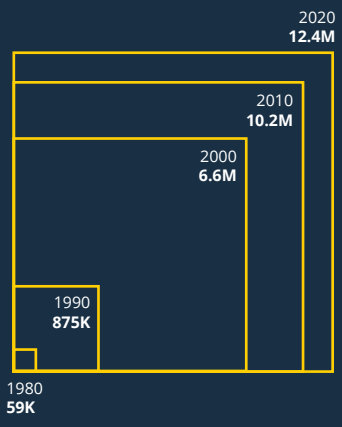
Animal heart rates (beats per minute)



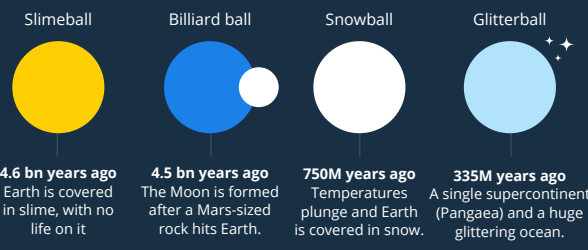
Change in animal sizes (50,000 BC v. today)



Population of Shenzhen, China



Earth's prehistory



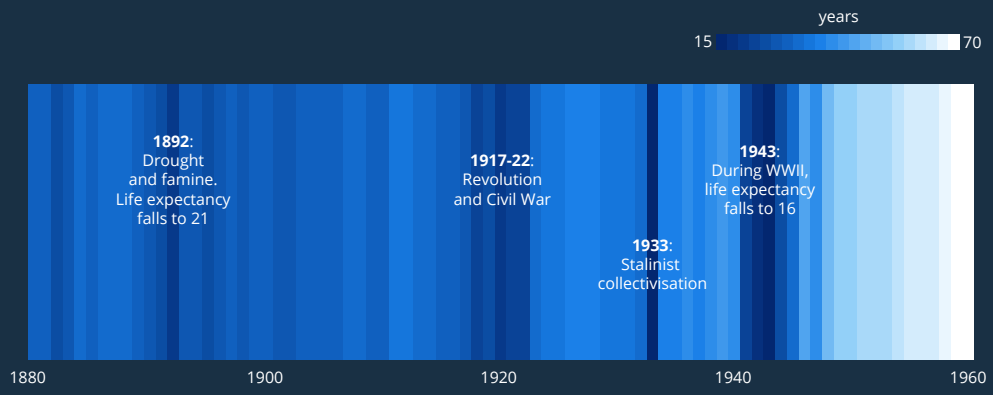
4.6 bn years ago
Earth is covered in slime, with no life on it

4.5 bn years ago
The Moon is formed after a Mars-sized rock hits Earth.

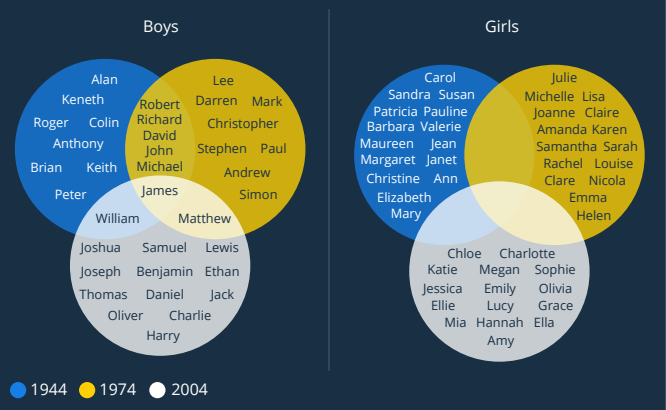
750M years ago
Temperatures plunge and Earth is covered in snow.

335M years ago
A single supercontinent (Pangaea) and a huge glittering ocean.

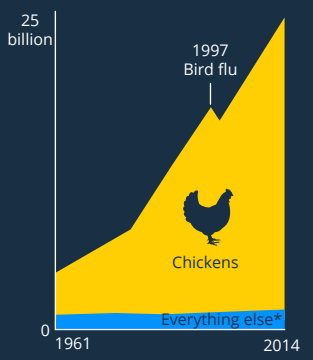
Average life expectancy in Russia and the Soviet Union (1880–1960)



Top 15 names in England & Wales (1944, 1974, 2004)

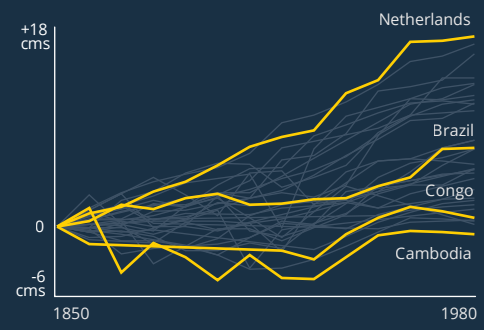


Number of livestock animals globally (1961–2014)

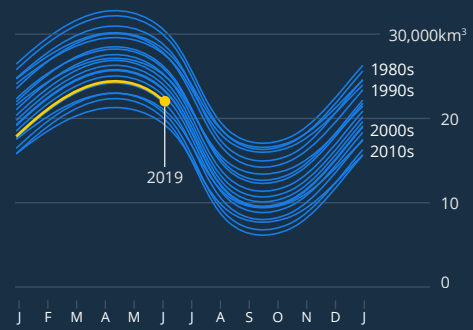


*cows, sheep, pigs, goats, turkeys, horses

Change in height in males (1850–1980)



Arctic sea ice volume (1979–2019)

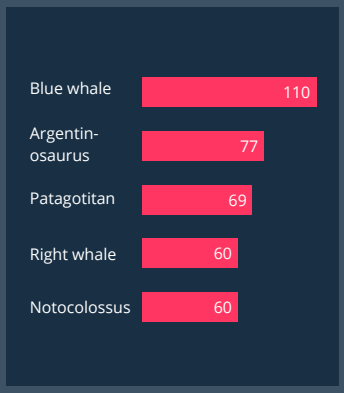


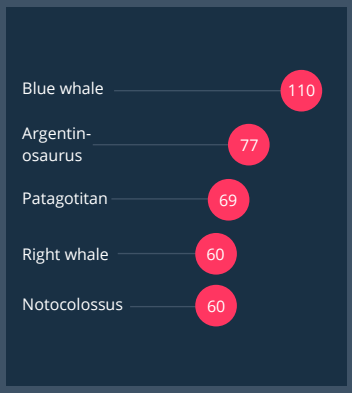
Sources: Google Trends (football data), Natural History Museum (animal size, animal heart rates), Gapminder (Russia life expectancy), Our World in Data (livestock and height data), Guardian/ Polar Science Centre (sea ice), ONS (baby names)

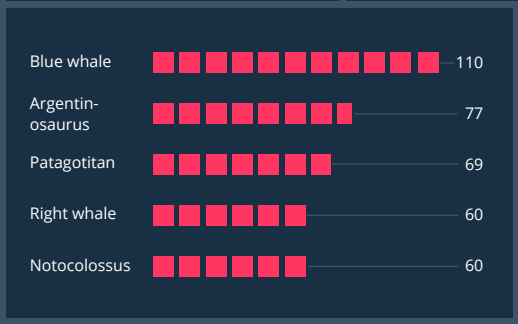
Comparison

1. Five items or fewer

Largest animals that have ever lived (average weight in tonnes)







With an average weight of

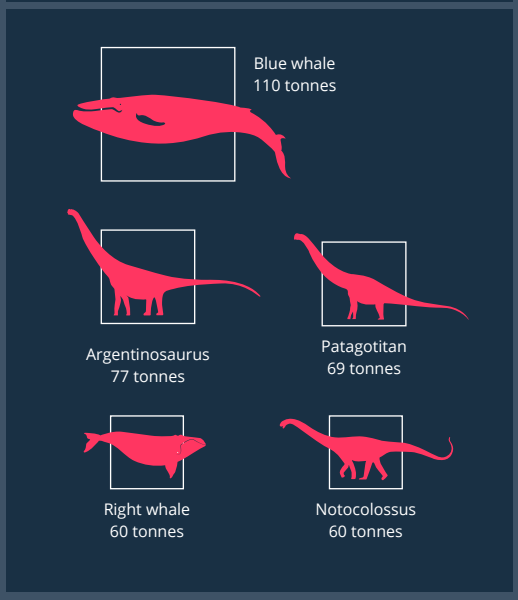
110 tonnes

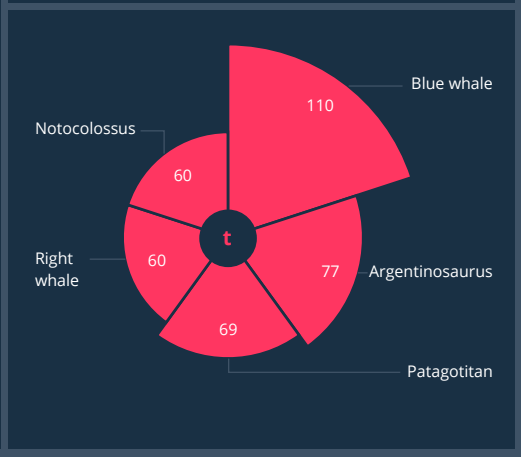
the blue whale is the largest animal ever to have lived

There are about

8,500

of them left



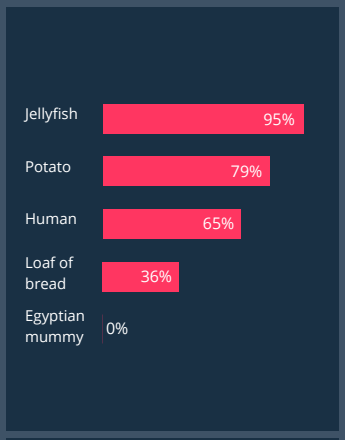


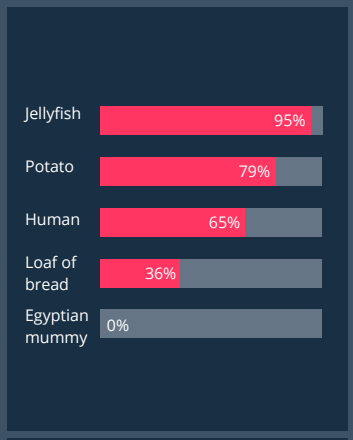
Source: Natural History Museum, UK. This is correct as of Jan 2019. Larger dinosaurs are being found all the time, but none so far have come close to the size of the blue whale

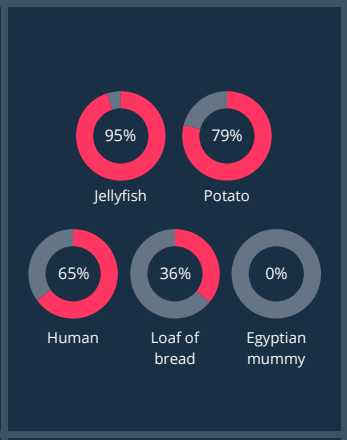
Comparison

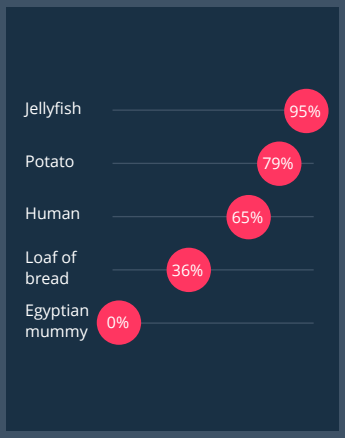
2. Five items or fewer, percentage

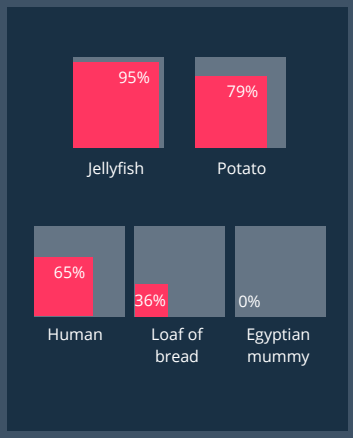
Water content (%)

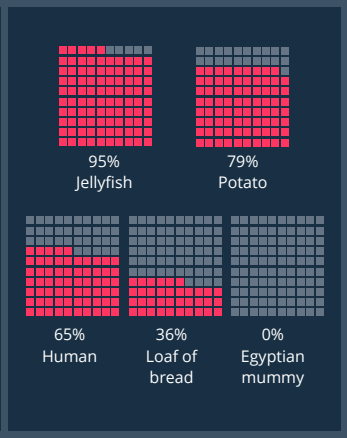


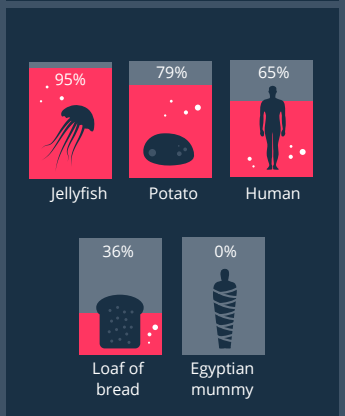


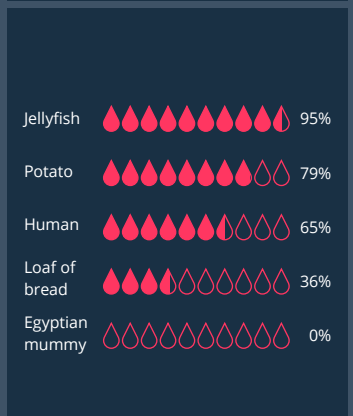


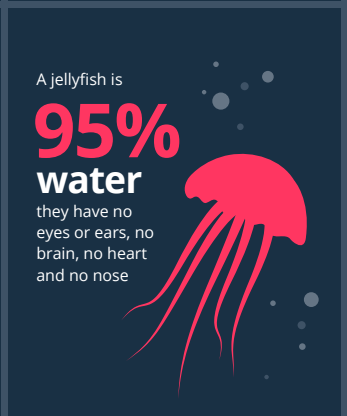










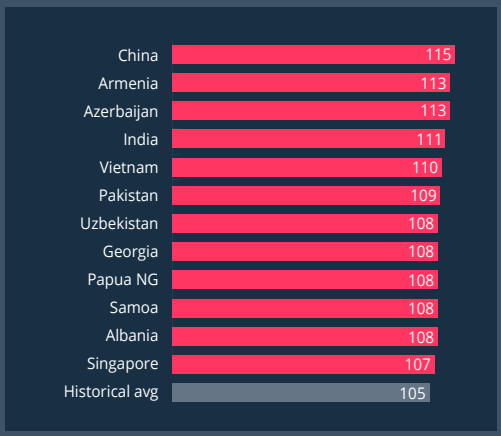


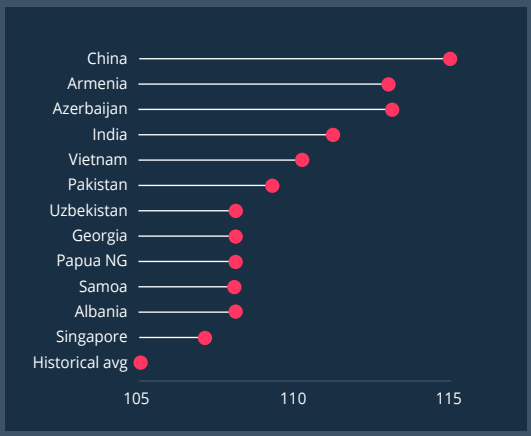
Source: How Stuff Works

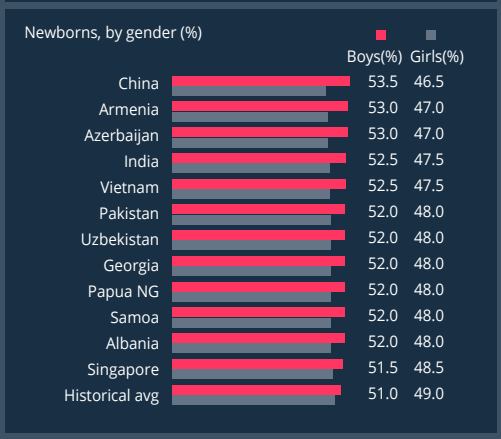
Comparison

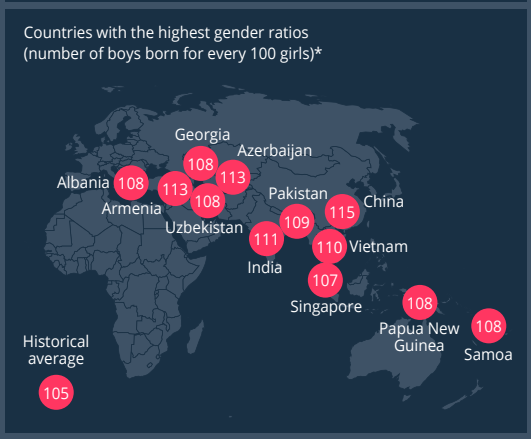
3. 10-20 datapoints

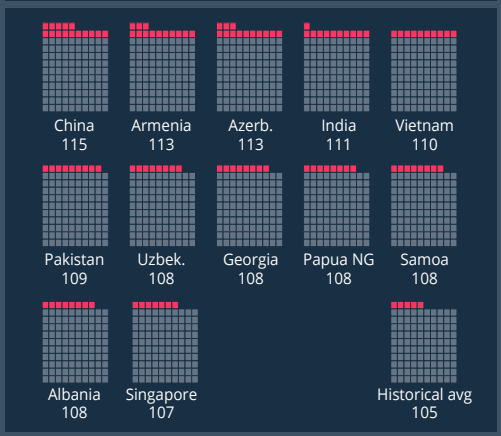
Number of baby boys for every 100 baby girls, 2017 (highest ratio)

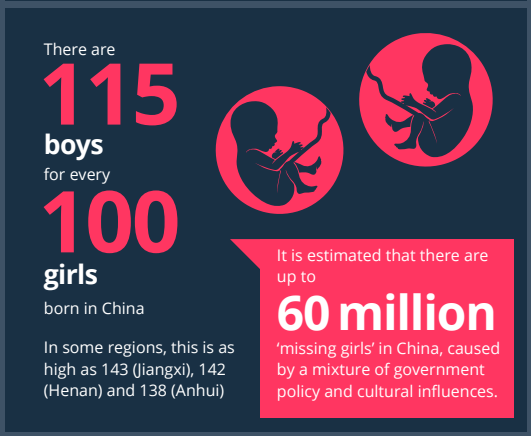










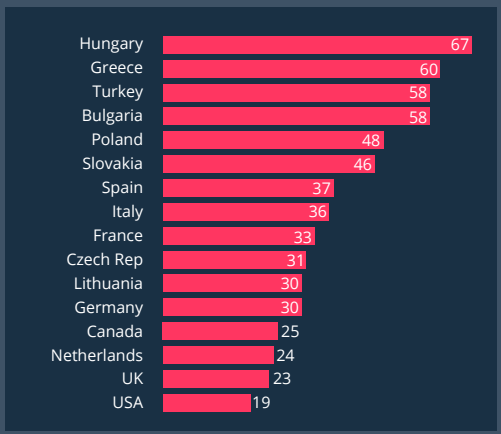


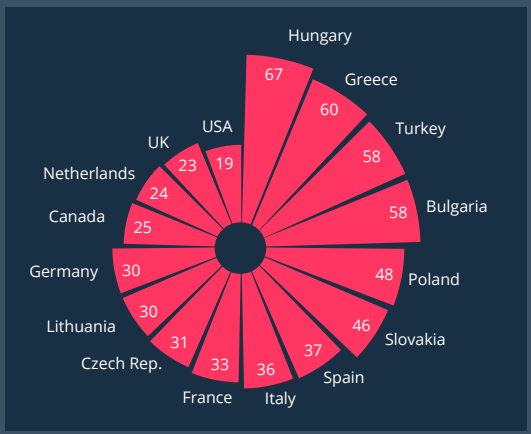
Source: World Bank

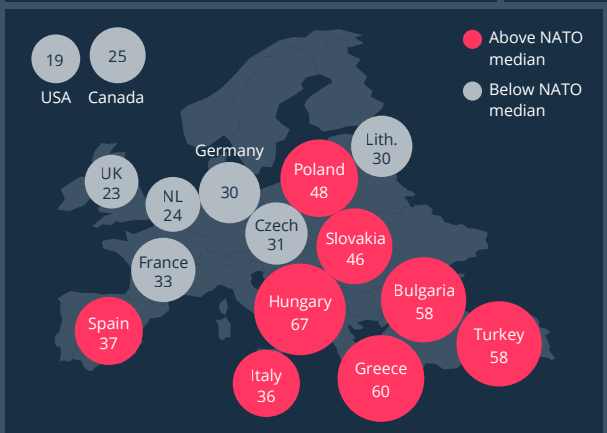
Comparison

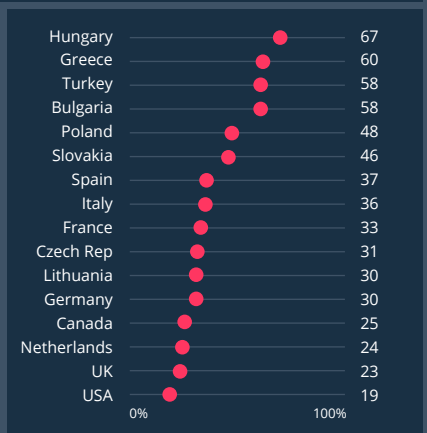
4. 10-20 datapoints, %

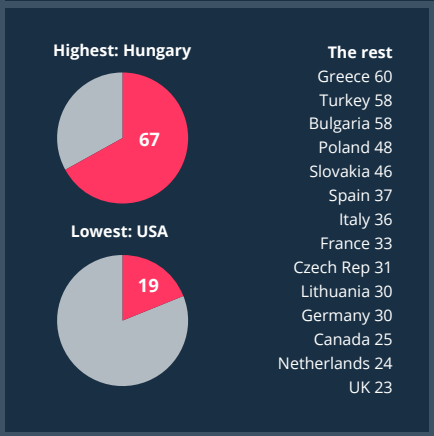
Percentage who believe that parts of neighbouring countries 'really belong to us' (among NATO members, 2020)

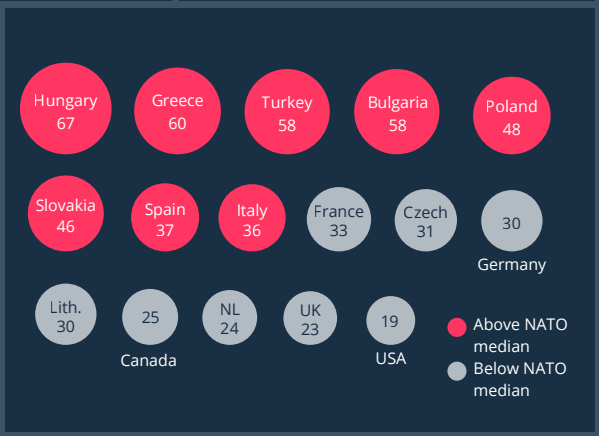










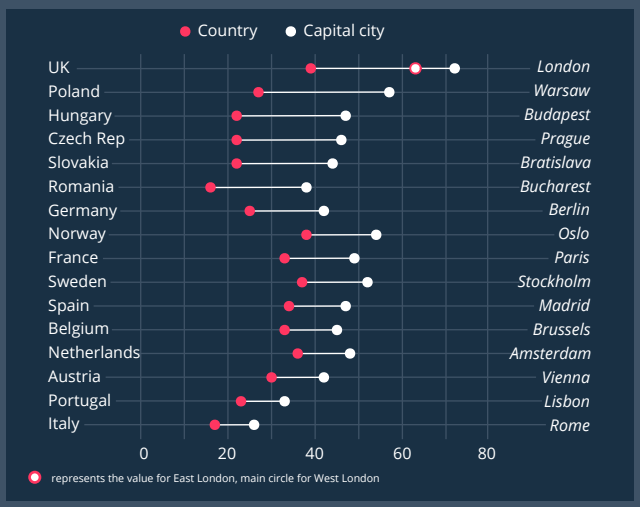


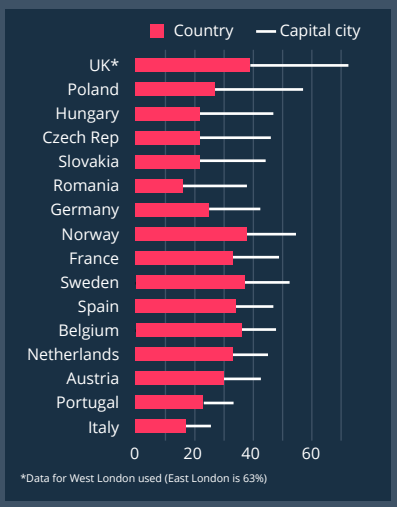
Source: Pew Research Center, February 2020, 'NATO Seen Favorably Across Member States'

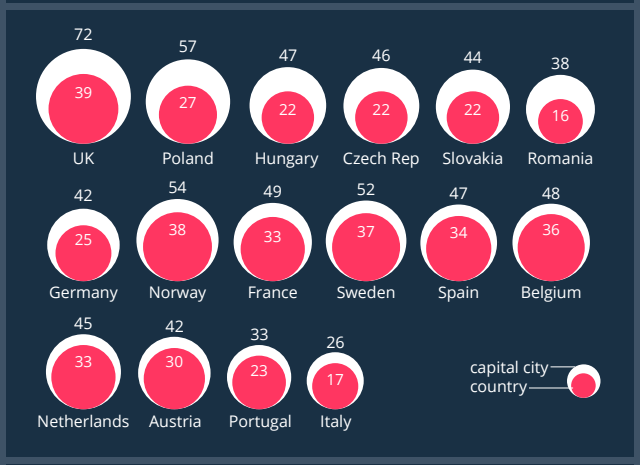
Comparison

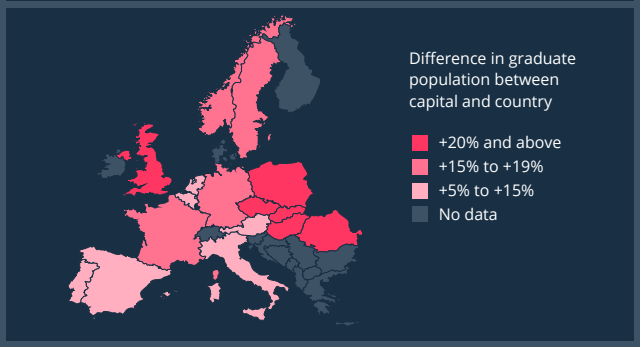
5. Many categories, two variables

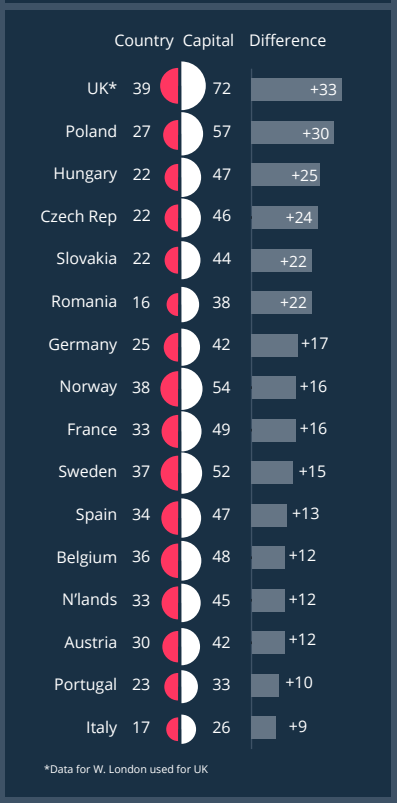
Graduate population (%) in selected European countries and their capital cities









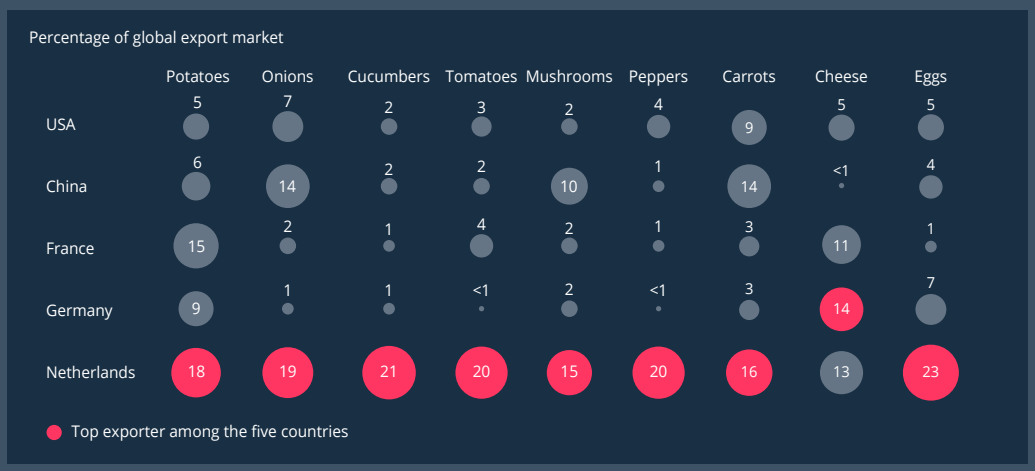


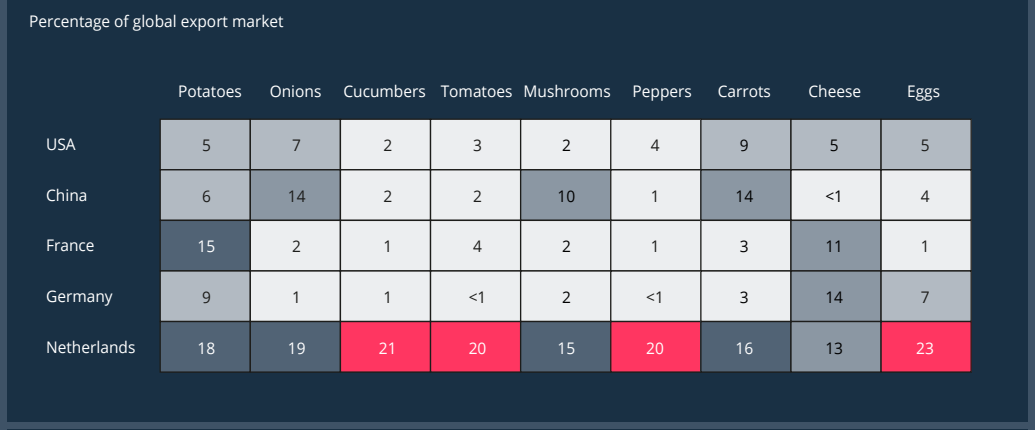
Source: Eurostat

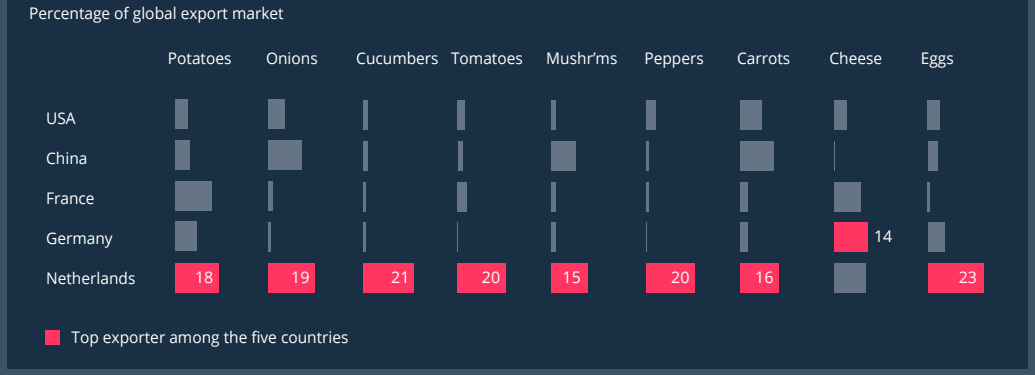
Comparison

6. Many categories, many variables

Selected food exports for USA, China, France, Germany and the Netherlands, 2018





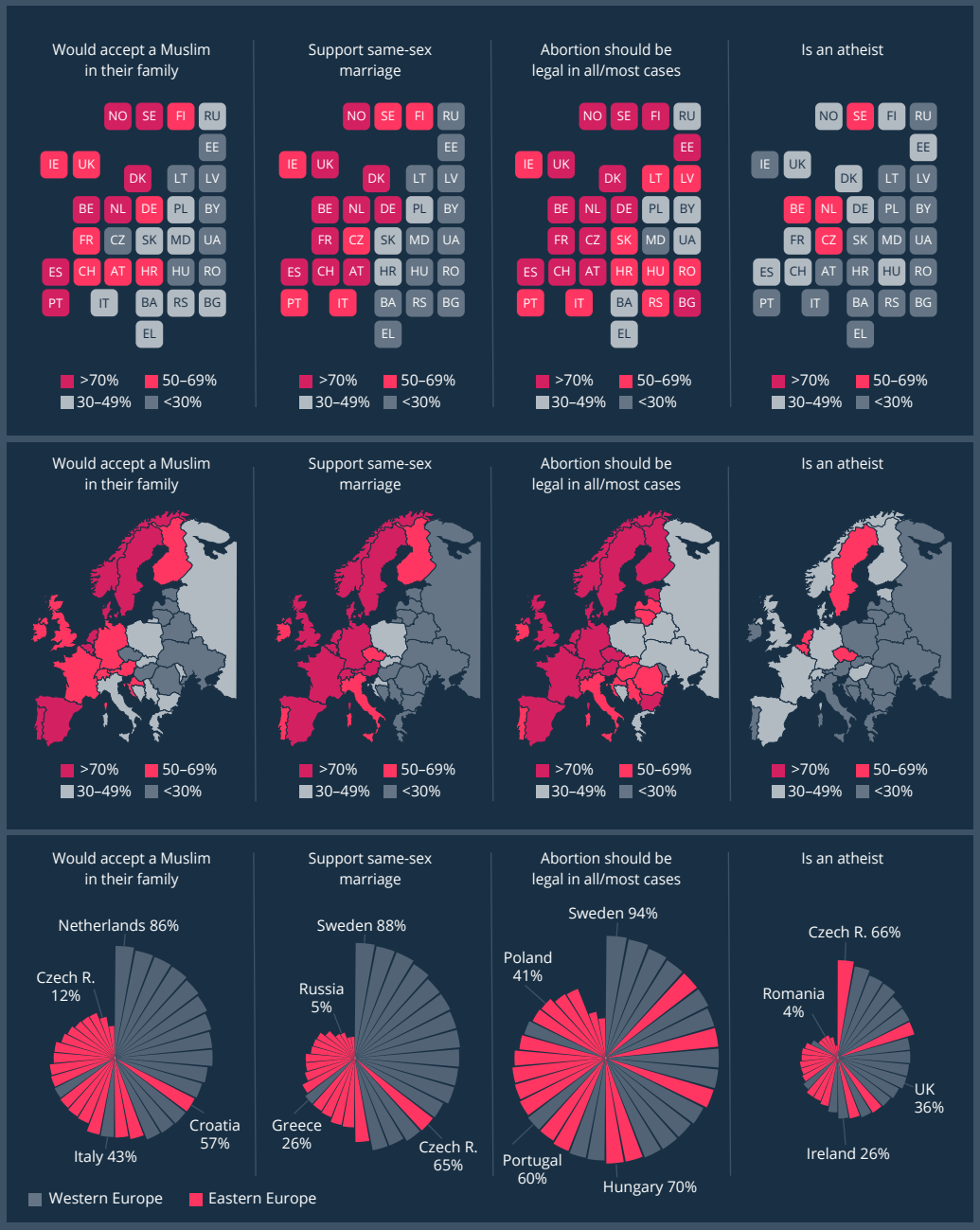


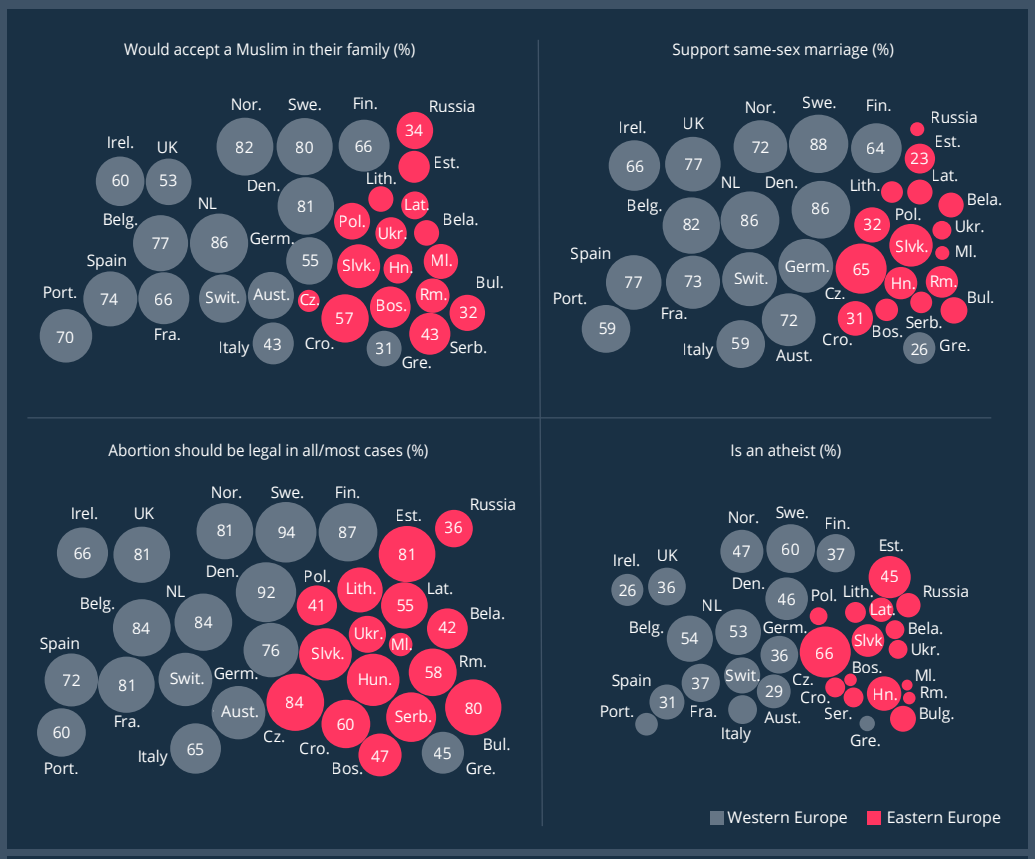
Source: CIA World Factbook, Trdige, worldstopexports.com

Comparison

7. Many countries, many variables

Social attitudes in selected European countries (2018)



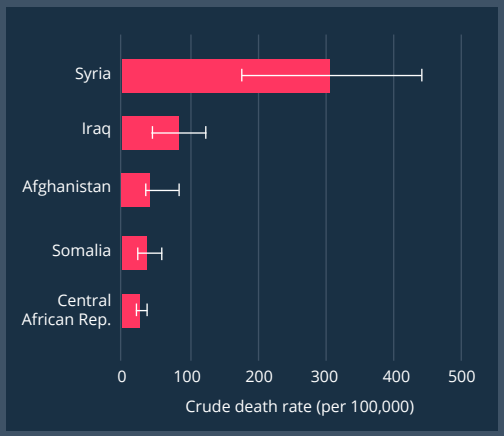


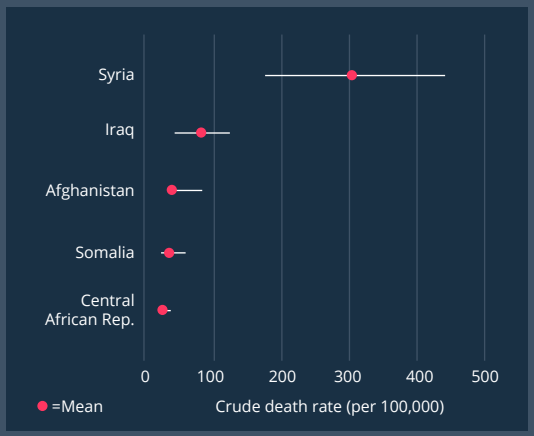
Source: Pew Research Center. Some countries omitted in maps 1, 2 and 4.

Comparison

8. Margin of error

Deaths from conflict in selected countries (2011-15)

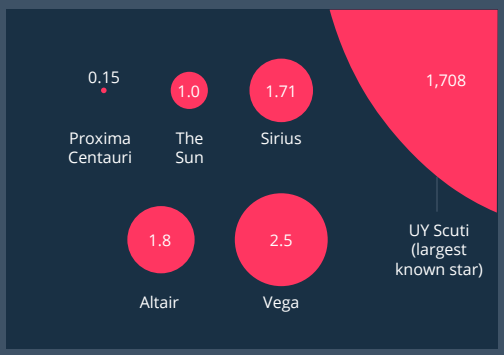


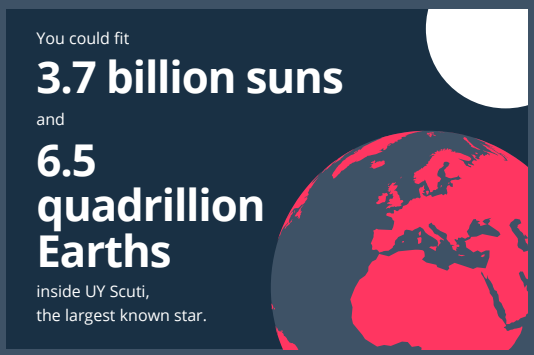


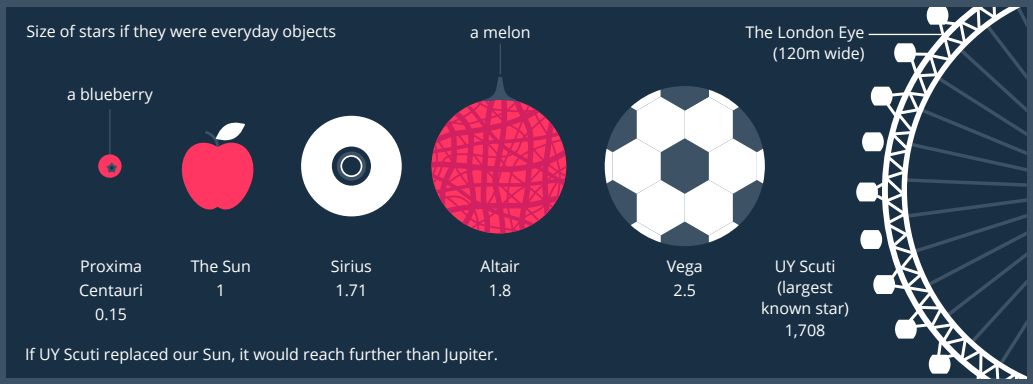
Source: WHO. Error bars show a 95% confidence interval

9. Off-the-charts

Size of stars (in solar radii)





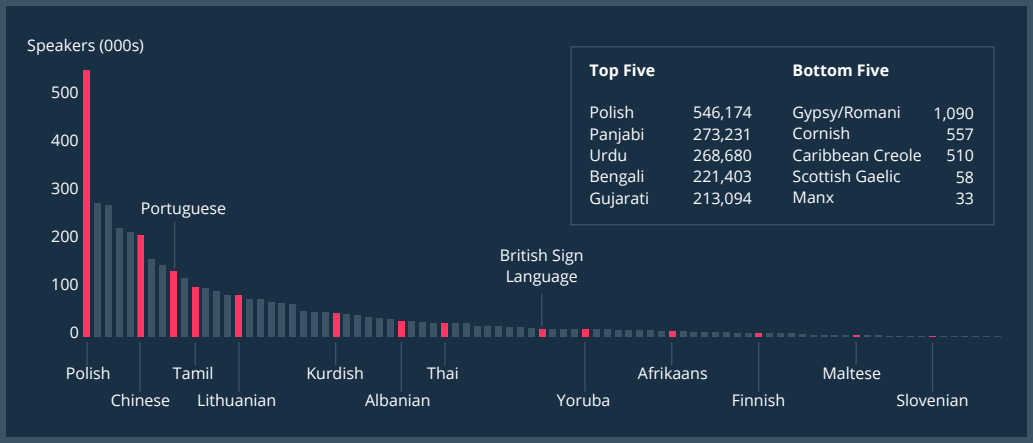


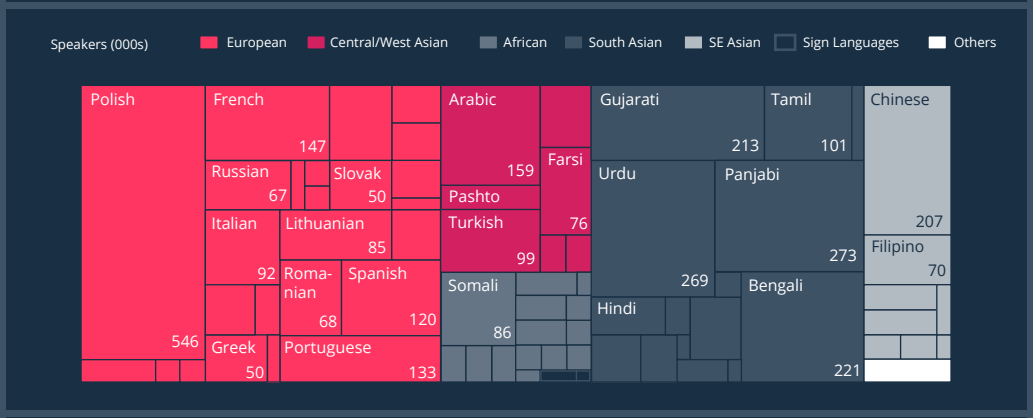
Source: NASA

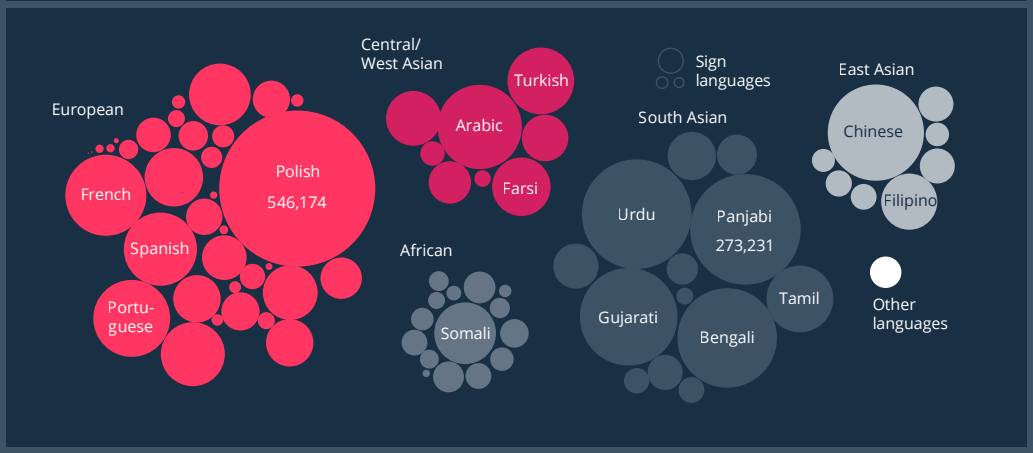
Comparison

10. Too many datapoints

Main language spoken (other than English and Welsh): England and Wales Census 2011*



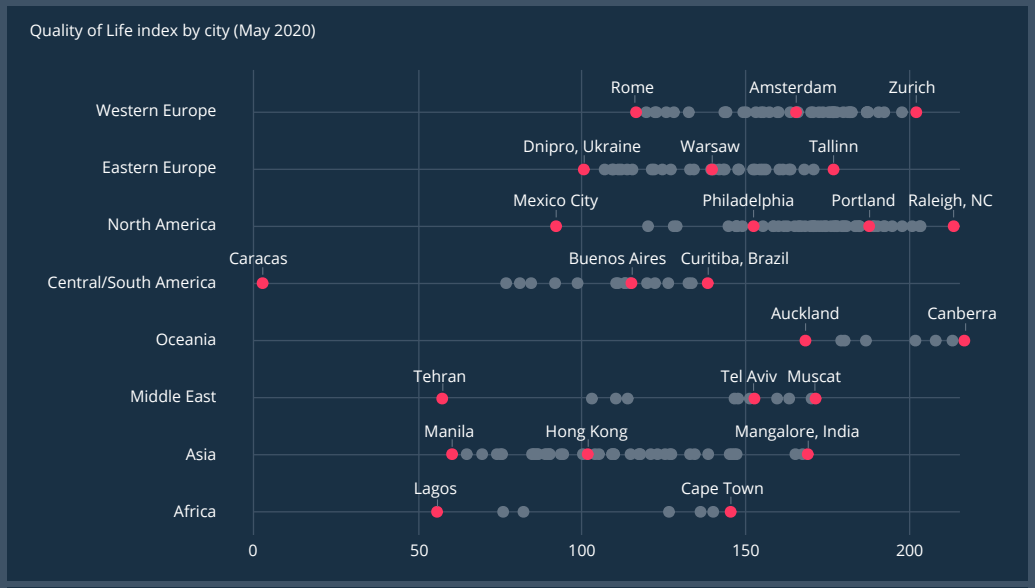


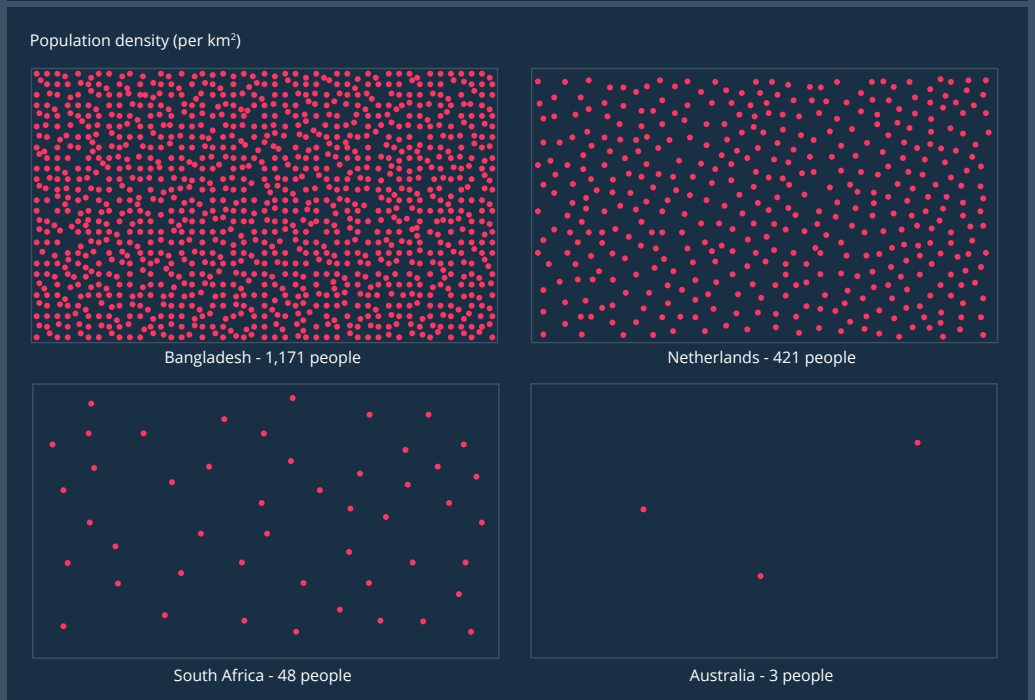


*49.8 million residents state that their main language is English. Of the 562,000 Welsh speakers, it is unknown how many of these use Welsh as their main language. Source: ONS/UK Census 2011

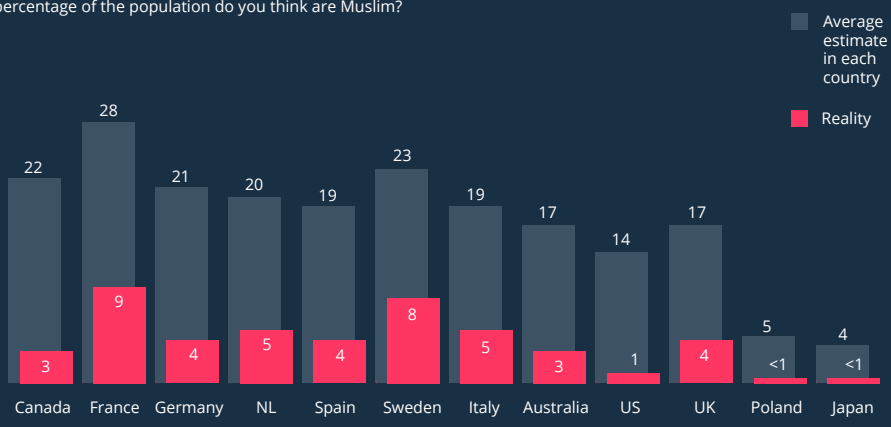
Comparison

11. Miscellaneous

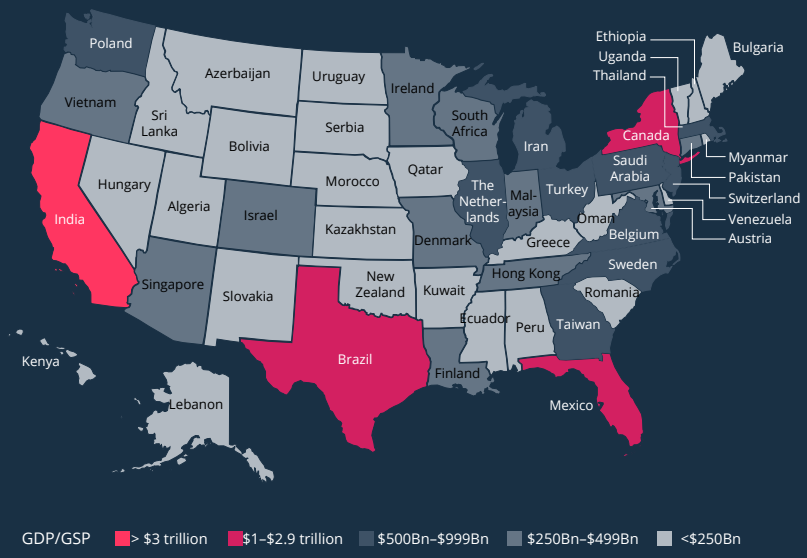




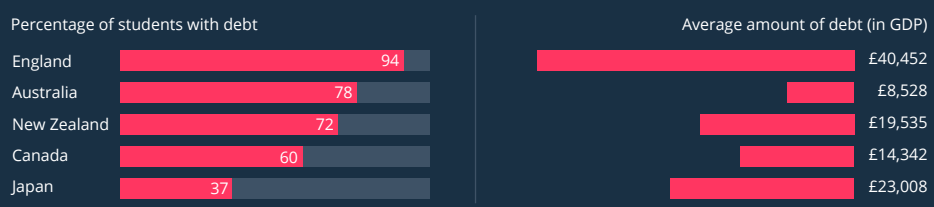
What percentage of the population do you think are Muslim?



If US states were countries (by GDP), 2019



Student debt in selected countries

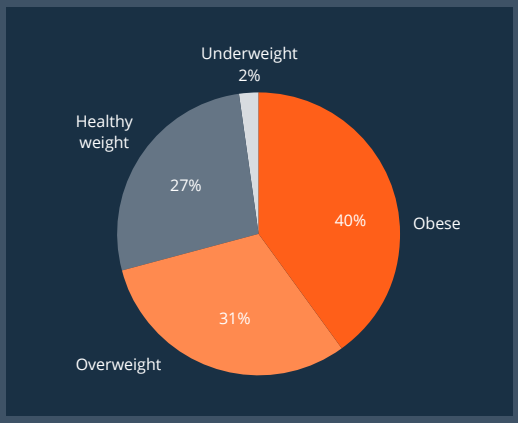


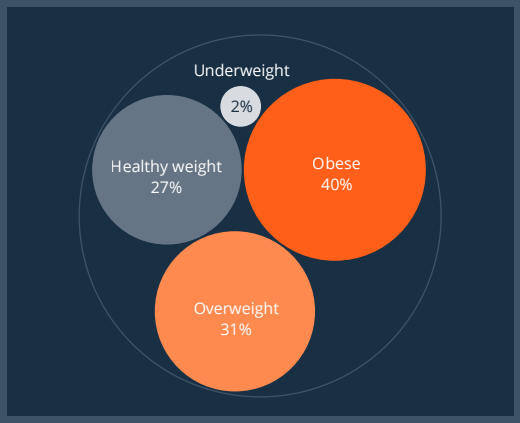
Sources: City Quality of Life by City from Numbeo (crowd-sourced), taken 15th May 2020, Population density from UN Statistics Division. US states GDP from BEA. Estimate of Muslim population from Ipsos Mori Perils of Perception, 2018. Student debt from OECD and UCU.

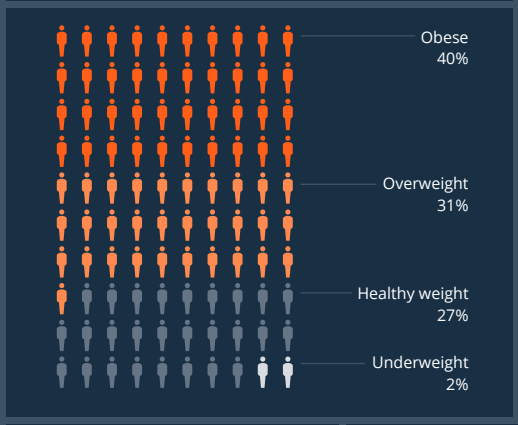
Composition

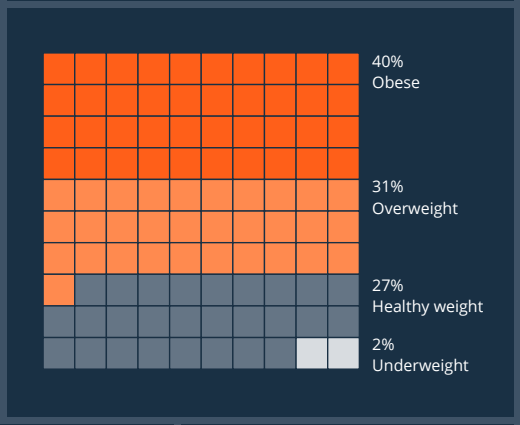
1. Percentage, small dataset, one point in time

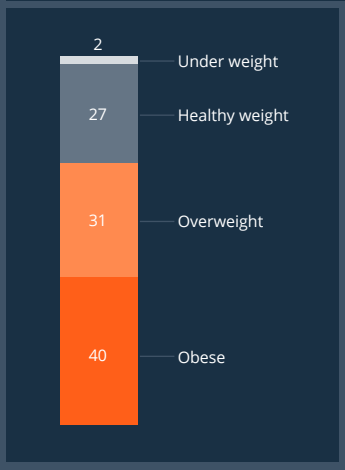
Percentage of overweight and obese adults in the US (2016)

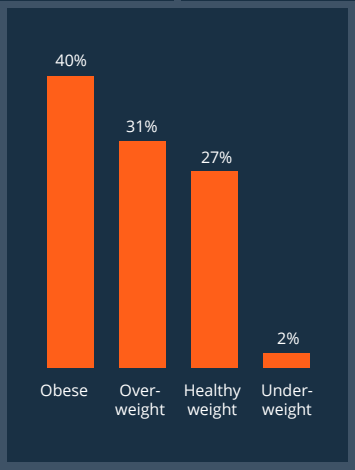


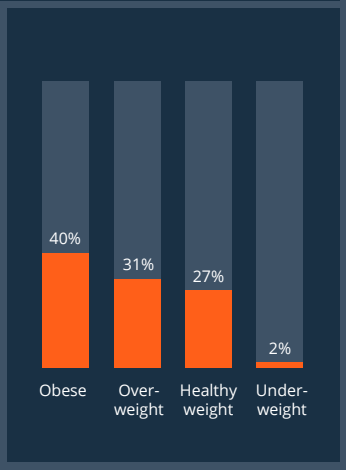










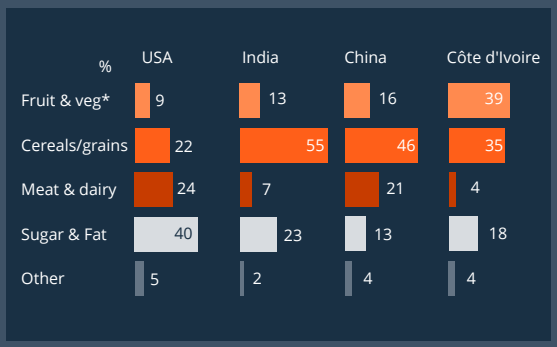


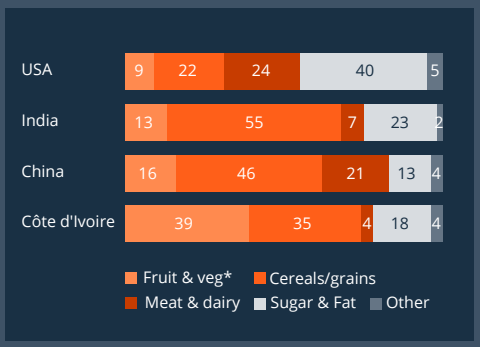
Source: CDC, https://www.cdc.gov/nchs/fastats/obesity-overweight.htm

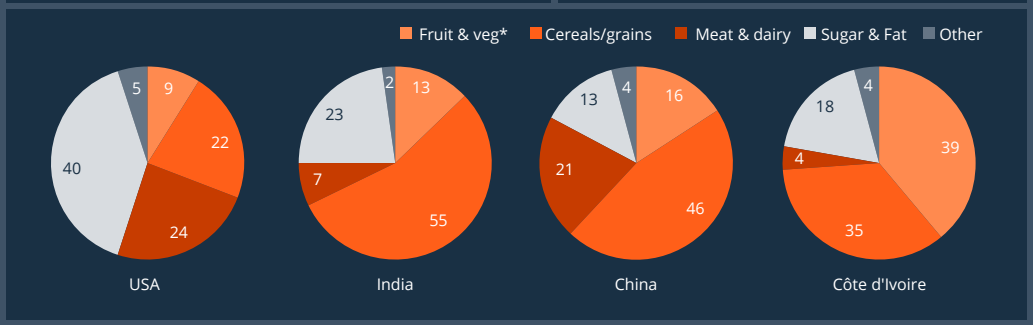
Composition

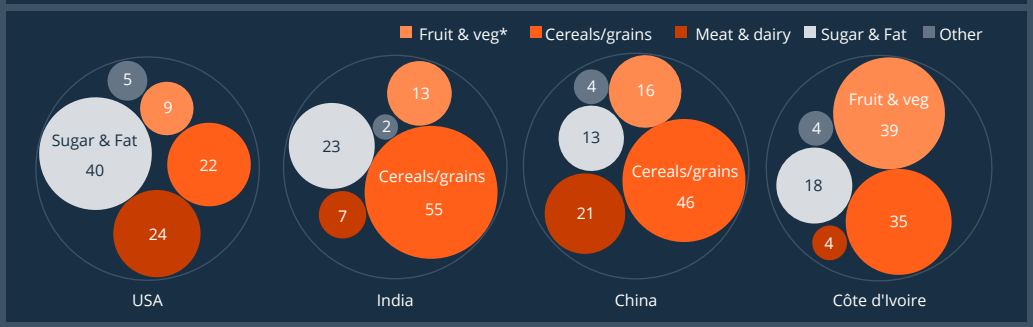
2. Percentage, comparing against others

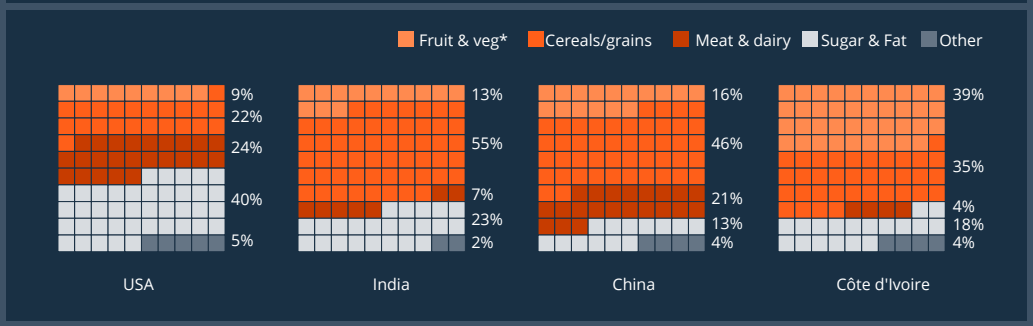
Percentage of daily energy intake by food group (selected countries, 2013)











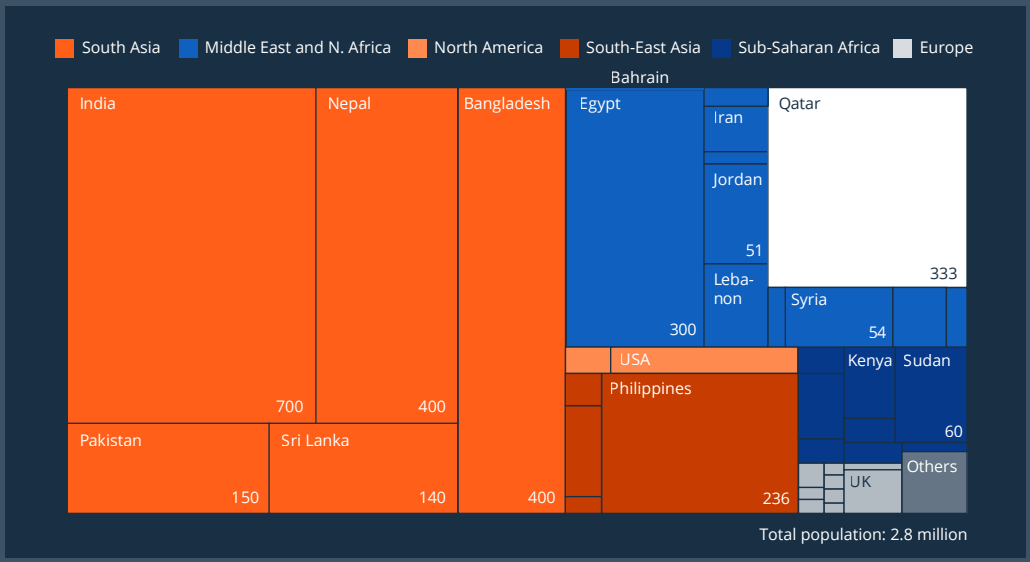
Source: UN FAO via Our World in Data

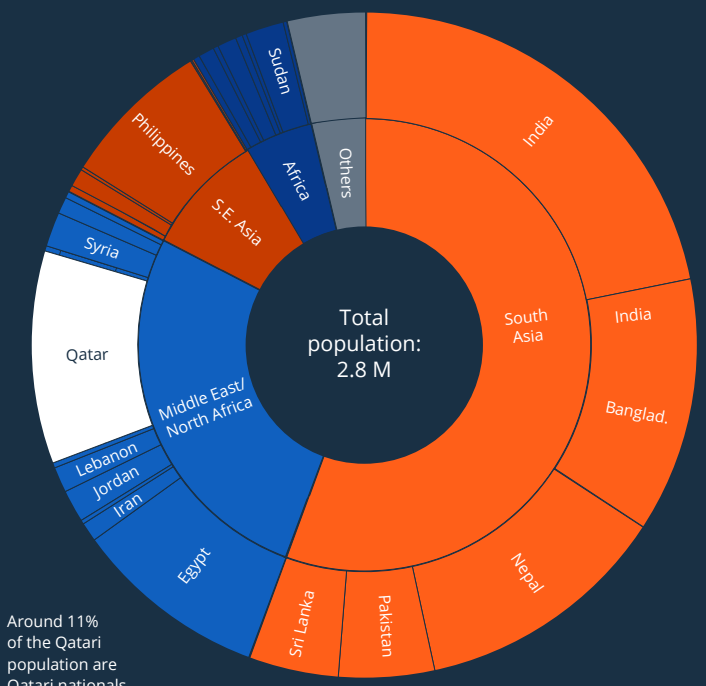
* includes starchy roots

Composition

3. Nested categories

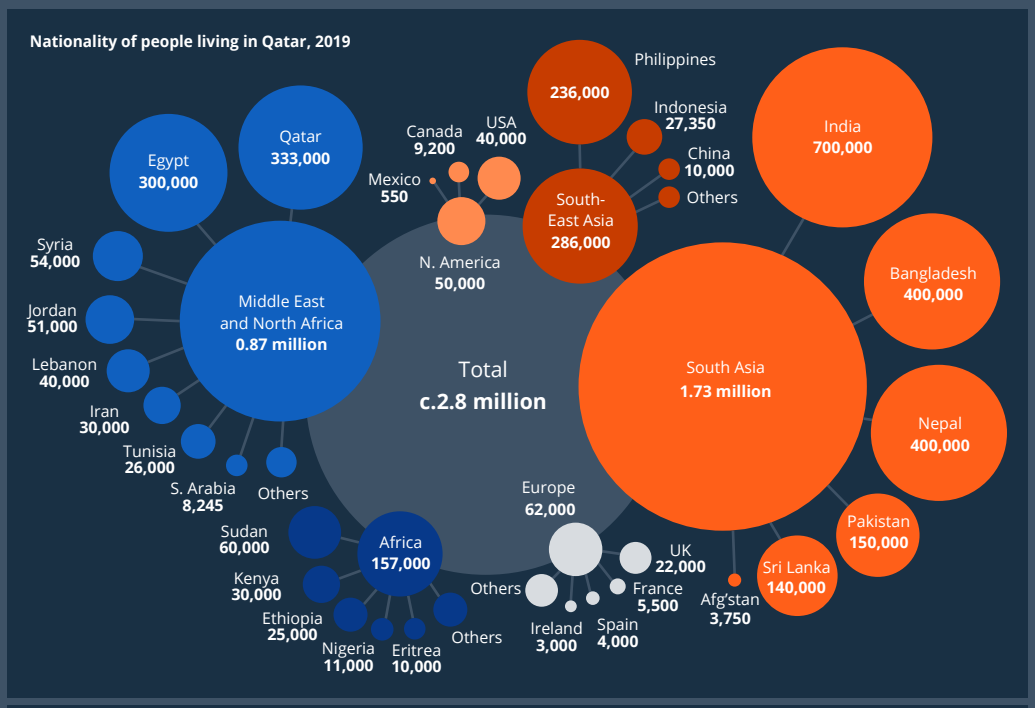
Nationality of people living in Qatar, 2019 (thousands, estimated)

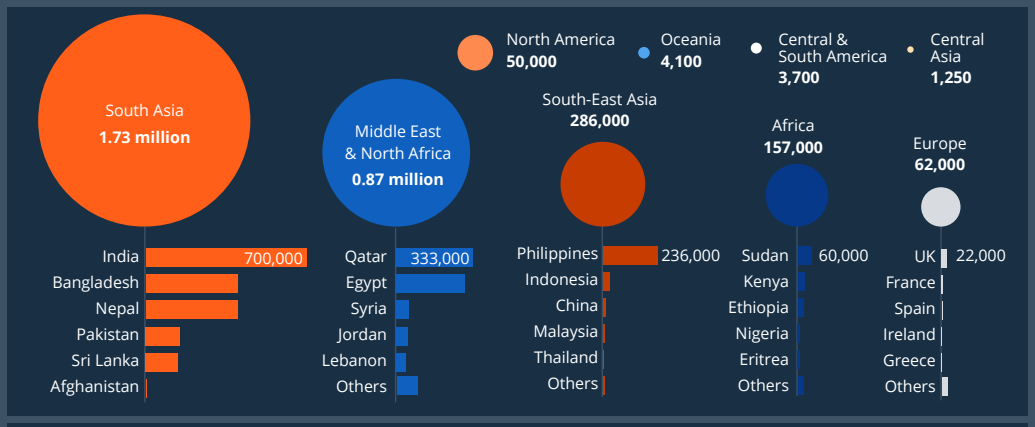


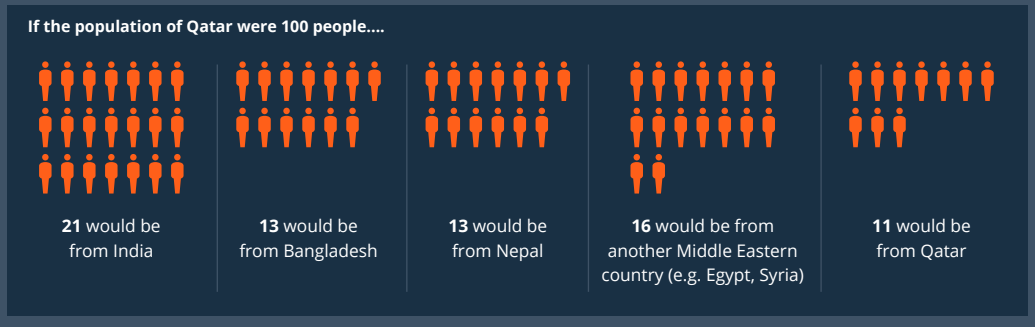


Region	Country	Population
S.E. Asia	Philippines	236,000
	Indonesia	27,350
	China	10,000
	Malaysia	5,000
	Thailand	3,065
	S. Korea	2,000
South Asia	India	700,000
	Banglad.	400,000
	Nepal	400,000
	Pakistan	150,000
	Sri Lanka	140,000
	Afgh'stan	3,750
Middle East & N. Africa	Qatar	333,000
	Egypt	300,000
	Syria	54,000
	Jordan	51,000
	Lebanon	40,000
	Iran	30,000
	Tunisia	26,000
	Turkey	10,000
	S. Arabia	8,245
	Palestine	8,000
	Iraq	6,100
	Bahrain	2,349
Africa	Sudan	60,000
	Kenya	30,000
	Ethiopia	25,000
	Nigeria	11,000
	Eritrea	10,000
	Ghana	8,000
	S. Africa	6,500
	Uganda	5,500
Others	USA	40,000
	Canada	9,200
	UK	22,000
	France	5,500
	Spain	4,000
	Ireland	3,000
	Greece	2,600
	Others	38,615

Source: Priya DSouza Communications





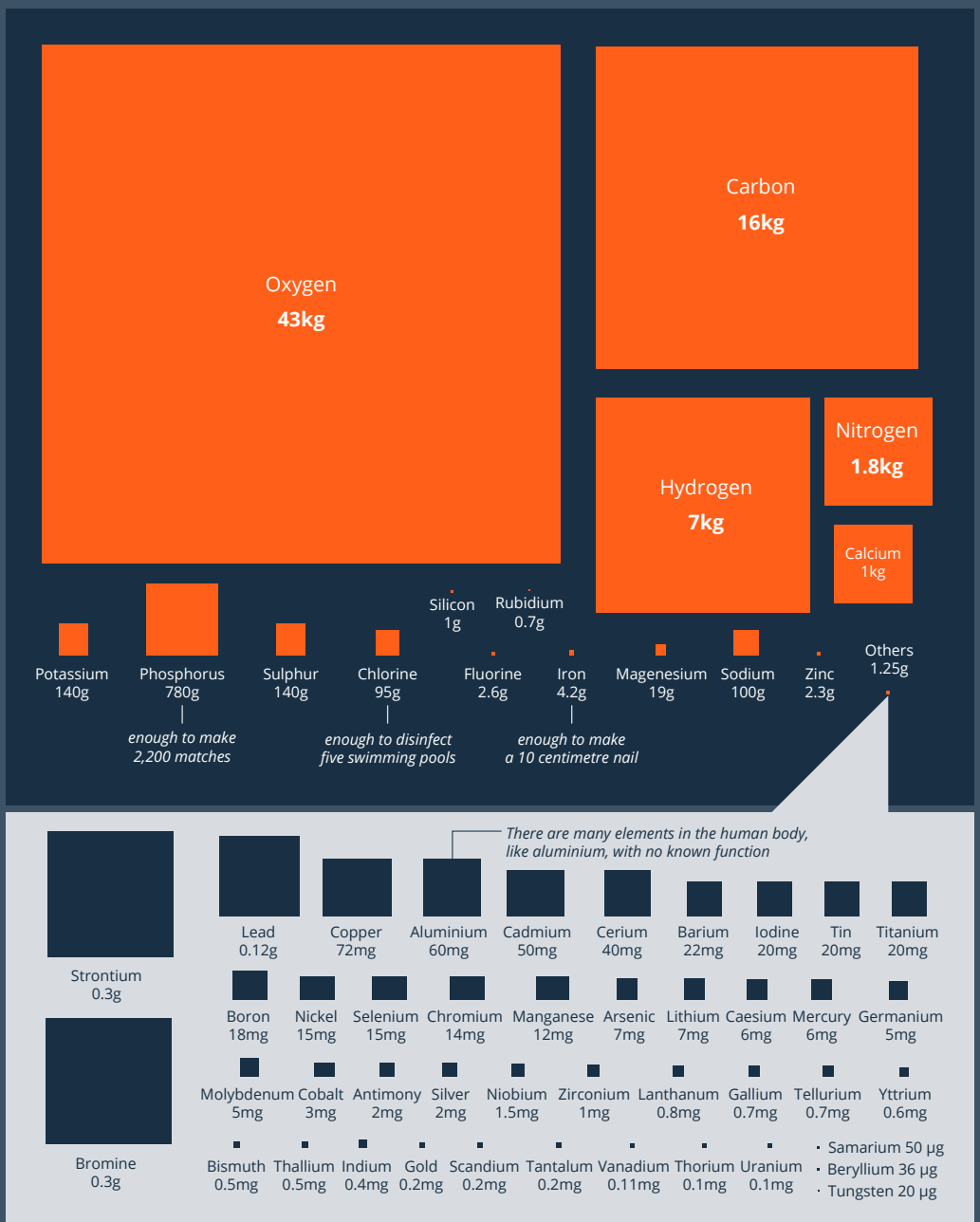


Source: Priya DSouza Communications

Composition

4. Too many datapoints

Composition of the human body (mass, kg, based on a 70kg adult human)

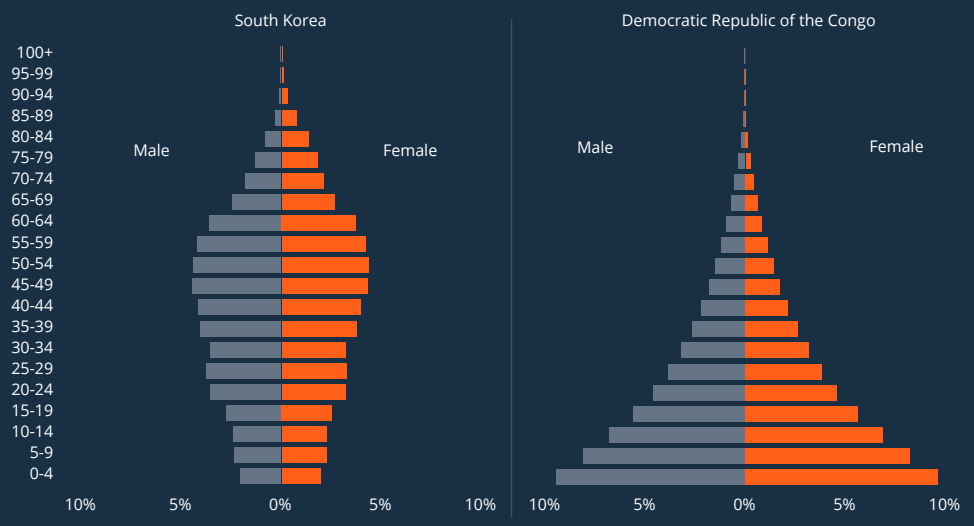


Source: Emsley, John, The Elements, 3rd edn, Clarendon Press, Oxford, 1998 via ThoughtCo.com

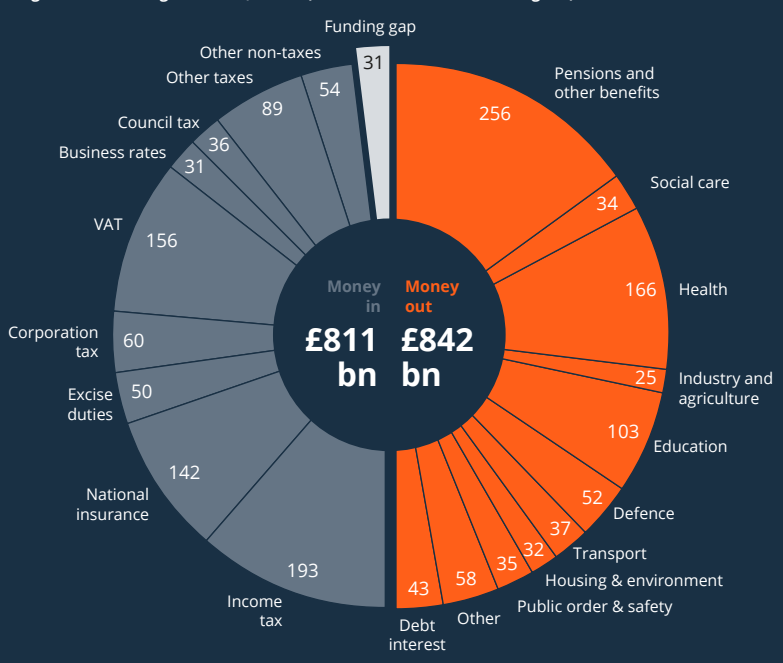
Composition

5. Miscellaneous

Population of South Korea and DRC by age, 2019



UK government budget 2019-20, in £bn (based on a 2013 *Guardian* original)



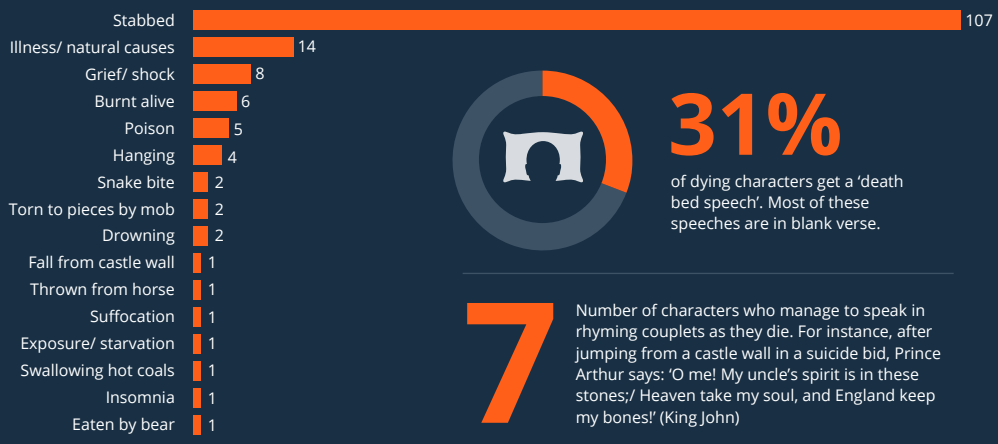
According to HMRC, at least

£7.1 bn

was lost to the Exchequer in 2018-19 due to tax avoidance and evasion, with billions more lost due the use of tax havens.

Source: Population pyramid data from PopulationPyramid.net, UK Budget data from gov.uk, original design concept by *the Guardian*.

How Shakespeare's characters die



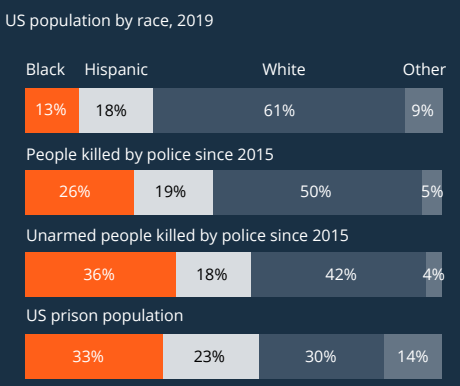
31%

of dying characters get a 'death bed speech'. Most of these speeches are in blank verse.

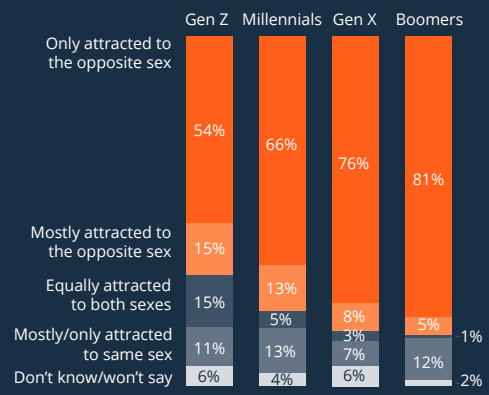
7

Number of characters who manage to speak in rhyming couplets as they die. For instance, after jumping from a castle wall in a suicide bid, Prince Arthur says: 'O me! My uncle's spirit is in these stones;/ Heaven take my soul, and England keep my bones!' (King John)

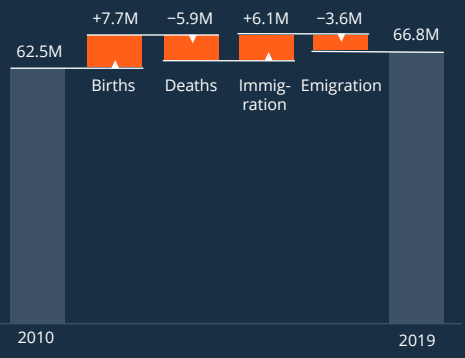
Crime and racial prejudice in the US



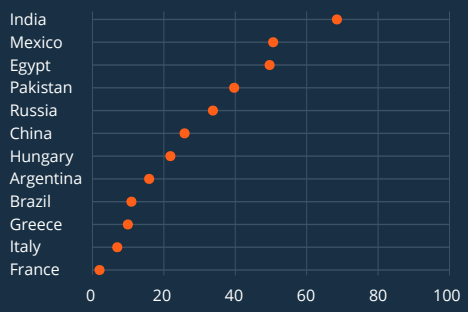
Sexual orientation by generation, 2020 (UK)



Population change in UK 2010–19



Percentage of people who have paid a bribe this year to access public services (2017)

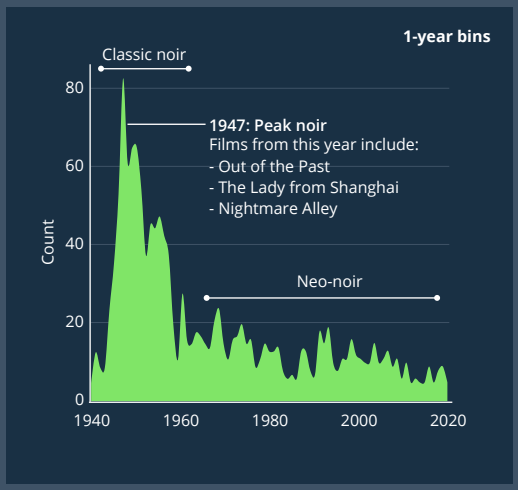


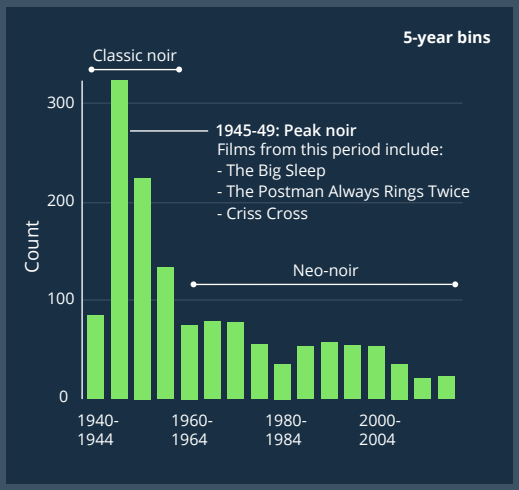
Source: Shakespeare data from Adam Frost. US ethnicity & crime data from *Washington Post*, Pew Research; Sexual orientation data from Ipsos Mori UK, Population change data from ONS UK. Bribery data from Transparency International via Our World in Data

Distribution

1. A single distribution

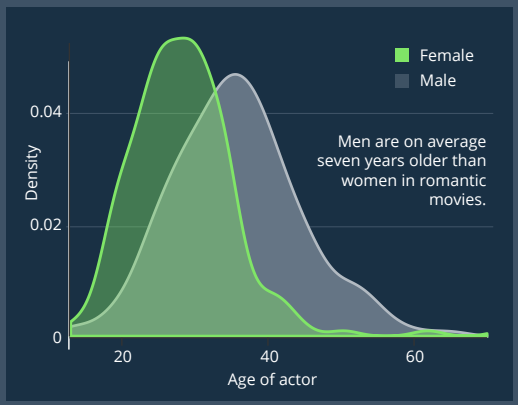
Film noir movies (1940–2020)

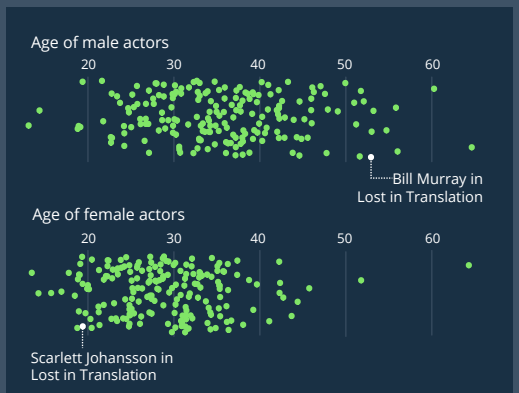


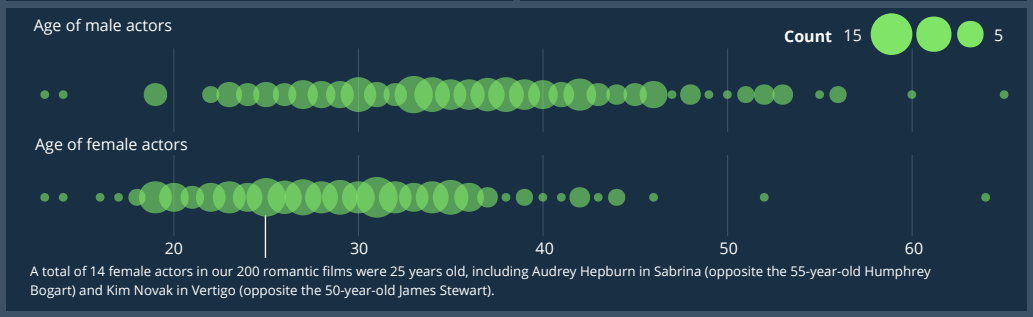


2. Comparing two distributions

Age of leading men and leading women in 200 key romantic movies (1905–2015)





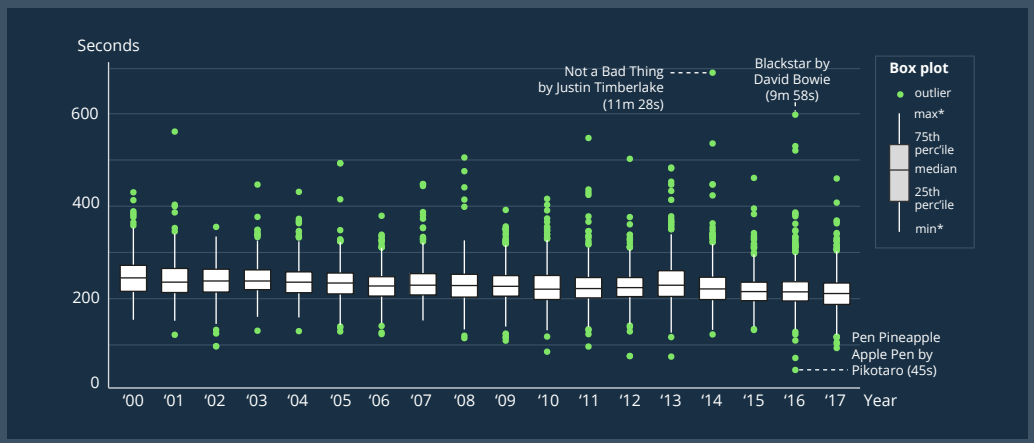


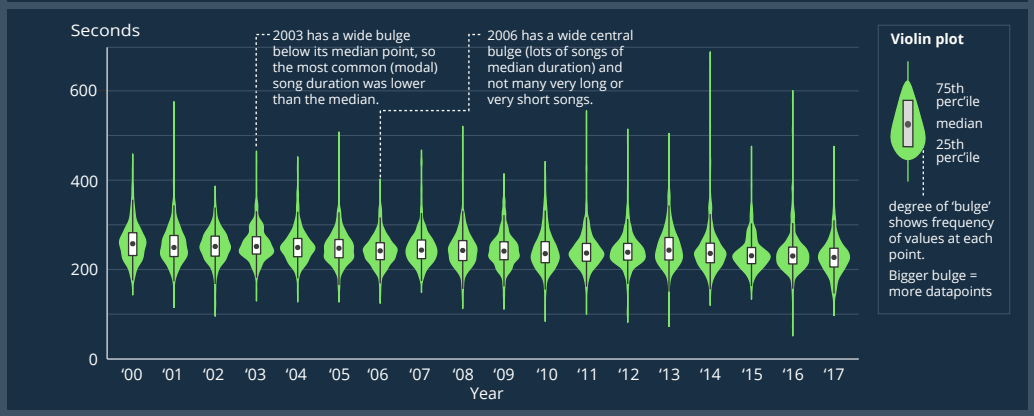
Source: Adam Frost while researching British Film Institute graphics. Data here: bit.ly/noir-films-all and here: bit.ly/love-films-all

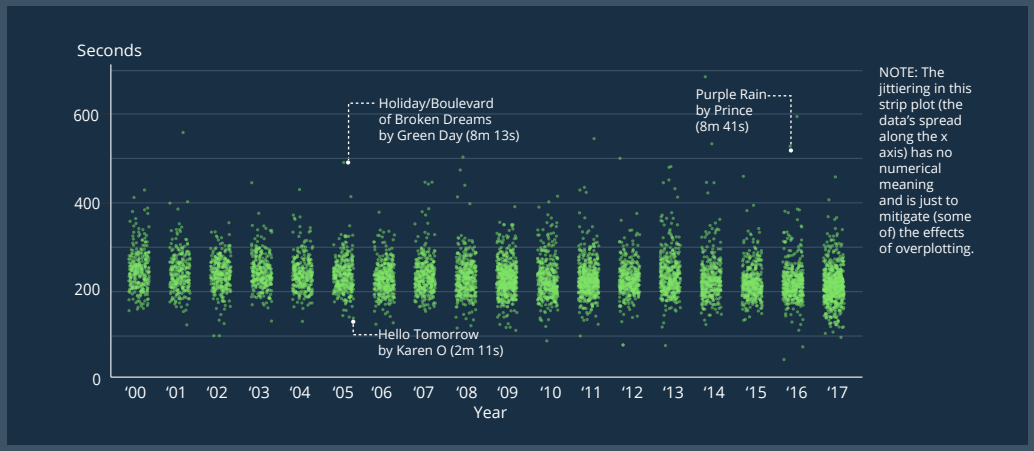
Distribution

3. Comparing many distributions

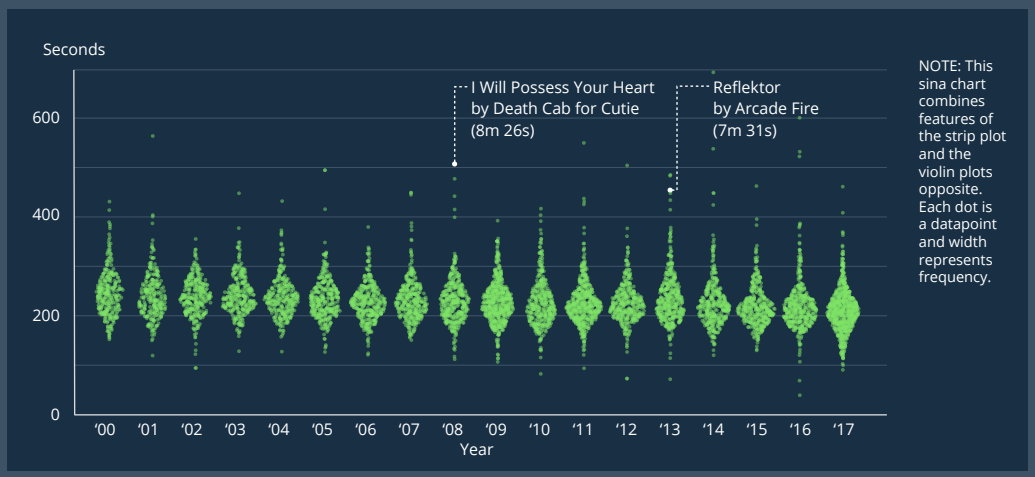
Duration of hit songs (2000–17)

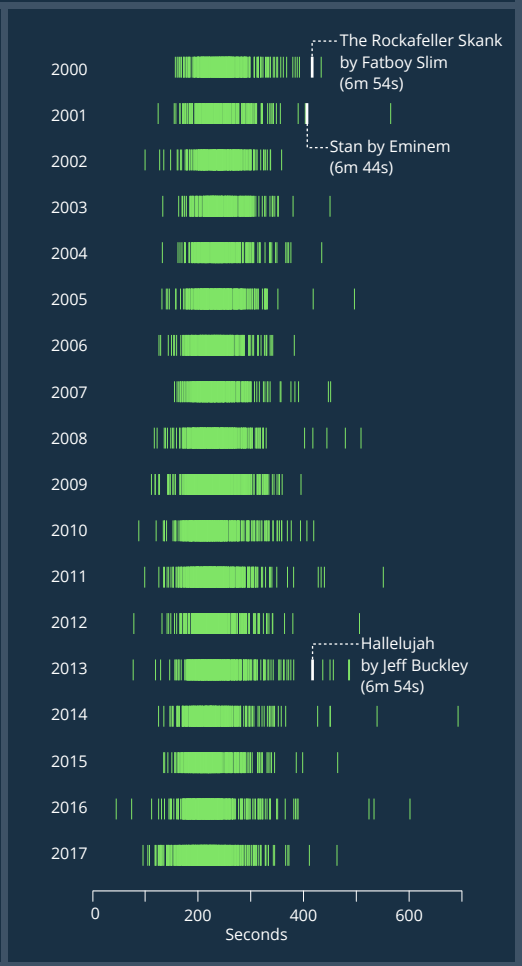






*Not quite the min and max in this case. For example, min = smallest value within 1.5 x interquartile range below 25th percentile. This variant of a box plot is often used so that outliers don't skew the 'whiskers' at either end of the plot.



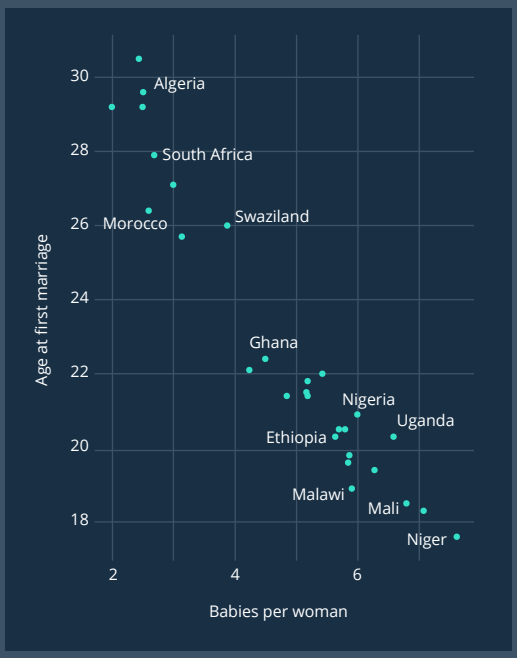


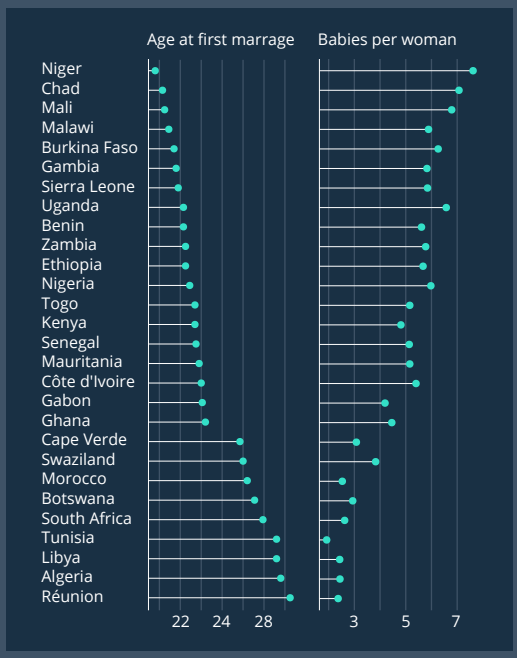
Source: Michael Tauberg, https://medium.com/@michaeltauberg/music-and-our-attention-spans-are-getting-shorter-8be37b5c2d67

Correlation

1. Comparing countries or categories

Age at first marrriage and number of babies per woman in selected African countries (2005)

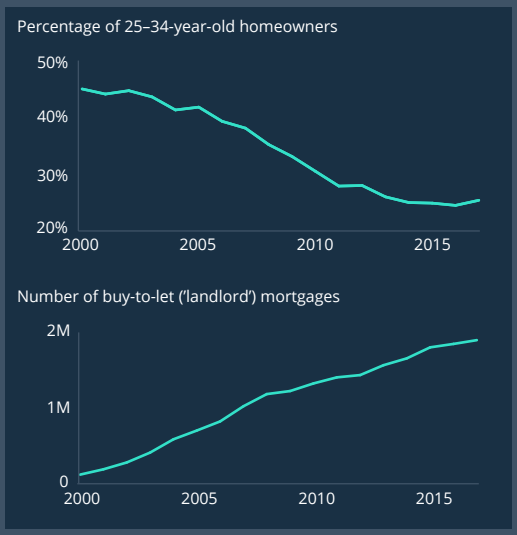


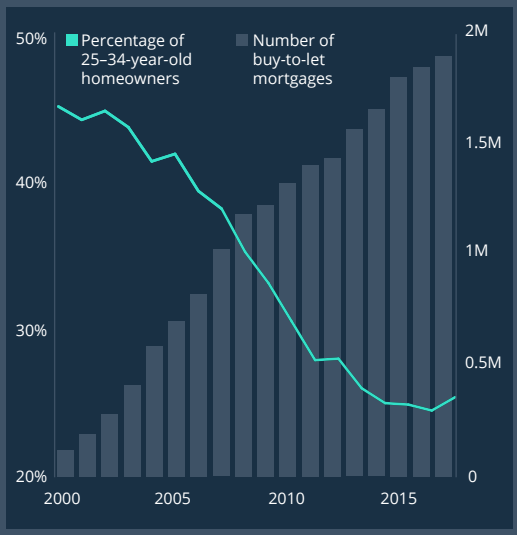


Source: World Bank, Gapminder Foundation

2. Change over time

Percentage of 25–34-year-olds who own a home v. number of buy-to-let mortgages (UK, 2000-17)



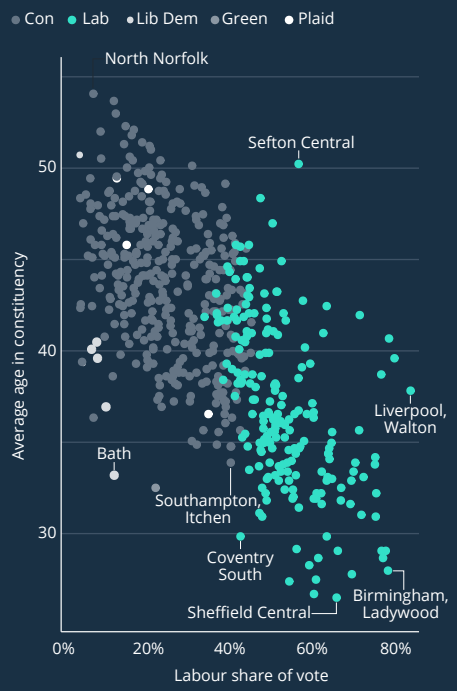


Source: Resolution Foundation, Game of Homes report.

Correlation

3. Hundreds of datapoints

The relationship between youth and voting Labour in England and Wales (2019)



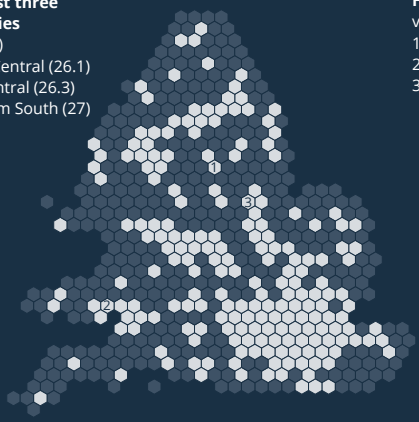
The 75 constituencies with the youngest median age

Lab
Lib Dem
Con
Green

Sheffield Central	Islington North
Cardiff Central	York Central
Nottingham South	Coventry North East
Leeds Central	Ilford South
Manchester Central	Kingston upon Hull North
Birmingham, Ladywood	Hackney South and Shored.
Newcastle upon Tyne East	Holborn and St Pancras
Liverpool, Riverside	Birmingham, Edgbaston
Bristol West	Greenwich and Woolwich
Birmingham, Hodge Hill	Luton South
Manchester, Gorton	Bath
Leicester South	Lewisham, Deptford
Oxford East	Birmingham, Perry Barr
Nottingham East	Streatham
Coventry South	Exeter
Bradford West	Battersea
Portsmouth South	Tooting
Bethnal Green and Bow	Plymouth, Sutton and Dev
Cambridge	Tottenham
Newcastle upon Tyne Cent	Norwich South
West Ham	Camberwell and Peckham
Poplar and Limehouse	Birmingham, Yardley
Manchester, Withington	Middlesbrough
Leicester West	Southampton, Itchen
Preston	Hayes and Harlington
Barking	Edmonton
Birmingham, Selly Oak	Walthamstow
Islington South and Fins	Leyton and Wanstead
East Ham	Brent Central
Bradford East	Salford and Eccles
Blackley and Broughton	Reading East
Southampton, Test	Leeds West
Vauxhall	Canterbury
Bermondsey and Old South	Blackburn
Birmingham, Hall Green	Slough
Leeds North West	Sheffield, Brightside
Brighton, Pavilion	Derby South
Hackney North and Stoke N	

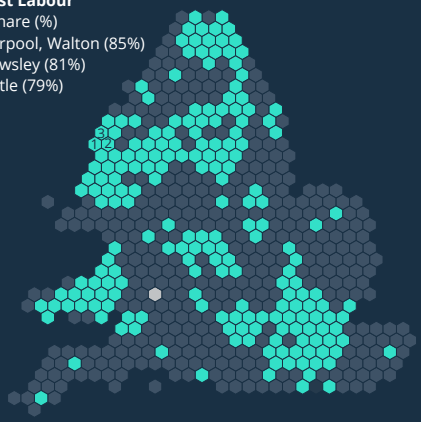
The 202 seats with the youngest average age in England & Wales

The youngest three constituencies
(average age)
1. Sheffield Central (26.1)
2. Cardiff Central (26.3)
3. Nottingham South (27)



The 202 seats that Labour won in England and Wales in 2019

Highest Labour
vote share (%)
1. Liverpool, Walton (85%)
2. Knowsley (81%)
3. Bootle (79%)

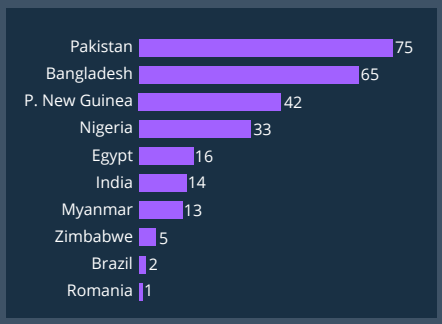


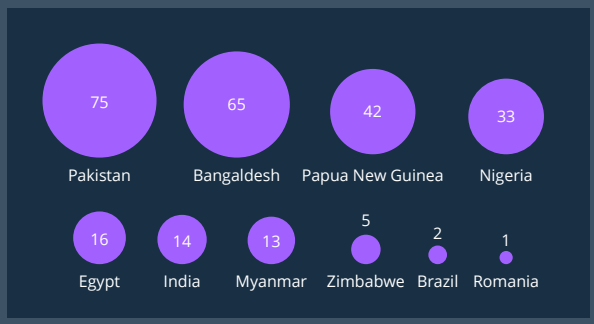
Source: ONS, Parlitools R package, ODI Leeds (the hex map)

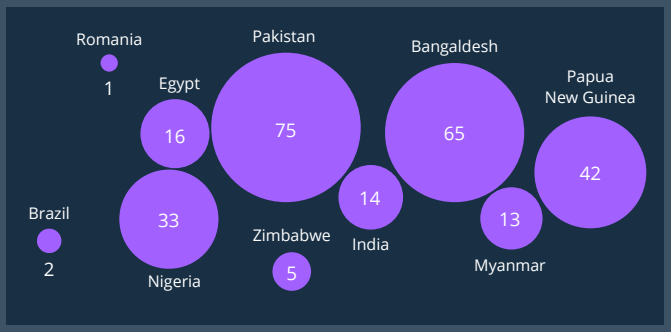
Geospatial

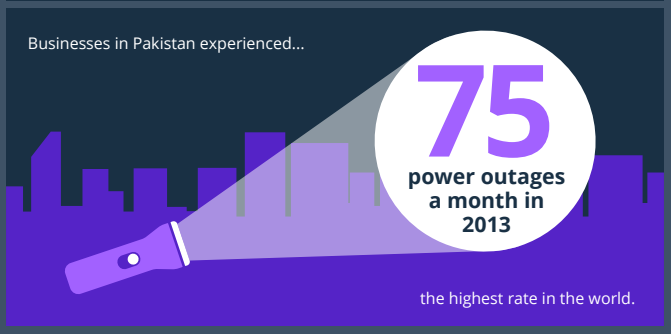
1. 10 datapoints or fewer

Number of power cuts reported by businesses in a typical month (most recent year)*







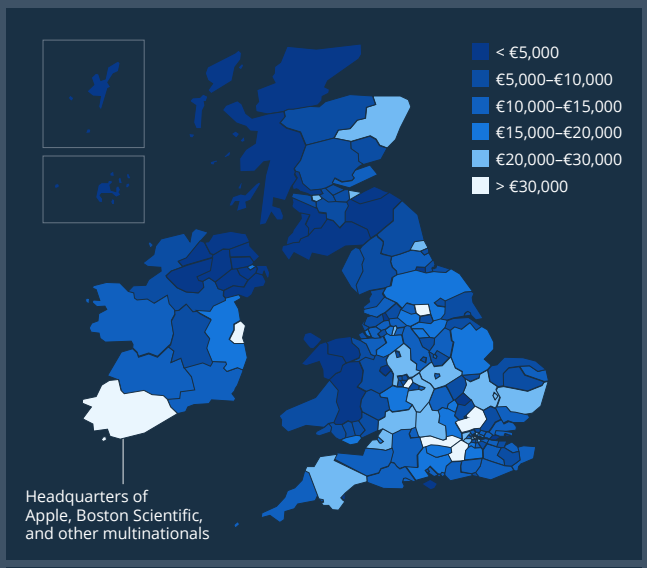


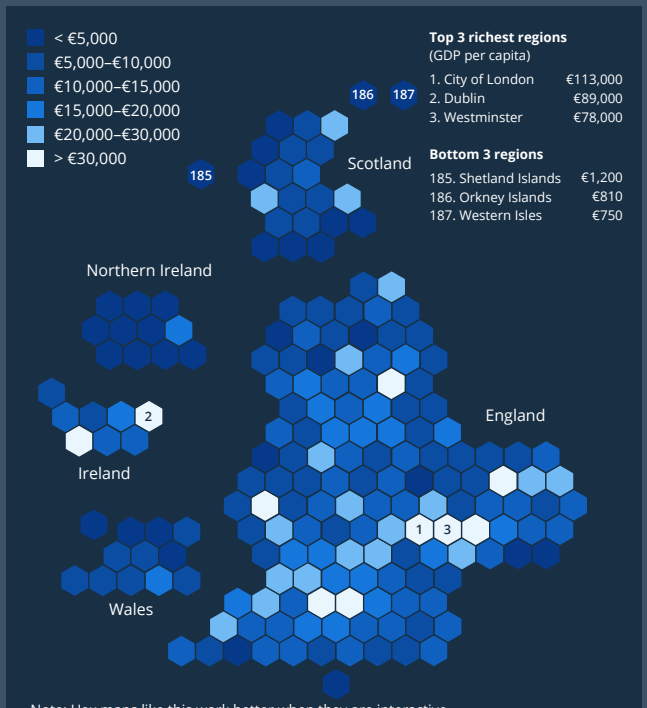
Source: Our World in Data. The most recent year varies from 2009 for Brazil to 2016 to Zimbabwe.

Geospatial

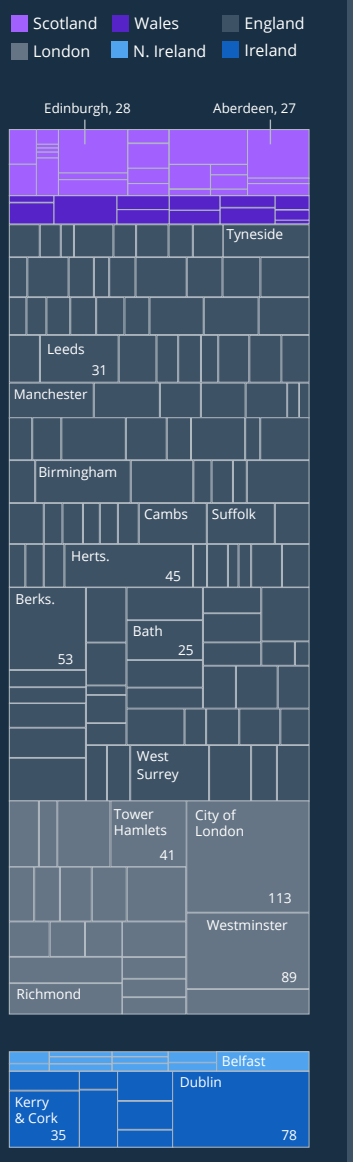
2. One country or area, all regions

GDP per capita (in euros), UK and Ireland, by NUTS-3 region, 2014





Note: Hex maps like this work better when they are interactive

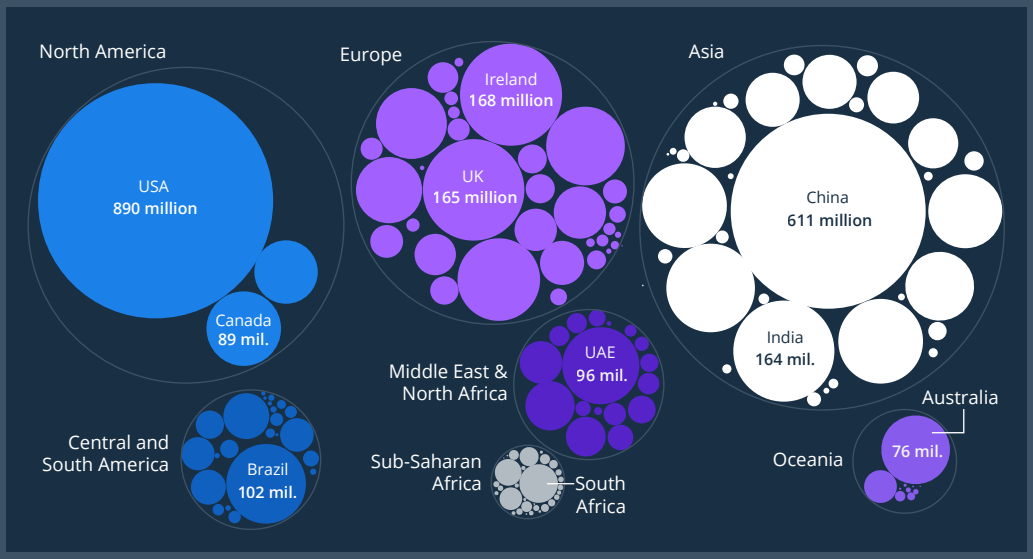


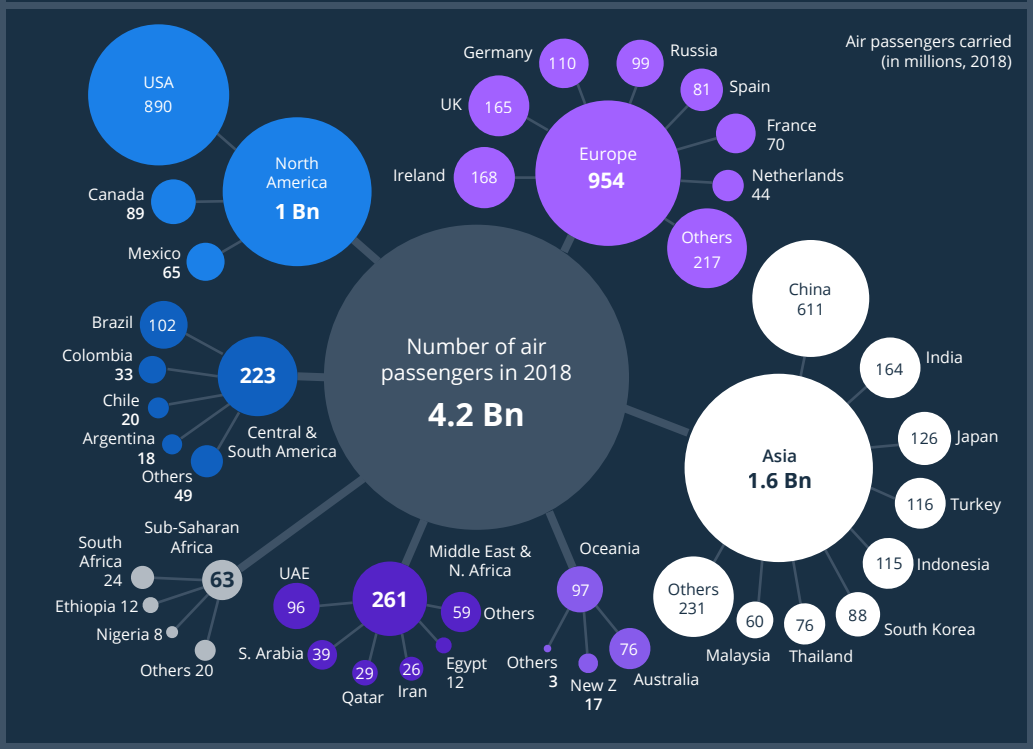
Numbers show GDP in €'000s

Geospatial

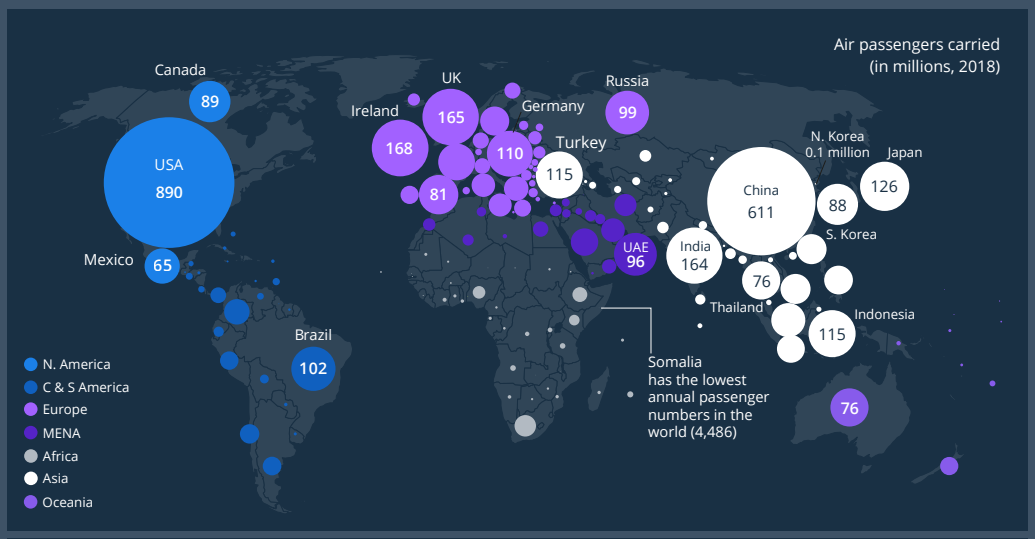
3. Global data, single point in time

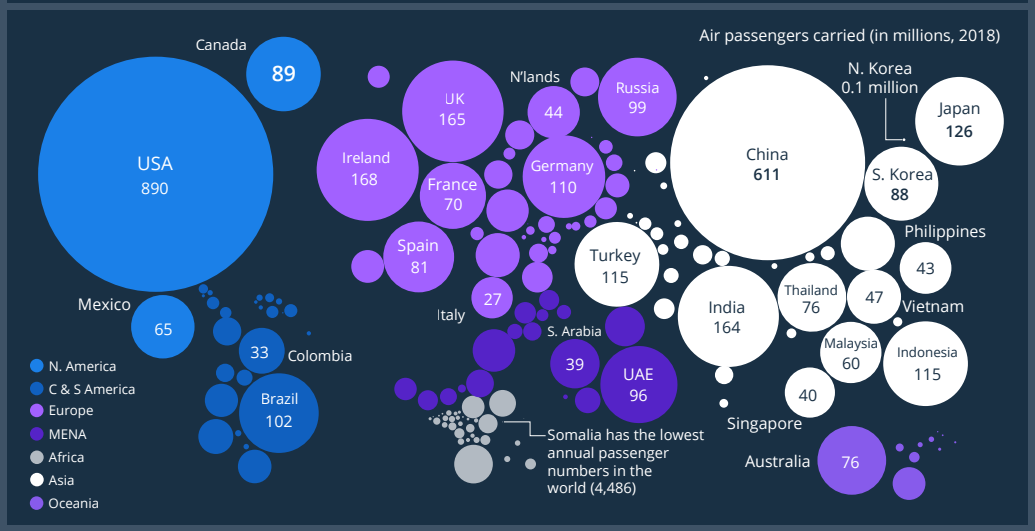
Air passengers carried (in millions), by country (2018)*

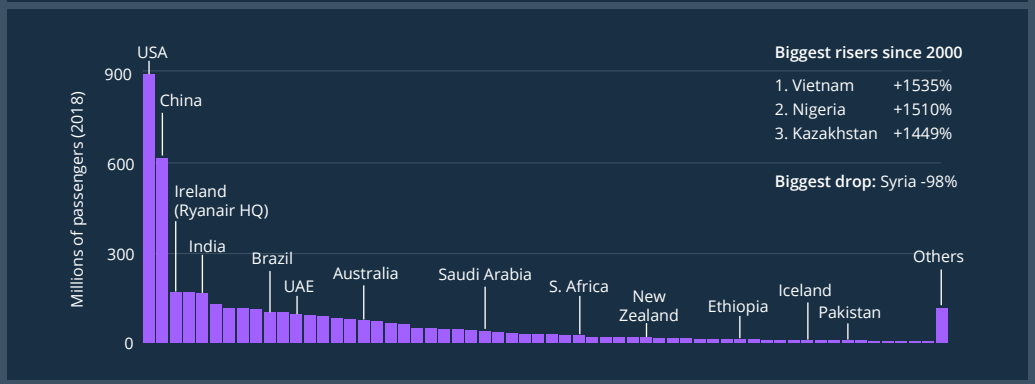


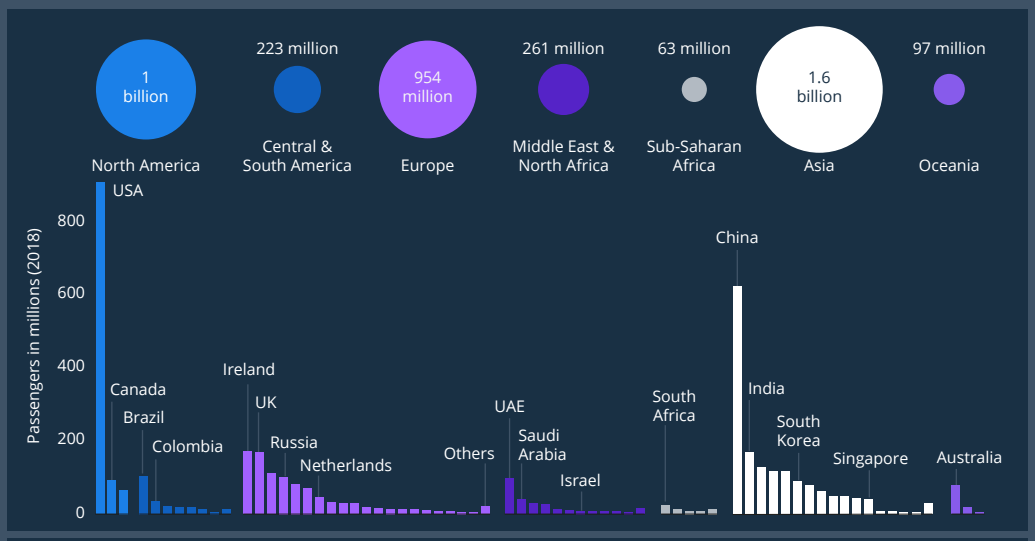


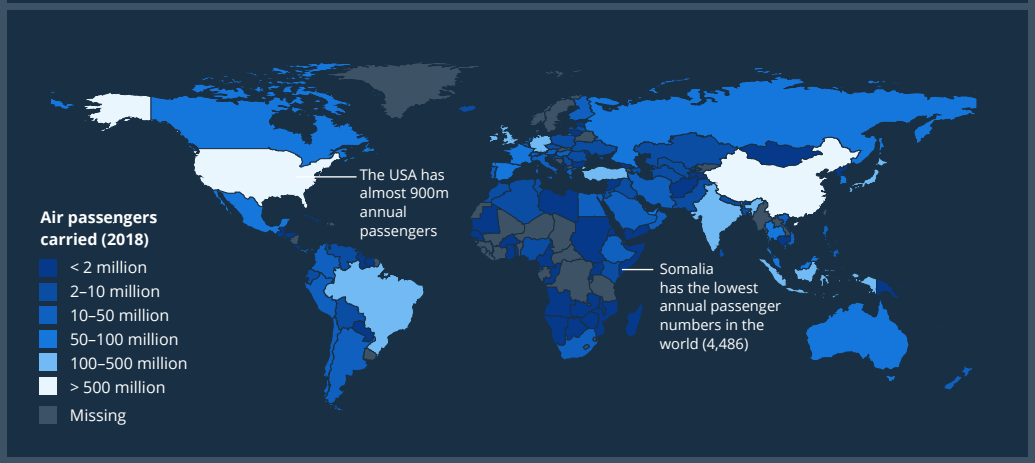
**Data missing for some countries, some countries use data from earlier than 2018. Dataset here: bit.ly/air_travel_data
Souce: World Bank - International Civil Aviation Organization, Civil Aviation Statistics of the World and ICAO staff estimates

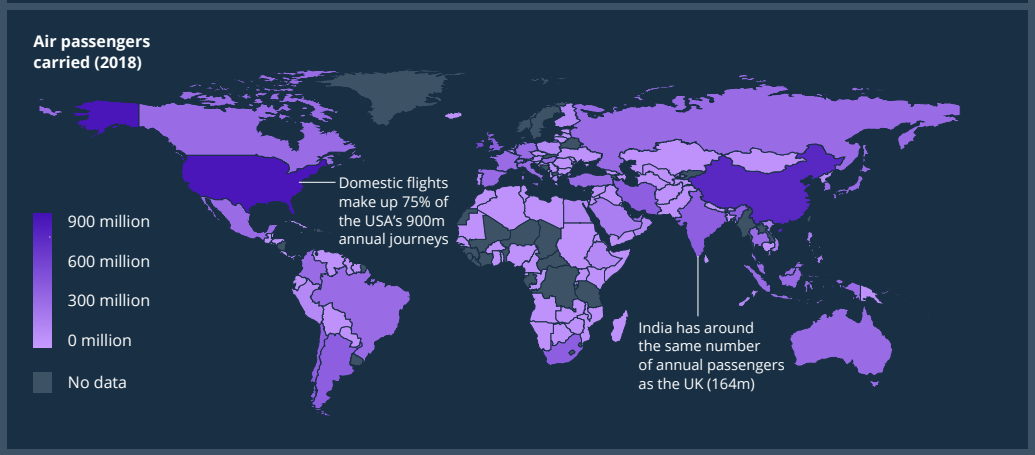

Air passengers carried (in millions, 2018)
Canada
89
USA
890
Mexico
65
Brazil
102
UK
Ireland
165
168
Germany
110
Russia
99
Turkey
115
81
UAE
96
India
164
China
611
N. Korea
0.1 million
Japan
126
88
S. Korea
76
Thailand
Indonesia
115
76
Somalia has the lowest annual passenger numbers in the world (4,486)
N. America
C & S America
Europe
MENA
Africa
Asia
Oceania

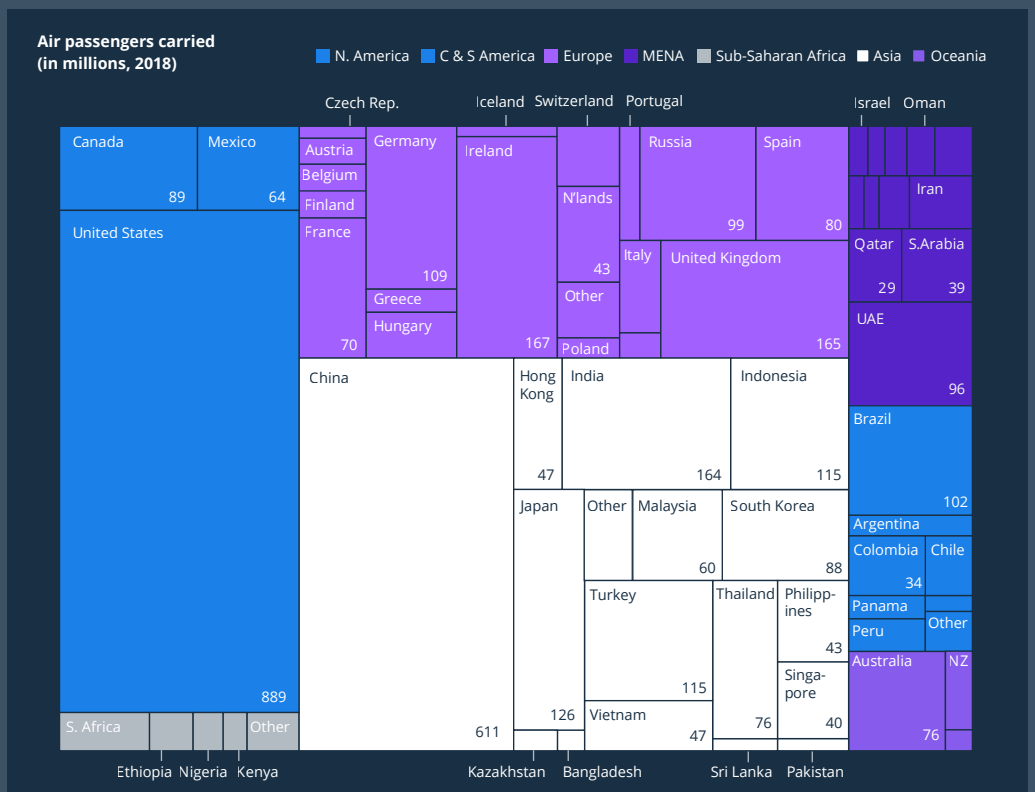

Air passengers carried (in millions, 2018)
Canada
89
USA
890
Mexico
65
33
Colombia
Brazil
102
UK
165
N'lands
44
Russia
99
Ireland
168
France
70
Germany
110
Spain
81
27
Italy
Turkey
115
S. Arabia
39
UAE
96
China
611
N. Korea
0.1 million
Japan
126
S. Korea
88
Philippines
43
India
164
Thailand
76
47
Vietnam
Malaysia
60
Indonesia
115
40
Singapore
Australia
76
Somalia has the lowest annual passenger numbers in the world (4,486)
N. America
C & S America
Europe
MENA
Africa
Asia
Oceania

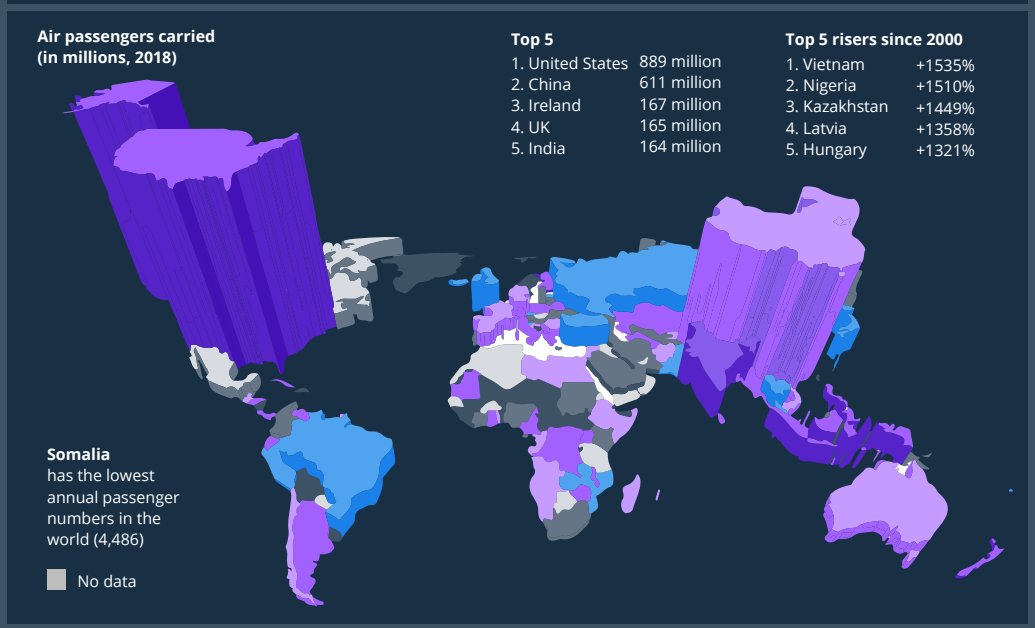

Millions of passengers (2018)
900
600
300
0
USA
China
Ireland (Ryanair HQ)
India
Brazil
UAE
Australia
Saudi Arabia
S. Africa
New Zealand
Ethiopia
Iceland
Pakistan
Others
Biggest risers since 2000
1. Vietnam +1535%
2. Nigeria +1510%
3. Kazakhstan +1449%
Biggest drop: Syria -98%


1 billion
North America
223 million
Central & South America
954 million
Europe
261 million
Middle East & North Africa
63 million
Sub-Saharan Africa
1.6 billion
Asia
97 million
Oceania
Passengers in millions (2018)
0
200
400
600
800
USA
Canada
Brazil
Colombia
Ireland
UK
Russia
Netherlands
Others
UAE
Saudi Arabia
Israel
South Africa
China
India
South Korea
Singapore
Australia


Air passengers carried (2018)
< 2 million
2–10 million
10–50 million
50–100 million
100–500 million
> 500 million
Missing
The USA has almost 900m annual passengers
Somalia has the lowest annual passenger numbers in the world (4,486)


Air passengers carried (2018)
900 million
600 million
300 million
0 million
No data
Domestic flights make up 75% of the USA's 900m annual journeys
India has around the same number of annual passengers as the UK (164m)

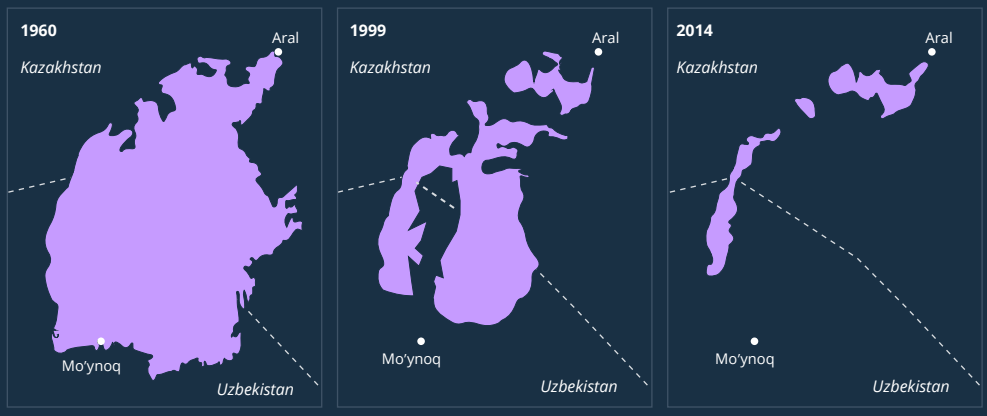

Air passengers carried
(in millions, 2018)
N. America
C & S America
Europe
MENA
Sub-Saharan Africa
Asia
Oceania
Czech Rep.
Iceland
Switzerland
Portugal
Israel
Oman
Canada 89
Mexico 64
United States 889
Austria
Belgium
Finland
France 70
Germany 109
Greece
Hungary
Ireland 167
N'lands 43
Other
Poland
Russia 99
Spain 80
Italy
United Kingdom 165
Iran
Qatar 29
S.Arabia 39
UAE 96
Brazil 102
Argentina
Colombia 34
Chile
Panama
Other
Peru
Australia 76
NZ
China 611
Hong Kong 47
India 164
Indonesia 115
Japan 126
Other
Malaysia 60
South Korea 88
Turkey 115
Thailand 76
Philipp-ines 43
Singa-pore 40
Vietnam 47
S. Africa
Other
Ethiopia
Nigeria
Kenya
Kazakhstan
Bangladesh
Sri Lanka
Pakistan


Air passengers carried
(in millions, 2018)
Top 5
1. United States 889 million
2. China 611 million
3. Ireland 167 million
4. UK 165 million
5. India 164 million
Top 5 risers since 2000
1. Vietnam +1535%
2. Nigeria +1510%
3. Kazakhstan +1449%
4. Latvia +1358%
5. Hungary +1321%
Somalia
has the lowest
annual passenger
numbers in the
world (4,486)
No data

Geospatial

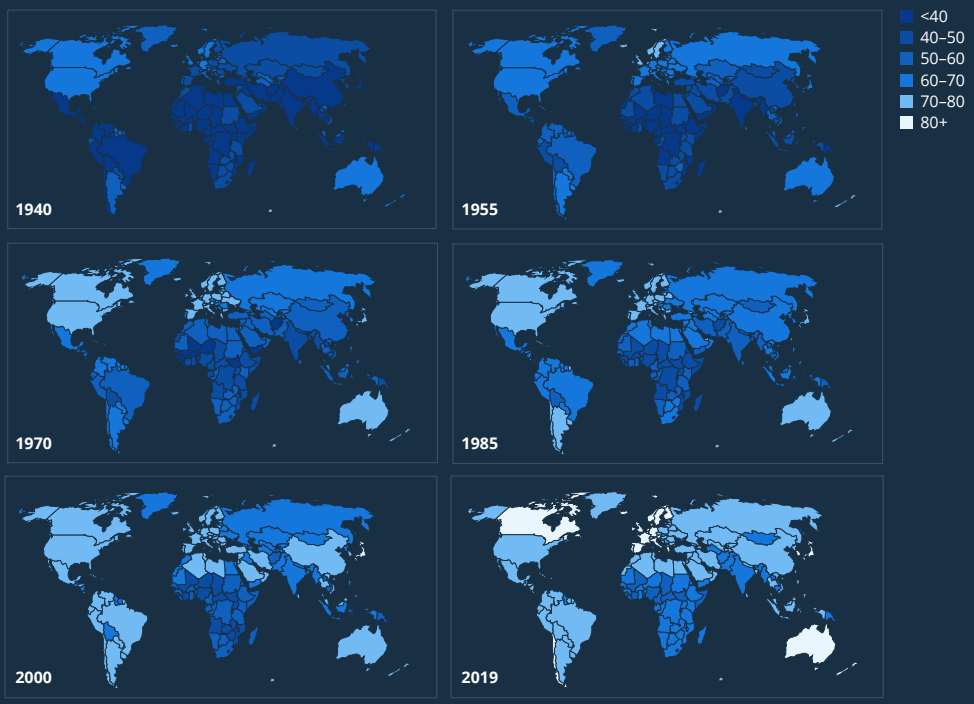
3. Miscelaneous

The shrinking of the Aral Sea



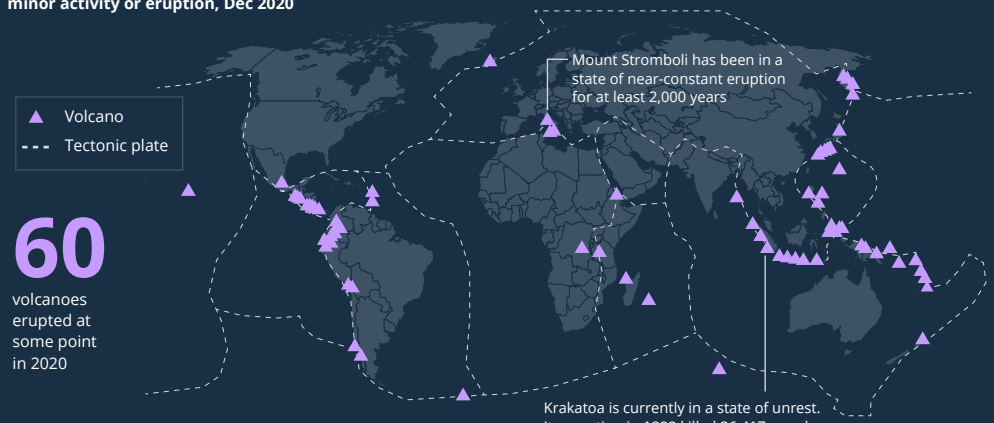
At 68,000km², the Aral Sea was once the size of Ireland - the fourth largest lake in the world and the home of a huge fishing industry. It began to shrink in the 1960s after the rivers that fed into it were diverted by Soviet irrigation projects. It is now a toxic wasteland. The port on its south coast, Mo'ynoq, has become a magnet for disaster tourists, who go to see the rusting fishing ships that sit on the dried-up seabed.

Life expectancy (1940-2019)



In 1940, the lowest life expectancy was **24.5** years of age in Sierra Leone, today the lowest is **53.3** in the Central African Republic. The highest life expectancy in 1940 was **66.7** in Sweden. The highest today is **84.6** in Japan

Volcanoes that were in a state of unrest, minor activity or eruption, Dec 2020



60
volcanoes erupted at some point in 2020

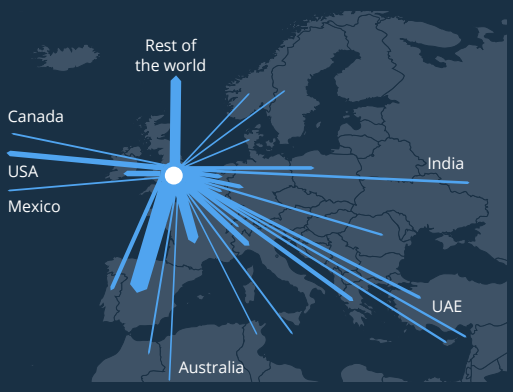
The migration of the Arctic tern

Total distance travelled up to
96,000km

Distance travelled per day (southbound)
330km

Distance travelled per day (northbound)
520km

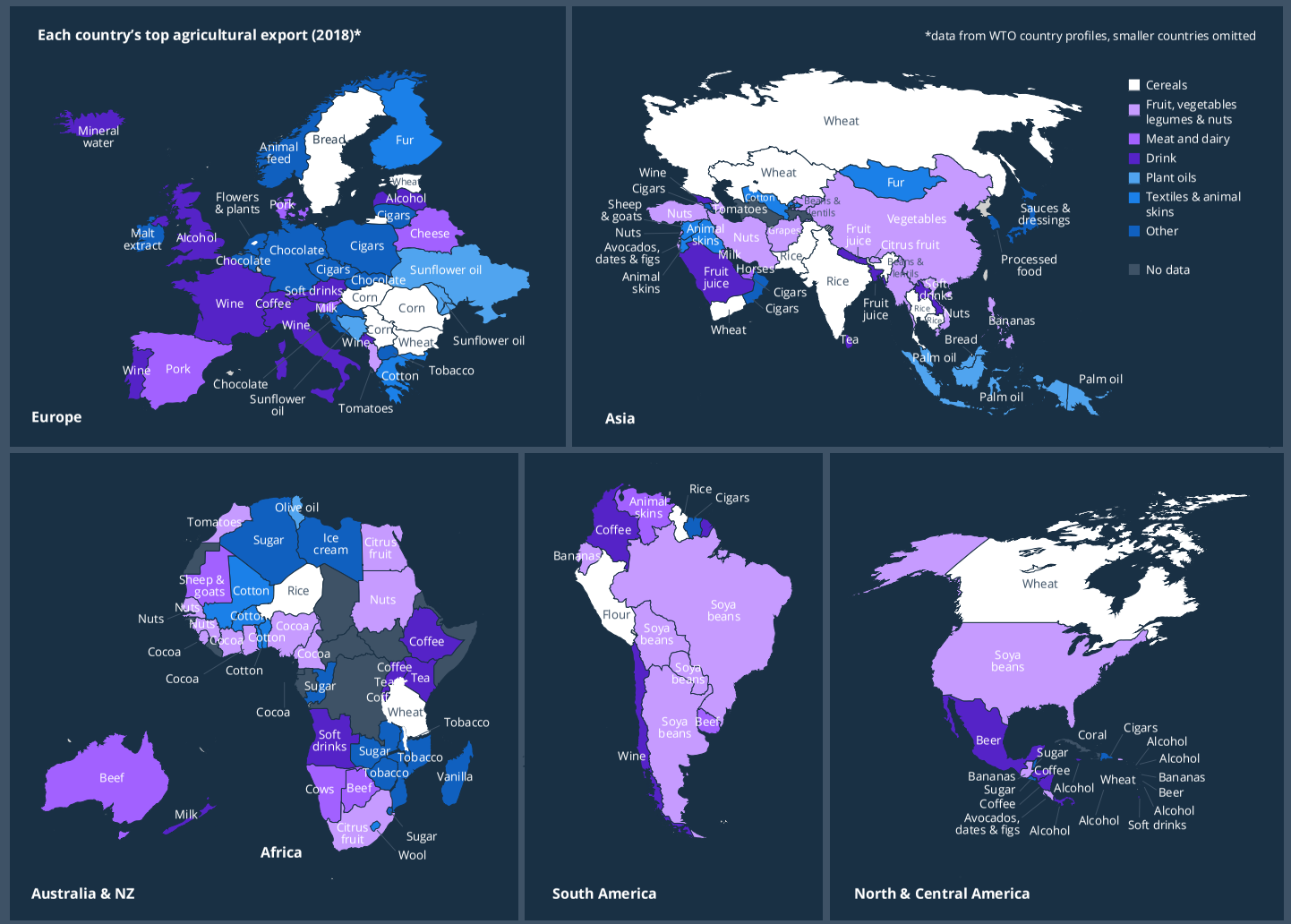
Some of the longest animal migrations (in km)



Number of visits abroad by British tourists in 2019 (millions, by destination)

Spain	18.13	Romania	1.29
France	10.35	UAE	1.29
Italy	5.11	Cyprus	1.05
USA	4.81	Malta	0.84
Ireland	4.79	Morocco	0.81
Netherlands	3.57	Canada	0.76
Greece	3.44	Mexico	0.69
Germany	3.38	Australia	0.55
Portugal	3.31	Norway	0.53
Poland	3.23	Denmark	0.52
Turkey	2.29	Sweden	0.52
Belgium	2.10	Tunisia	0.38
India	1.61	Rest of world	9.80
Switzerland	1.35		

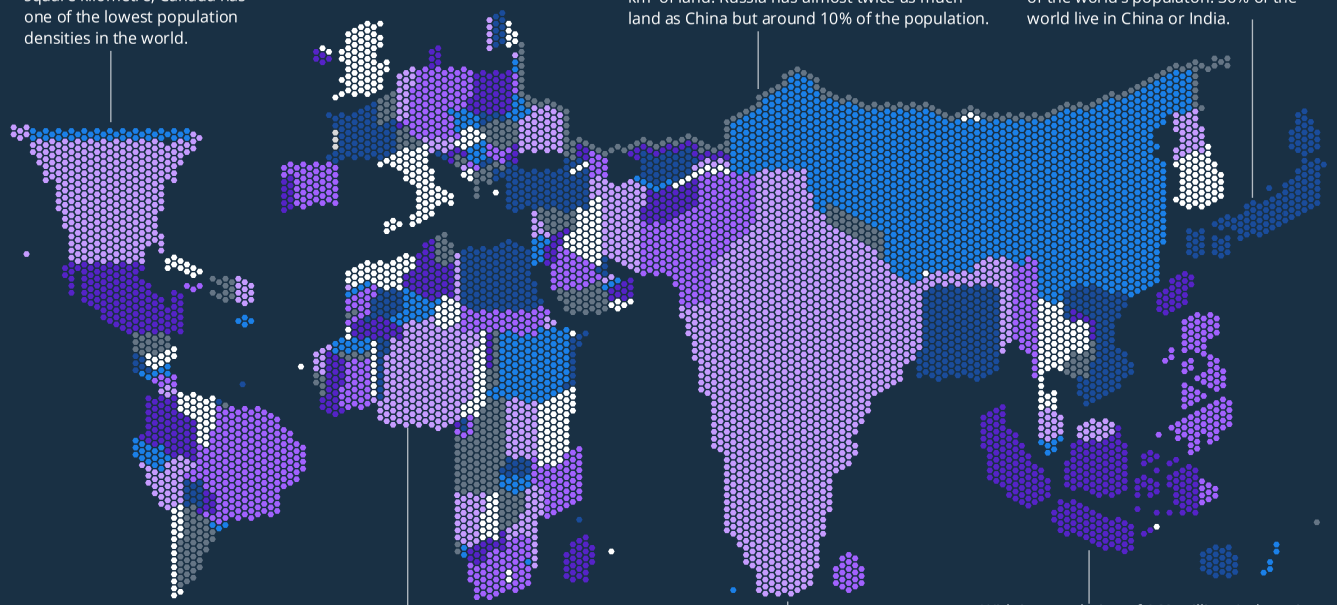
Sources: Encyclopaedia Britannica (Aral Sea), Our World in Data, UN Population Division (Life expectancy), Volcano Discovery (volcano map)/ BBC Earth, Guardian Environment (Arctic Tern), Office of National Statistics (outbound tourism data)


Each country's top agricultural export (2018)*
*data from WTO country profiles, smaller countries omitted
Cereals
Fruit, vegetables legumes & nuts
Meat and dairy
Drink
Plant oils
Textiles & animal skins
Other
No data
Europe
Asia
Africa
Australia & NZ
South America
North & Central America
Sources: *data from WTO country profiles, smaller countries omitted

Sources: *data from WTO country profiles, smaller countries omitted

Countries sized by population (2020)

= 1 million people



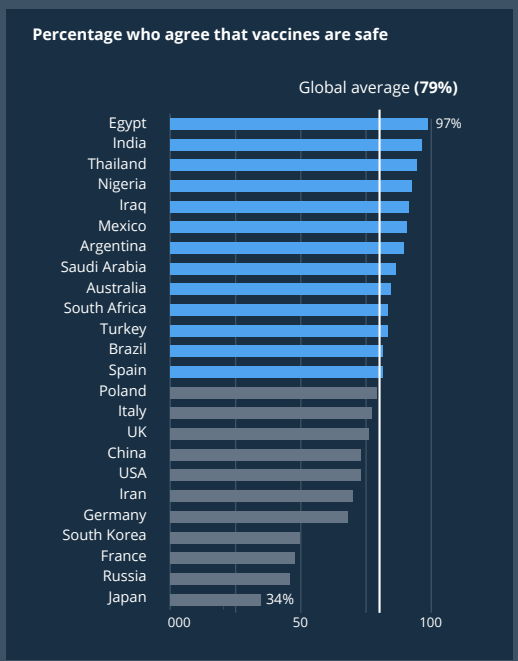
Inspired by an original design by Simon Scarr

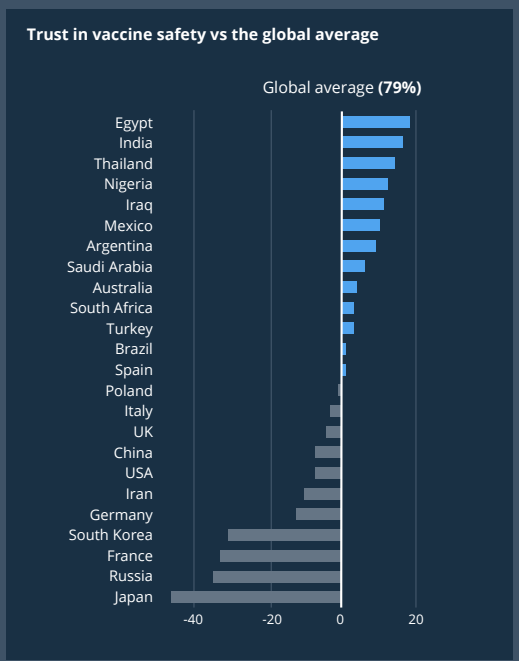
Any countries with a population of fewer than 500,000 people are not shown. Sorry, Iceland.

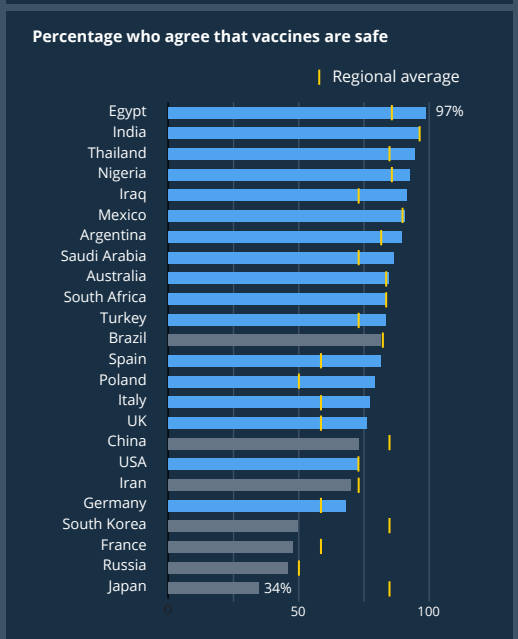
Other chart types

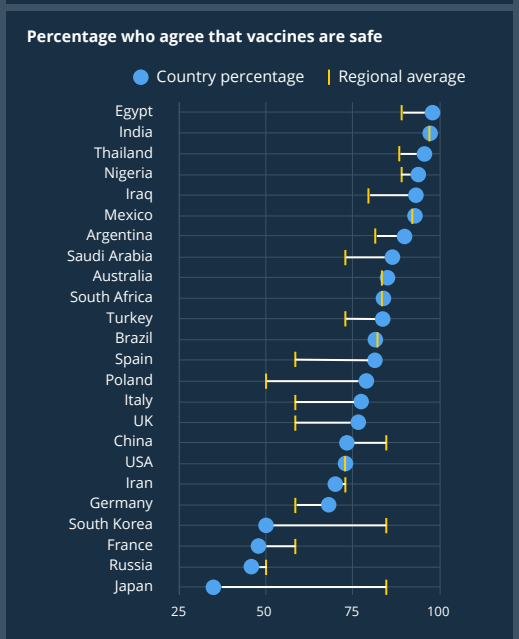
1. Targets and deviation

Vaccine safety (2018)







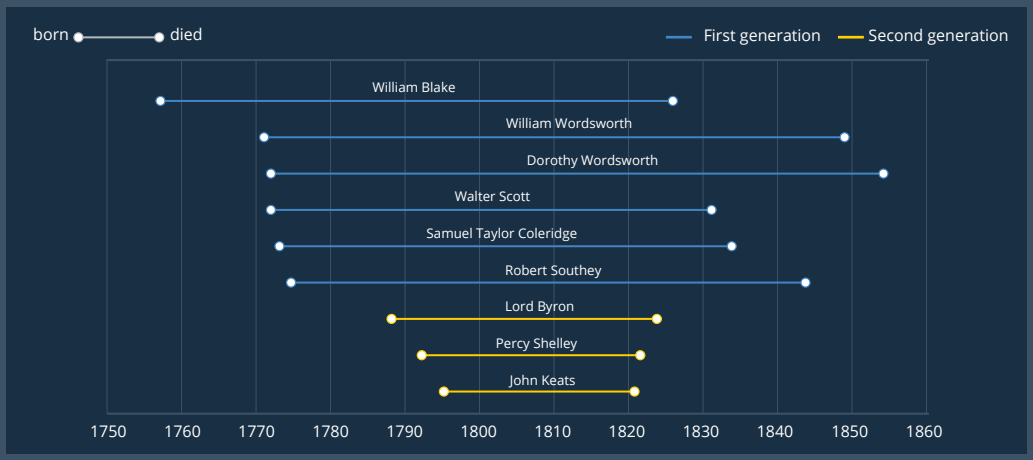


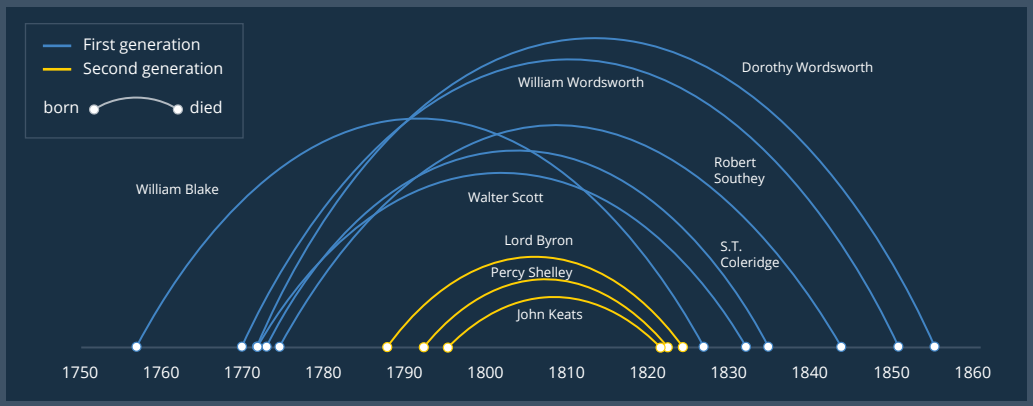
Source: Wellcome Global Monitor, part of the Gallup World Poll 2018

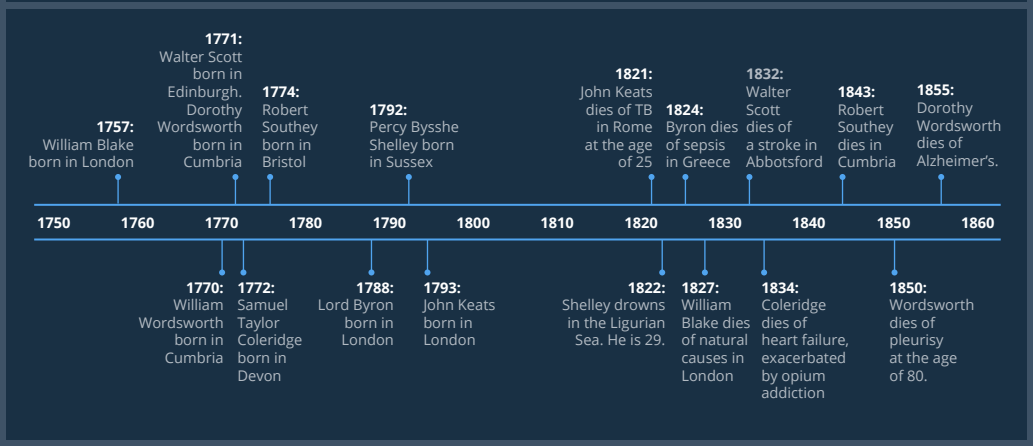
Other chart types

2. Timelines

Selected British Romantic writers – a timeline





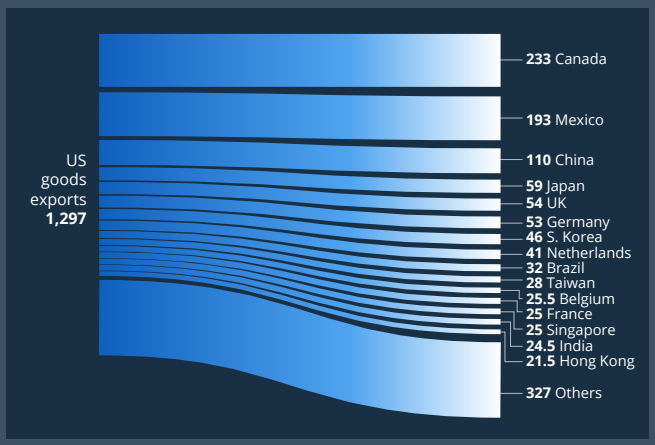


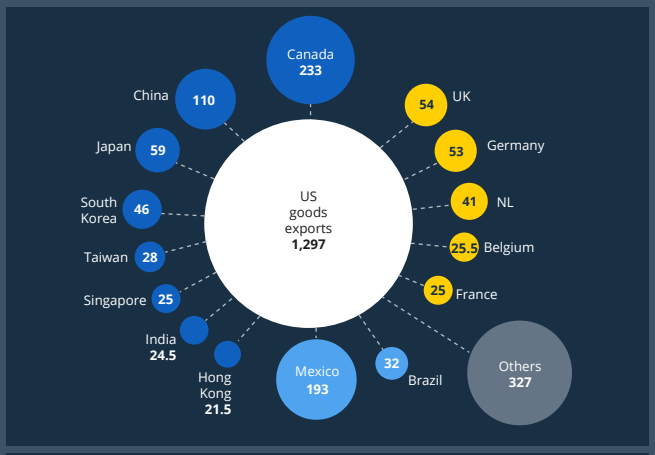
Source: Encyclopaedia Britannica

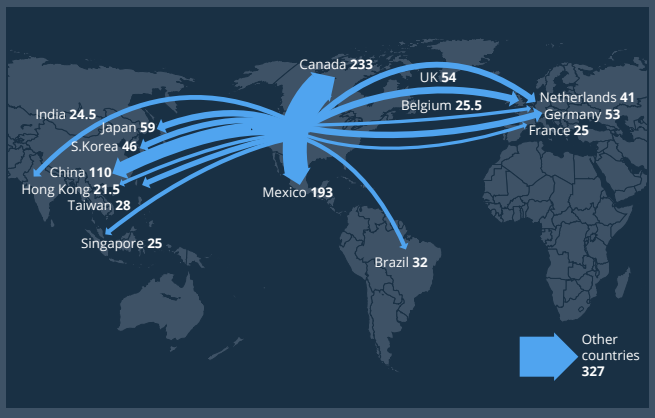
Other chart types

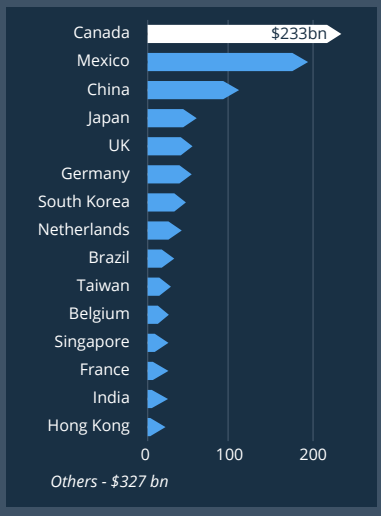
3. Movement and flow

Value of US goods exports in $bn (by destination, 2000)









*goods only, in billions of dollars, provisional figures. Ship icon by Sascha Elmers/ Noun Project. Data source: Census.gov, USTR,. Sankey flow chart template from Flourish

Other chart types

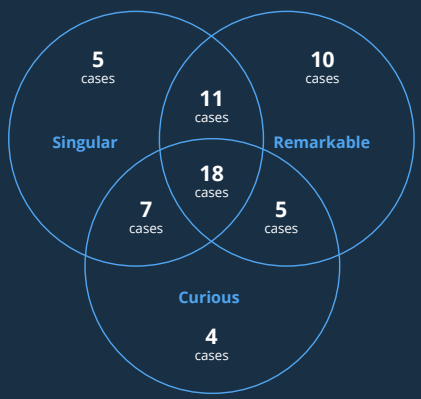
4. Overlap

The world of Sherlock Holmes

Which Sherlock Holmes story is the best?

*Ranked by Doyle:
http://www.sherlock-holmes.co.uk/library/doyle.html
**Ranked by fans:
http://www.bestofsherlock.com/story/storyhm.htm

Holmes likes to take on cases that are singular, remarkable and curious

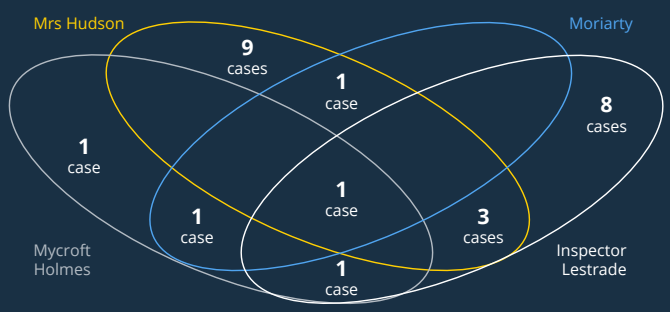


The 18 cases described as singular, remarkable AND curious are:

- Reigate Squire
- Red-Headed League
- Speckled Band
- Bruce-Partington Plans
- Crooked Man
- Hound of the Baskervilles
- Golden Pince-Nez
- Greek Interpreter
- Wisteria Lodge
- Sign of the Four
- Retired Colourman
- Case of Identity
- Silver Blaze
- Norwood Builder
- Resident Patient
- Devil's Foot
- Three Garridebs
- Creeping Man

*One of these adjectives is used in every single case. Other adjectives that feature widely include: extraordinary, strange, novel, uncommon and peculiar.

The supporting characters are almost as famous, but are scattered throughout the stories



The only case featuring all four of these characters is The Empty House. It is also one of the favourites of both Conan Doyle and Sherlockians. In it, Holmes comes 'back to life' after his apparent death at Moriarty's hands at the Reichenbach Falls.

Source: Adam Frost and Jim Kynvin

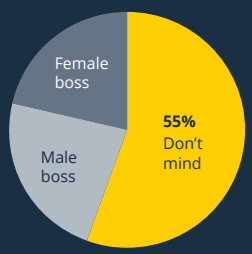
Chart Combinations

1. A change for the better

US attitudes on gender in the workplace

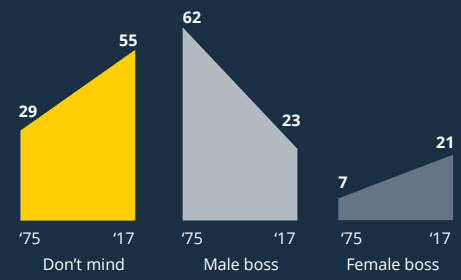
Most Americans no longer care whether their boss is male or female

Would you prefer to work for a male or female boss? (2017)



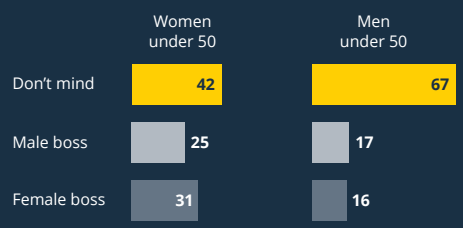
This represents a dramatic shift in attitudes since 1975

Would you prefer to work for a male or female boss? (%)



Younger Americans are least likely to say they would like a male boss

Would you prefer to work for a male or female boss? (2017, %)



There could be several reasons why attitudes have changed

47% of the US labour force is now female, up from 30% in 1950.

Attitudes to working women have changed, with less than 1 in 5 now believing that women should have 'traditional roles'

The bad behaviour of male figures in authority has been widely publicised, in part because of the #MeToo movement

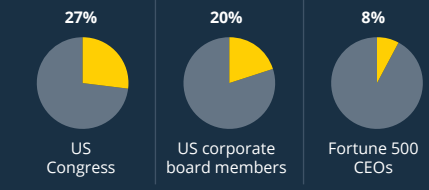
However let's not get too excited yet...

Percentage earned by women in comparison to men

The average woman still earns only 85% of what a man earns, and the gap has barely shifted since 2005.

And we might say we want more female bosses, but we don't currently have them.

Female representation



We need policy-makers and businesses to step up and make workplaces safer and more equal environments for women.

Advice for this story type

1. Start with a hero dataset and then bring in supplementary data to root your story in a wider context.
2. Introduce tone and perspective shifts with 'but' and 'however'. Your dataset might contain good news but there are always downsides or ongoing dilemmas, and these nuances make for a richer story.
3. Vary your chart types to signal that you are moving between different aspects of your story.
4. Use colour and textual cues to guide reader towards the most pertinent aspect of each chart.
5. Ensure that your text complements the visuals, and does not simply duplicate what is in the chart.
6. End with a clear conclusion or call to action.

Source: Gallup, World Bank, Pew Research Center

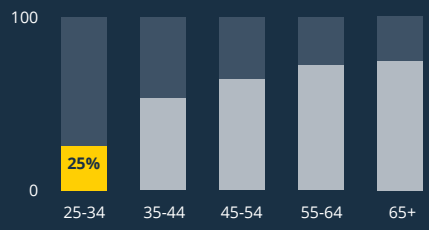
Chart Combinations

2. A change for the worse

Levels of home ownership in the UK

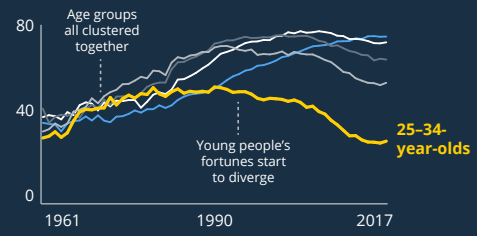
Young people in the UK can longer afford to buy their own home.

Percentage in each age range that own a home



Before the 1990s, your age used to make very little difference to your ability to buy a home.

Percentage in each age range that own a home (2017)



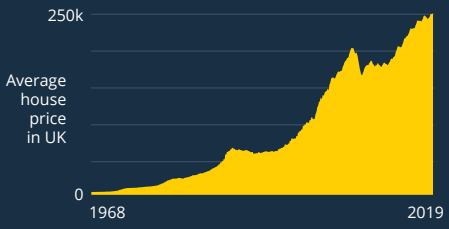
Since the 1980s, a series of policy decisions have made home ownership harder for the young.

The financial sector was deregulated in the 1980's leading to an era of 'cheap money'.

There has been a supply shortage: the number of new houses being built has dropped each decade since the 1960s. Most social housing has been sold off and not replaced.

The advent of 'buy to let' mortgages in the 1990s made it easier for existing homeowners to buy multiple properties and rent them out.

All of this has helped to stoke almost continuous runaway house price inflation.



In 1968, the average house was **3 times** the average salary, by 2019, it was **6.4 times** the average salary.

At the same time, young people are facing unprecedented financial pressures.

94%

of students leave university in debt, owing an average of **£50,800** (up from £16,200 in 2011)

52%

of people on zero- hours contracts are 17-34. Youth unemployment is **12.5%** (it is 4.9% overall).

What needs to change?

Several solutions have been proposed.

A new government-backed lending model
The current Help to Buy Scheme does not target low-earners. 65% of those who have used the scheme could have afforded a house anyway.

Disincentivising landlordism
The way rental income is taxed should be reviewed. It is currently too lucrative for people to own multiple properties.

A review of the planning system
There are too many restrictions on where to build new homes. In Surrey, just outside of London, more land is devoted to golf courses than houses.

Advice for this story type

1. Start with what has changed, and then bring in contextual data to explain why things might have worsened.
2. Try to keep your tone neutral even though you are presenting data which is likely to shock and anger people.
3. Use simple, clear charts. Because this is bad news, you don't want to suggest that you are treating it trivially.
4. Use icons to lift explanatory charts and to separate out your key points.
5. Use a highlight colour and clear copy to guide the reader towards the most relevant part of each visual. Change your visuals when you are looking at a different aspect of the problem.
6. Don't leave people in despair. Finish with an overview of how the situation might be changed or improved.

Source: Resolution Foundation

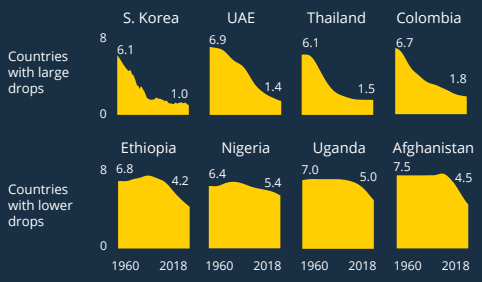
Chart Combinations

3. A neutral or historical change

Declining fertility rates

Global fertility rates have fallen by more than half since 1960.

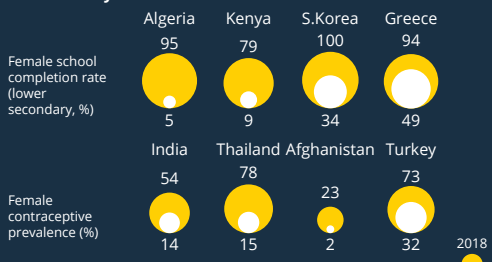
Although the rate of decline varies hugely by country, women are having fewer babies everywhere.



Low fertility rates are largely a success story, reflecting the fact that fewer children are dying in infancy.

Child mortality rates per 1,000 live births (1960 v 2019)

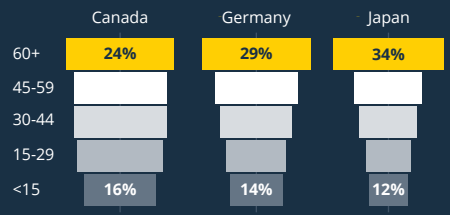
It is also linked to the transformation of women's lives in many countries.



Female labour force participation rates have also rocketed since 1980, e.g. from 7% to 24% in Pakistan, from 30% to 52% in Brazil.

But low fertility causes problems too. Population pyramids become inverted, unbalancing societies.

Population profile in 2020



By 2100, 183 out of the world's 195 countries will have declining populations because of low fertility.

What does this mean for the future?

Most experts believe that declining fertility will require a total reorganisation of society. Predictions include:

- Much later retirement age because of the reduced size of the adult workforce
- Changes in the tax system to reflect increasing healthcare costs for older populations
- Dramatic changes in migration policy as countries compete for skilled migrants
- Government programmes to increase fertility rates, and improved employment rights for parents

Advice for this story type

1. With a neutral dataset, your storytelling has to work harder. Start simple, with a single stat or chart, as it's not a dataset people are likely to have thought much about before.
2. As you move through your story, isolate only the most interesting datapoints - delete ruthlessly.
3. By bringing in secondary datasets, you can add drama and show that your apparently neutral dataset has both positive and negative connotations.
4. Be bold with your designs. Avoid too many bars/lines; consider more unusual charts (here, nested bubbles).
5. Draw everything together at the end of your story. And if possible, look ahead to what the future might hold.

Sources: World Bank, Our World in Data, BBC News, The Lancet, Population Pyramid.net. Icons from DesignBite, Sergey Krivoy & Ahargun Ahduy via Noun Project

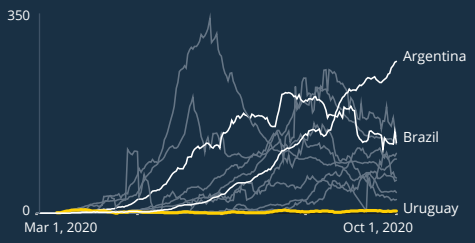
Chart Combinations

4. Comparison - an outlier or exception

The case of Uruguay

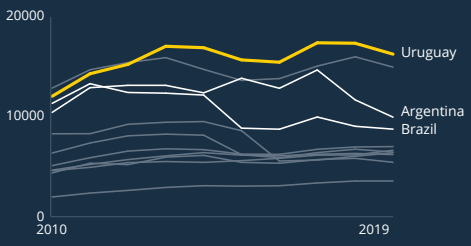
Uruguay hit the headlines in Autumn 2020 for having one of the world's most effective Covid responses.

Confirmed daily cases per million, South America



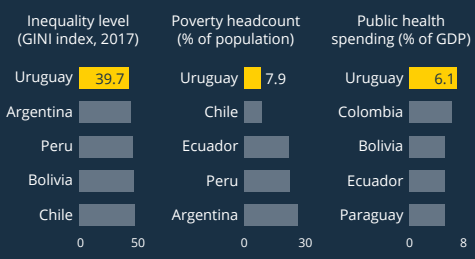
However, this didn't surprise anyone in South America. This tiny country had long been an outlier in the region.

GDP per capita (current US$), South America



Not only are Uruguayans relatively wealthy, but they share their wealth more equally.

Top 5 performing countries, South America



On social and political issues, Uruguay is also exceptional.

Best performer in region on women's rights (0.28 score in Gender Inequality Index). Abortion legal since 2012.

Highest levels of LGBT tolerance in the Americas (5.56 GAI Score, Williams Institute). Gay marriage legal since 2013.

Liberal drug and alcohol laws. Marijuana legal since 2017 and can be bought in shops.

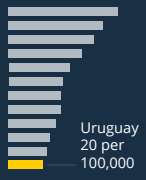
Highest political transparency score in region (70 out of 100). Lower levels of perceived corruption than most European countries.

The country is also an ecological pioneer

98%

of its energy comes from renewable sources

It emits just 2 metric tons of CO_2 per person per year



It has the lowest number of deaths from air pollution in the region

All of this meant that Uruguay was in a better position when the Covid crisis struck.

65% of people trust their institutions, the highest level in the region. This meant public health recommendations were followed by most people.

In a 2009 survey, almost 30% of Uruguayans said 'most people can be trusted'. Only 17% of Argentinians, 9% of Brazilians and 4% of Colombians said the same.

Would other countries benefit from copying Uruguay's social model?

Advice for this story type

1. When you telling a story about an outlier, always keep the competitive context in view, so the audience is continually reminded of how far your outlier deviates from 'normal' or average performance
2. If your chosen example excels in just one area, explain why this area is important. If it excels in many (as in this example), group the different elements into categories.
3. If you can, explain why and how your outlier managed to attain its exceptional position.
4. Use a single highlight colour for your outlier in each chart or illustration.
5. End by telling your audience why this information is important. Should we be imitating this exceptional entity?

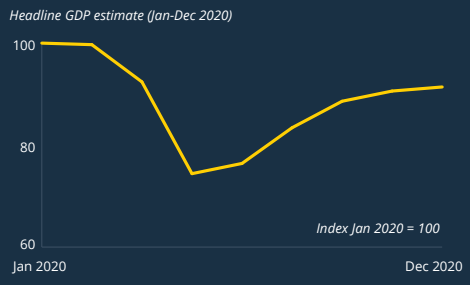
Sources: Johns Hopkins University, World Bank, Transparency International, Williams Institute, Our World in Data.
Renewable icon by Made x Made

Chart Combinations

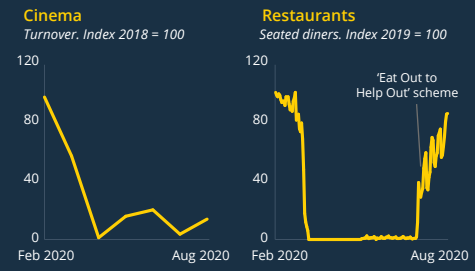
5. Comparison - a mixed picture

The impact of Covid on UK business

Covid has had a huge impact on UK business. At the end of 2020, GDP remained 8% below its January level.



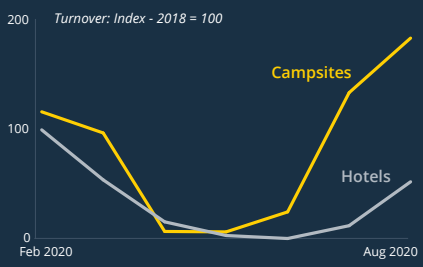
For some industries, Covid was an unmitigated disaster.



4 out of 5 pubs were still closed in December 2020

Clothing and footwear were hard hit too - as people went outdoors less and saw fewer people.

The hotel industry was seriously damaged by the pandemic, although campsites flourished.



There were a few obvious beneficiaries.

The average pharmacy saw its sales volumes double between Feb and June 2020.

The share of retail sales that were online surged from 20% in February to 34% in May.

Online supermarket Ocado saw their share price double in 2020.

It is hard to predict whether the behaviour changes caused by Covid will have a long-term effect.

25% of British people say they will shift permanently to online-only shopping after Covid

As local shopping surges and large malls suffer, 70% of local shoppers say they will continue to stay local after Covid.

41% say that, after lockdown, they plan to limit the number of shops they visit and just stick to a few favourite stores.

Advice for this story type

1. A mixed picture can be confusing unless you structure your story effectively. Clearly demarcate the story's positive and negative elements before starting. Avoid using examples that don't show a clear trend or outcome.
2. Decide what you want your story arc to be: will you start with the negative examples or the positive? Bad news is more attention-grabbing, so it's often sensible to start with this by default.
3. Use text and chart changes to make it clear that you are shifting angle or perspective.
4. In mixed picture stories, your ending is likely to be inconclusive. Explain some of the uncertainties and invite your audience to speculate about possible implications.

Source: ONS, Cinema UK, Top Table, Yougov. Icons from Blangcon, Vectorstall via the Noun Project

Chart Combinations

6. Comparsion - two key categories, or one category against a target/average

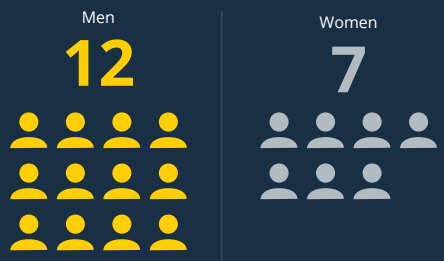
Sex and gender in the UK

The *Observer's* Sex Survey revealed striking differences between British men and women's sexual behaviour.

promiscuous
untruthful
discontent

monogamous
trusting
more content

Men claim to have had more sexual partners.



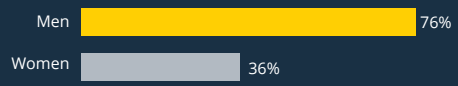
Men are more likely to be both jealous *and* unfaithful.

Cheated on their partner

Suspect their partner of cheating

They are more likely to pay for sexual services.

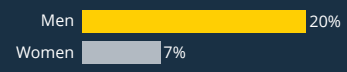
Use online pornography



Have used a prostitute

And to be drawn to risky or reckless behaviour.

Used the internet to get casual sex

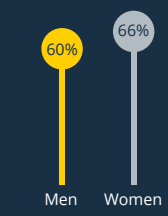


Had sex with someone and not known their name

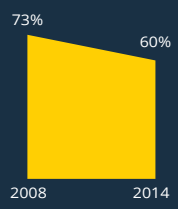
Had unsafe sex

But despite all their (apparent) sexual adventures...

Men are less likely than women to be happy with their sex lives



And they are getting unhappier all the time



Advice for this story type

1. When you are comparing two categories, keep your slides as simple and uncluttered as possible, so that the relationship between the categories is the obvious focus of every slide.
2. Use consistent colours for your two categories. Use charts (like bars or bubbles) that clearly demarcate the categories as distinct and separate.
3. Be clearly aware of the differences and similarities between your two categories, and use this to structure your story. 'They are similar in many ways, but...' or 'They are different in many ways, but...'
4. Draw the story to an obvious close. Is one category winning or losing out? Why? What might happen next?

Source: Observer Sex Survey 2014