

Turning data into meaningful insights

Gavin Freeguard
apolitical
3 July 2024

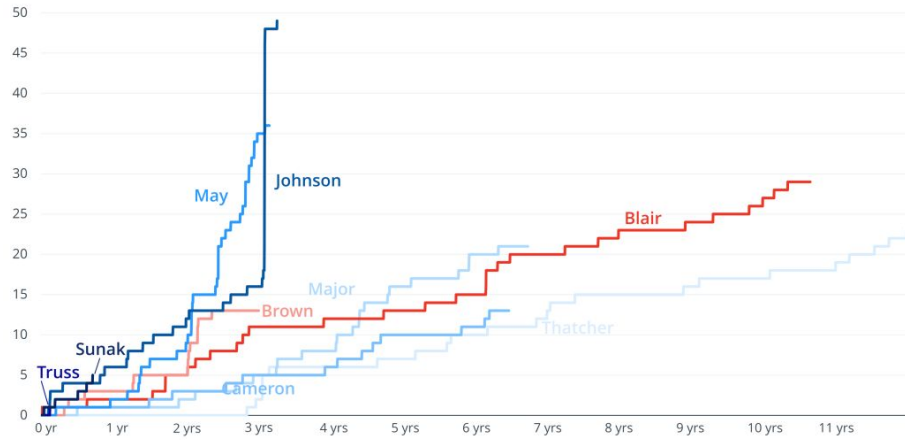
apolitical

Whitehall Monitor 2018

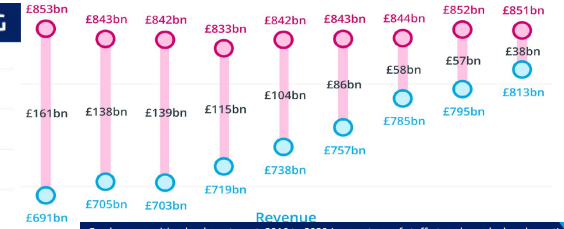
The General Election, Brexit and beyond

Gavin Freeguard | Lucy Campbell | Aron Cheung
Alice Lilly | Charlotte Baker

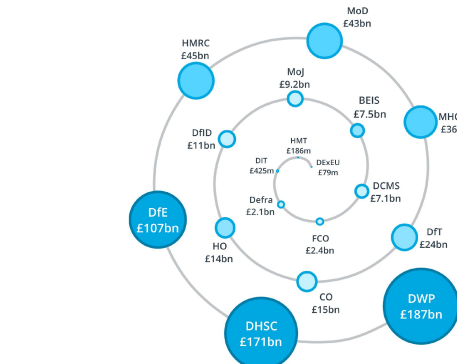
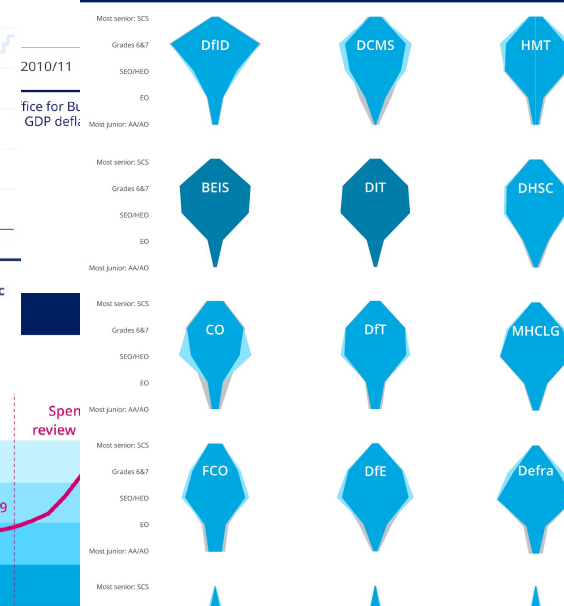
Ministerial resignations outside reshuffles by prime minister, 1979 to June 2023



Source: Institute for Government analysis of sources including Butler and Butler, *British Political Facts*; House of Commons Library; King A and Allen N, 'Off with their heads: British prime ministers and the power to dismiss', *BJPoS*, 2010, vol. 40, no. 2, pp. 249-278; and IfG ministers database. Notes: We have excluded those resignations announced before a reshuffle but effectively taking place during it, e.g. Hurd (1995), Smith/Bleas/Hughes/Watson (2009), Dunlop (2017), and sackings.



Grade composition by department, 2016 to 2020 (percentage of staff at each grade, headcount)



Percentage of FoI requests granted in full, by department, Q1 2005 to Q4 2020



Source: Institute for Government analysis of HM Treasury, Public Expenditure Statistical Analyses 2019, table 1.12, HMT shows administration spending only. BEIS excludes the Nuclear Decommissioning Authority.

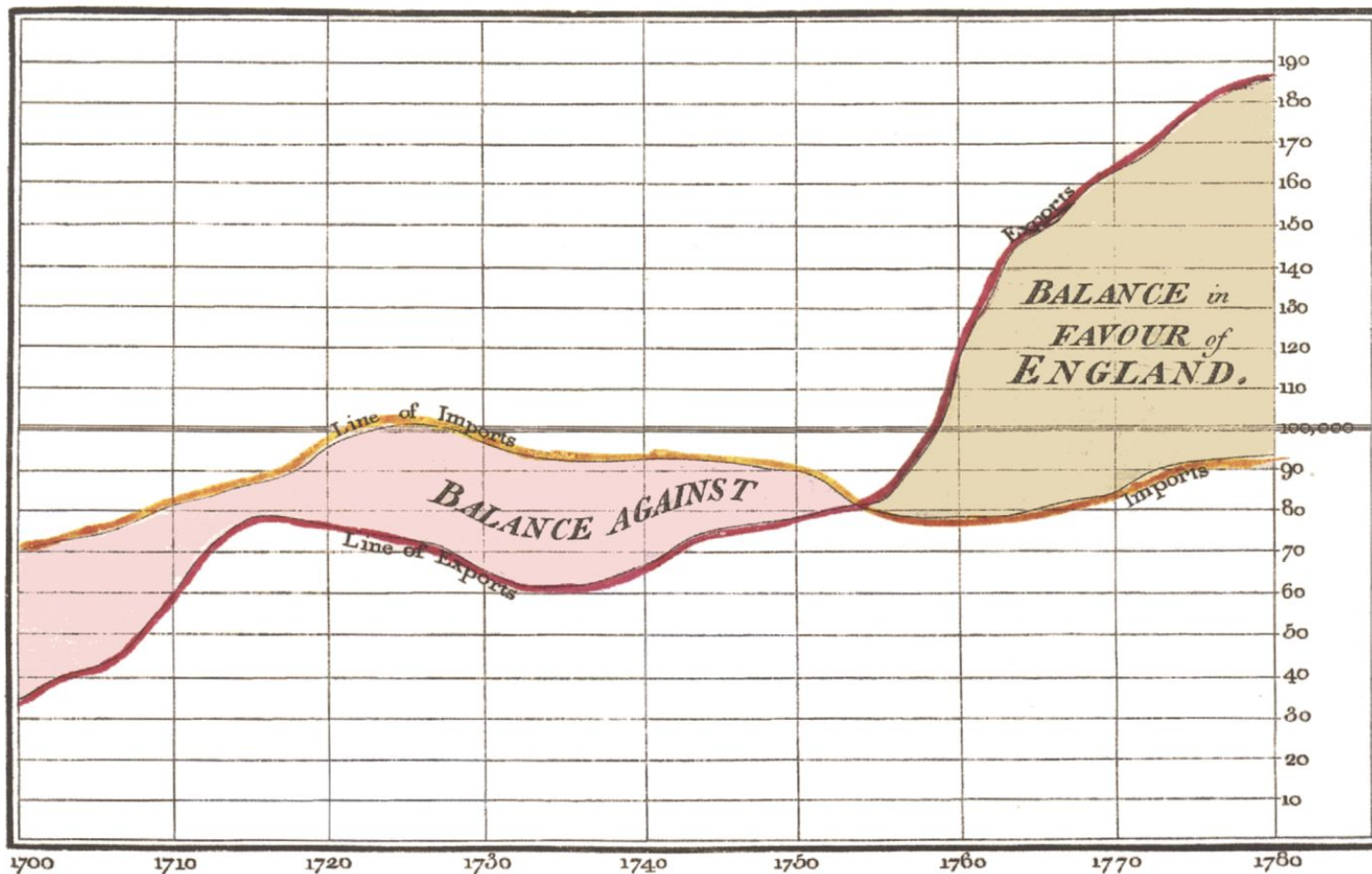
Source: Institute for Government analysis of Cabinet Office/Ministry of Justice, Government FoI statistics, Q1 2005 to Q4 2020. Resolvable requests with known outcomes only. Departments ordered by percentage of FoI requests granted in full in Q4 2020.

- Why visualise?
- The chart type you need
- The design touches you need

Why visualize data?

Why visualize data?

Exports and Imports to and from DENMARK & NORWAY from 1700 to 1780.



The Bottom line is divided into Years, the Right hand line into £10,000 each.

Published as the Act directs, 14th May 1786, by W^m Playfair

Neale sculpt 352 Strand, London.

‘...a man who has carefully investigated a printed table, finds, when done, that he has only a very faint and partial idea of what he had read; and that like a figure imprinted on sand, is soon totally erased and defaced...

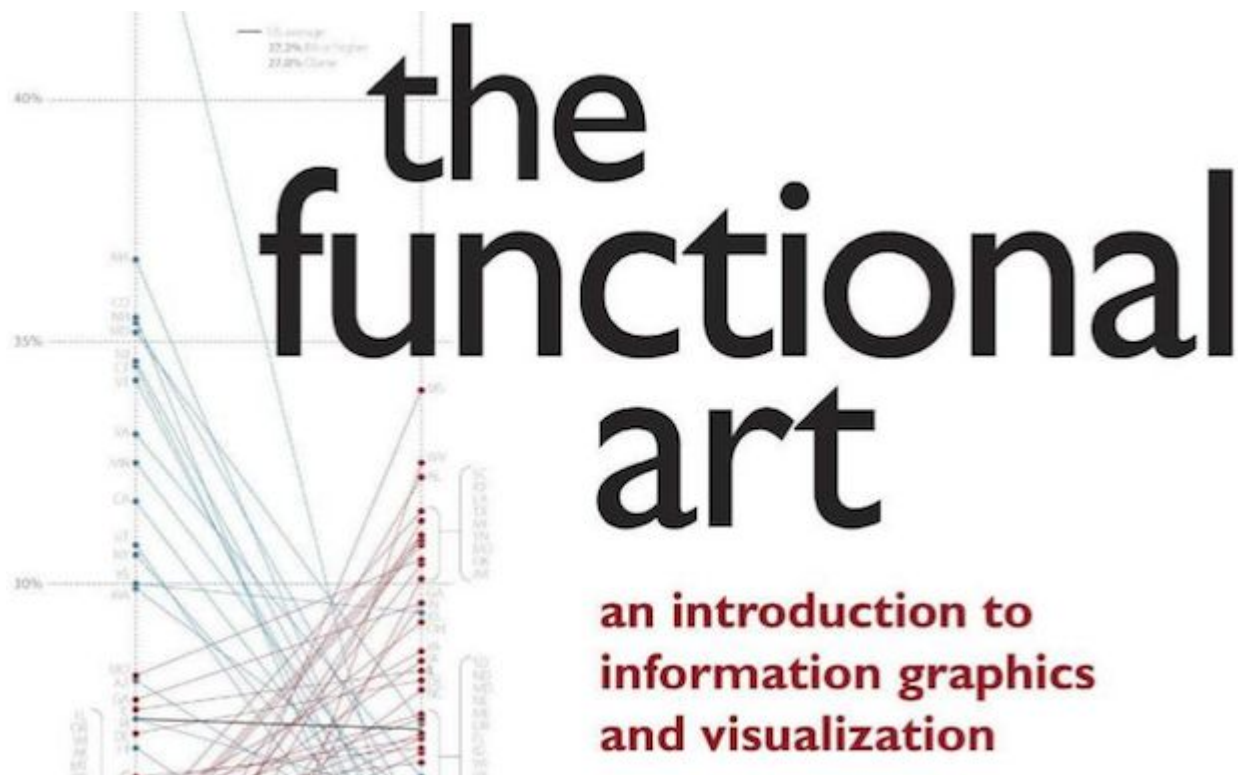
On inspecting any one of these Charts attentively, a sufficiently distinct impression will be made, to remain unimpaired for a considerable time, and the idea which does remain will be simple and complete...’

William Playfair

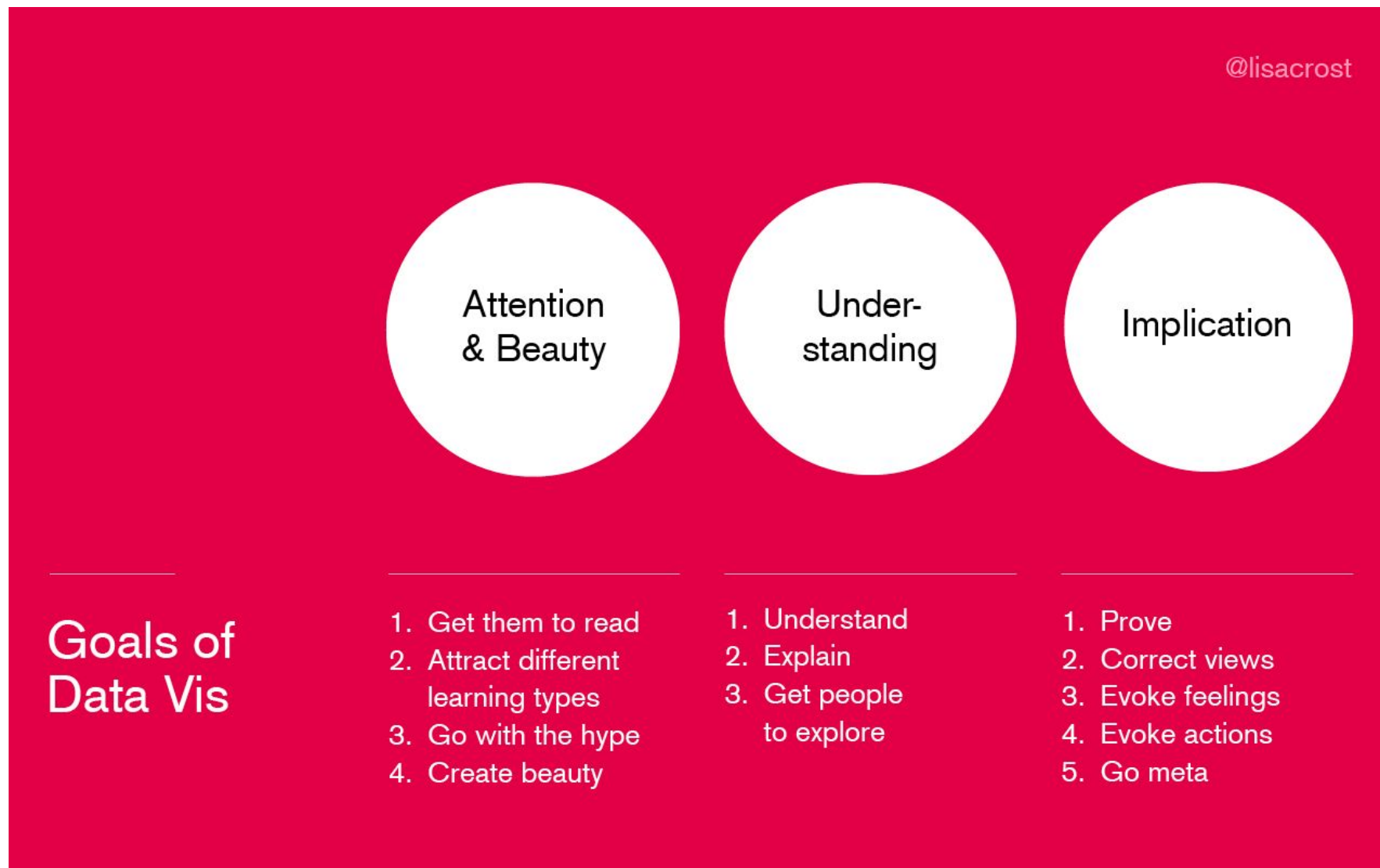
Why visualize data?

‘the aim is to help an audience complete certain tasks... [visualization] is not just art, but *functional art*, something that achieves beauty not through the subjective, freely wandering self-expression of the painter or the sculptor, but through the careful and restrained tinkering of the engineer’

Alberto Cairo



Why visualize data?



Why visualize data?

- Work out what the story is
- Tell that story to others

Why visualize data?

- Work out what the story is
- Tell that story to others

Key questions

- What is the story? What are you trying to show?
- What impression do you want the reader to go away with?
- Will your reader understand?
- In what context are you presenting the visualization?
- Is the data accurate?

Clear and attractive

- People apparently spend 15 seconds on a website
- Be clear about the story
- Let the data breathe – nothing superfluous

Correct and accurate

- Don't distort the data – or let bad design distort it
- Make the source clear
- Make any caveats clear

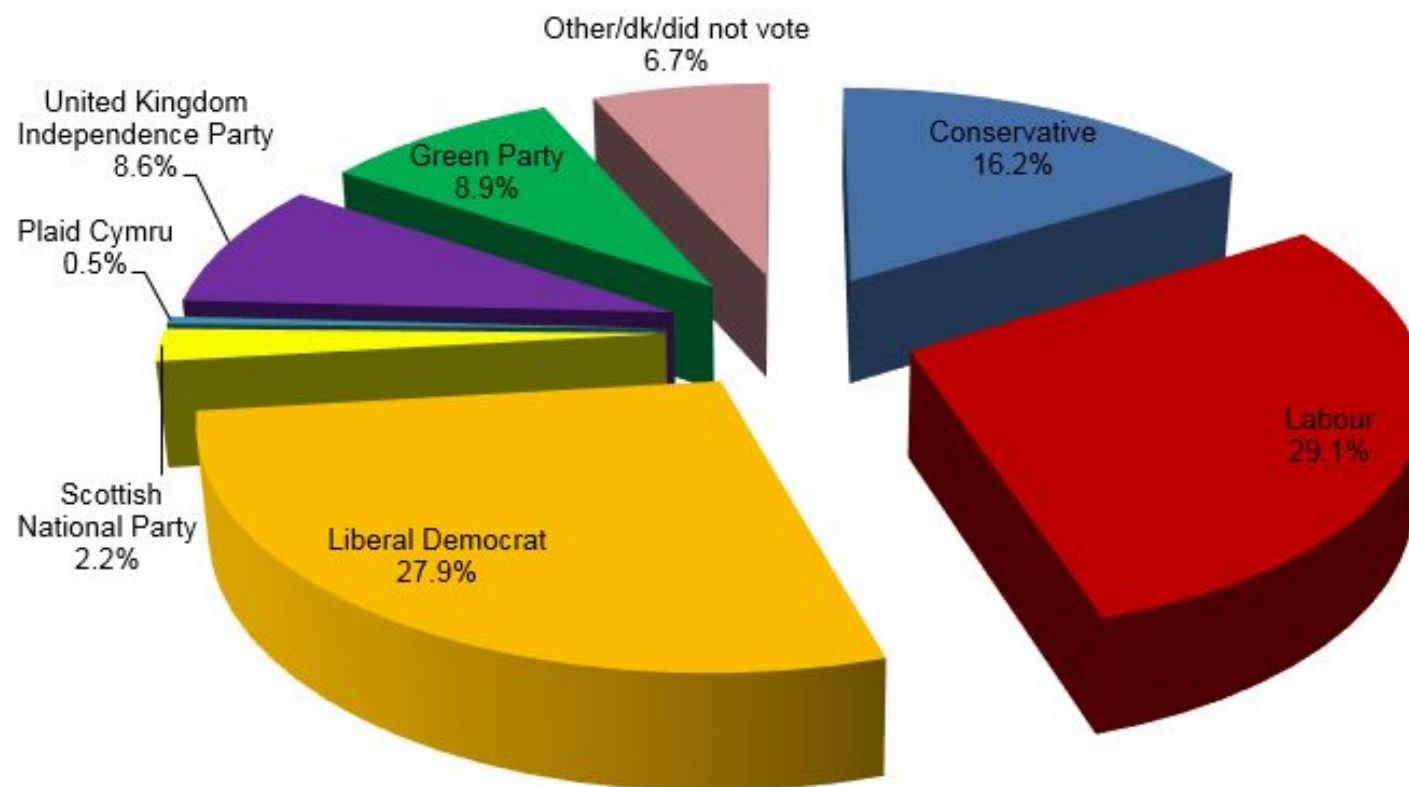
Clear and attractive

- Would a reader understand the chart or be hooked in by it in 15 seconds?

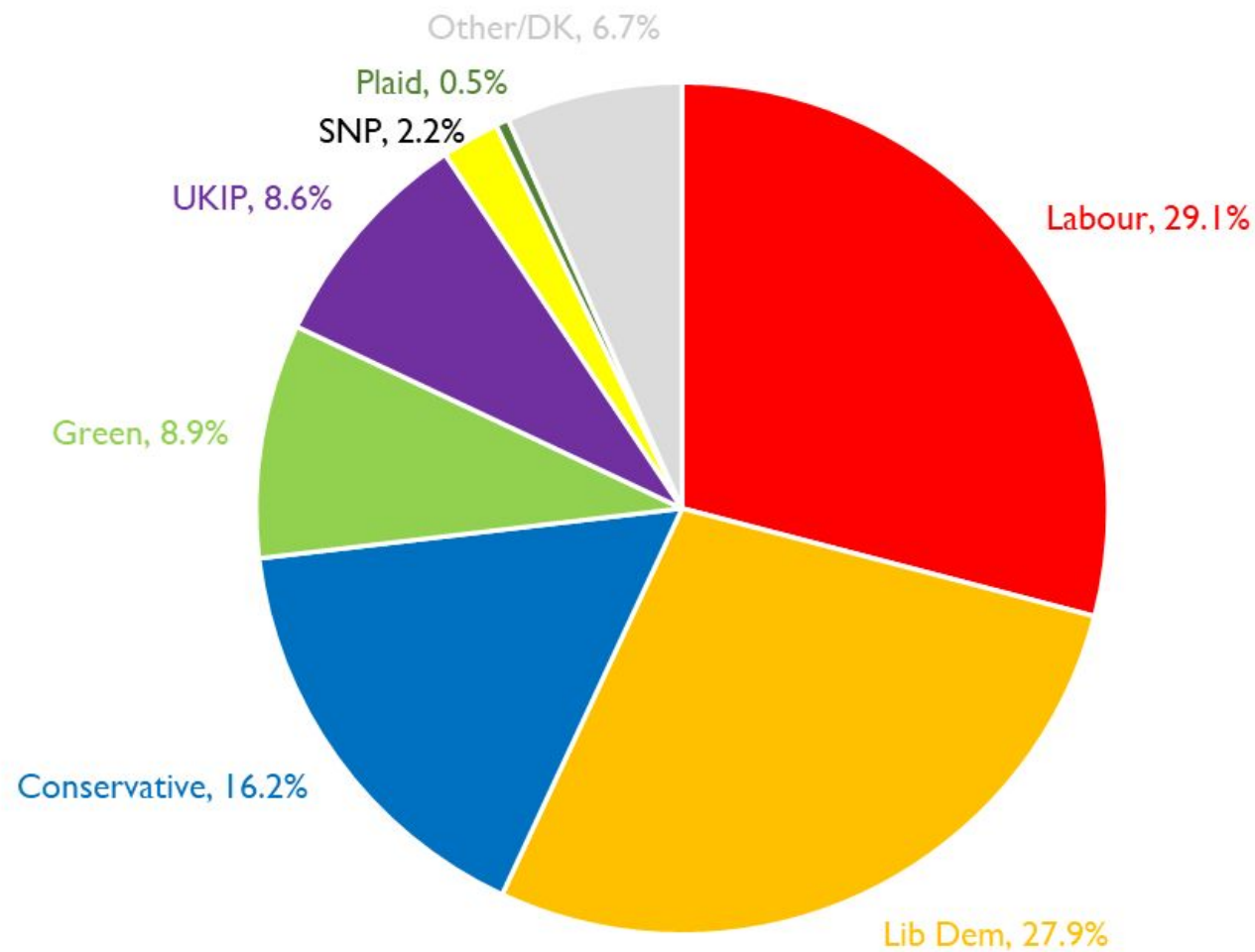
Correct and accurate

- How would you feel if the chart were retweeted without any further context?

Destination of 2010 Liberal Democrat voters

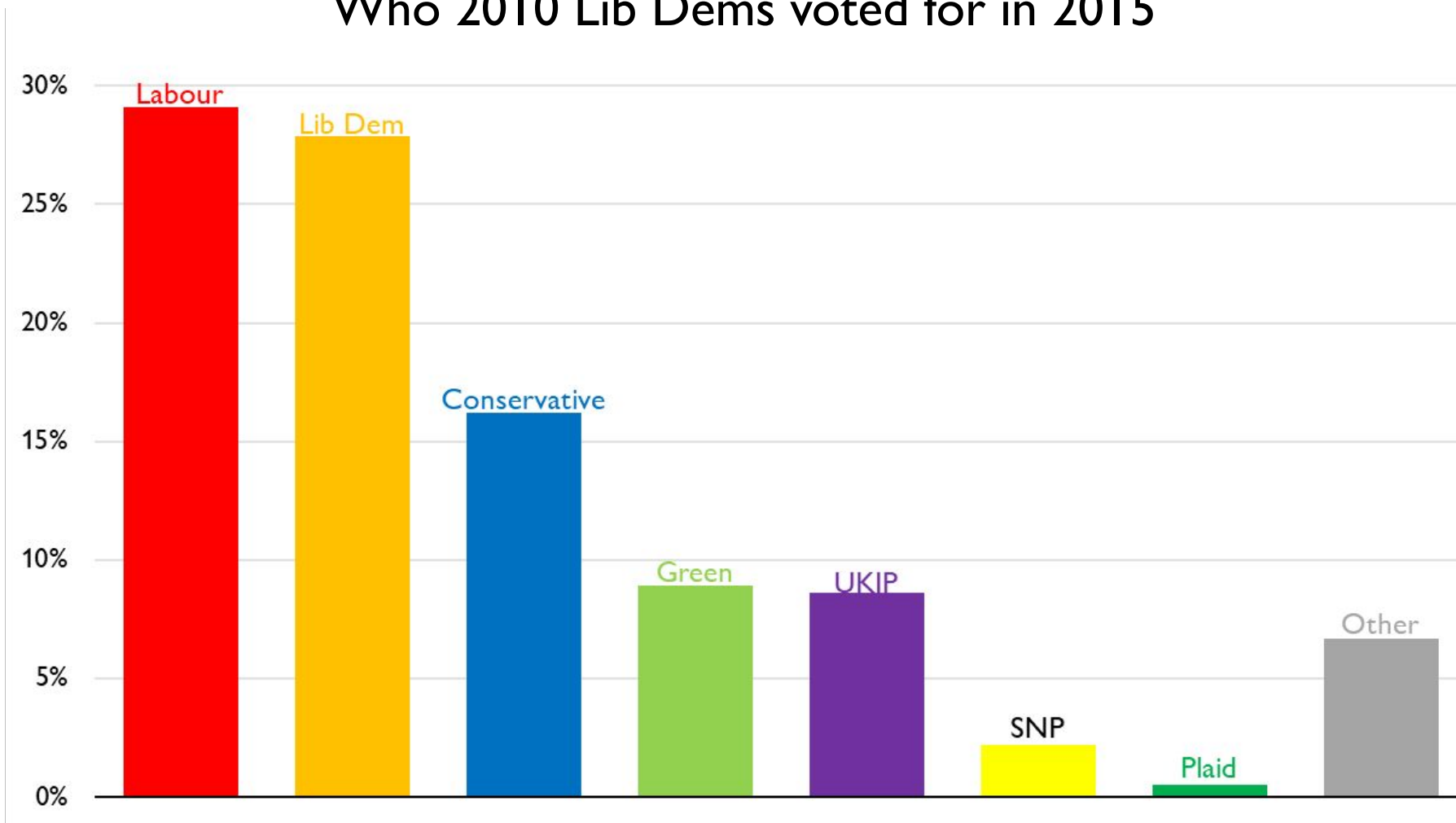


Who 2010 Lib Dems voted for in 2015

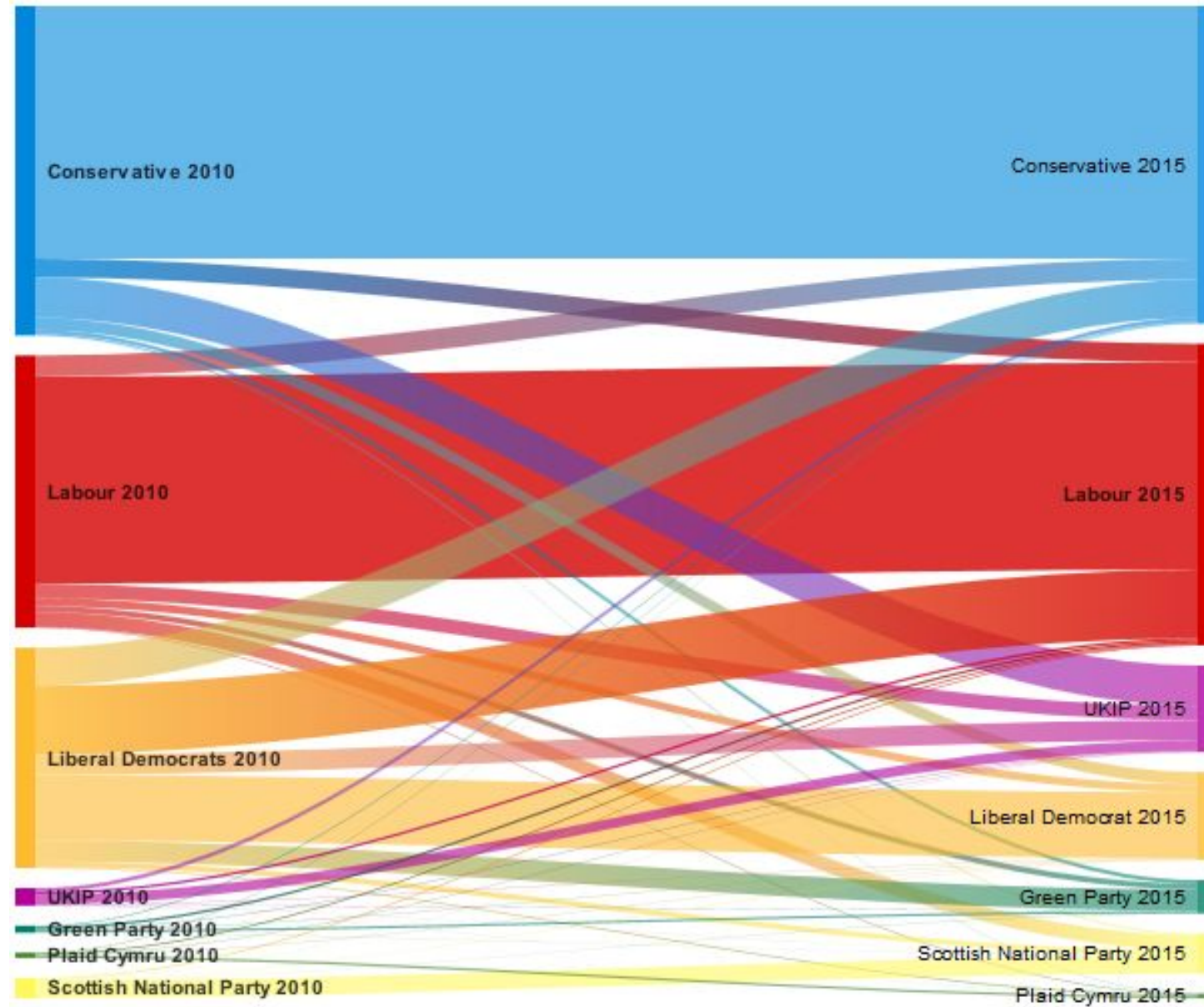


Things to think about

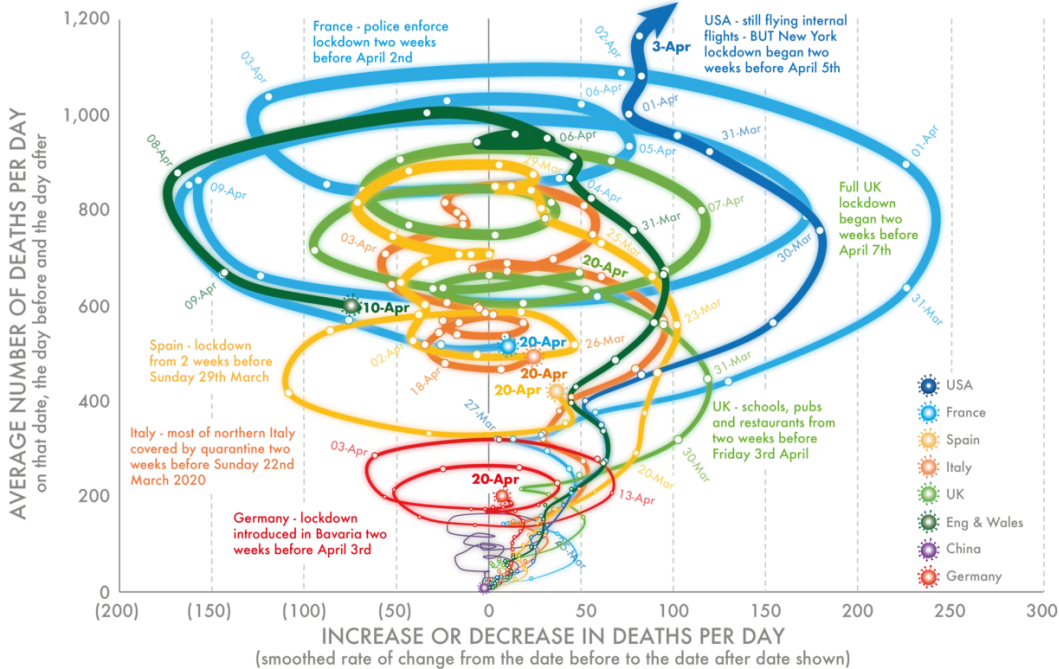
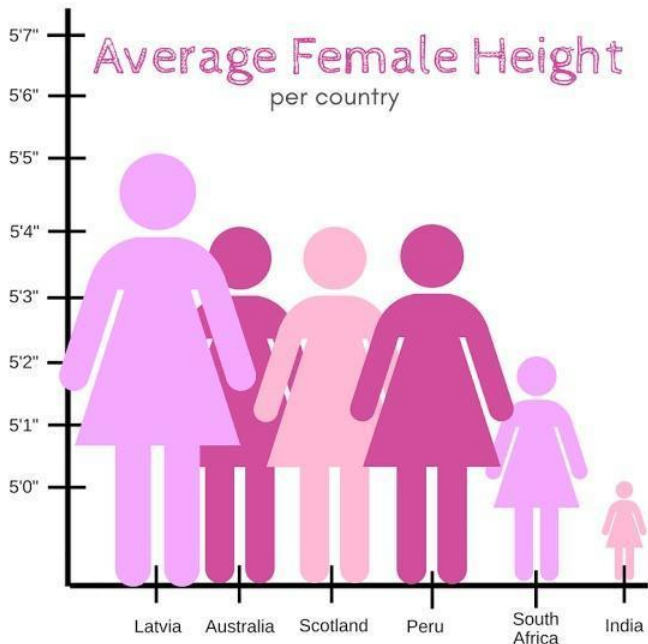
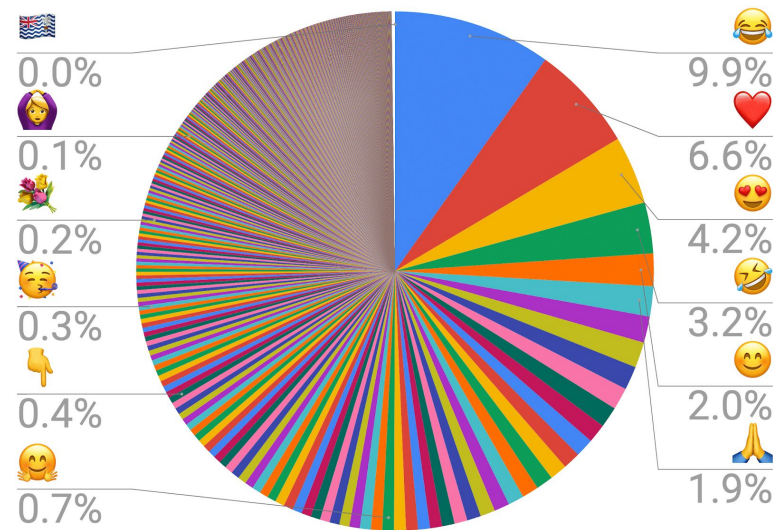
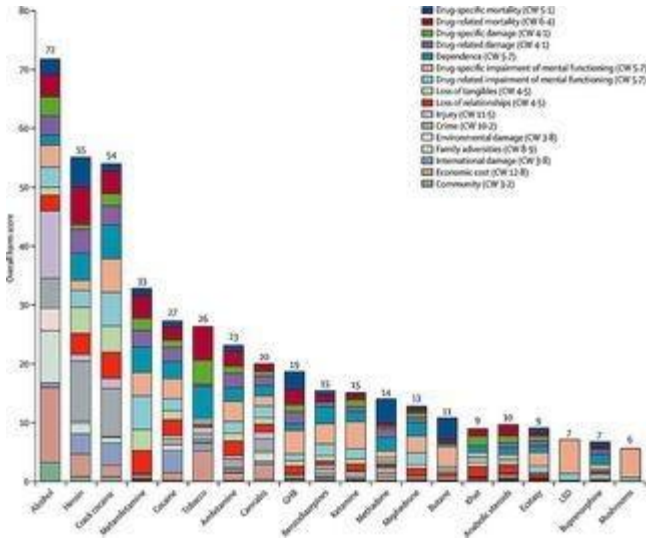
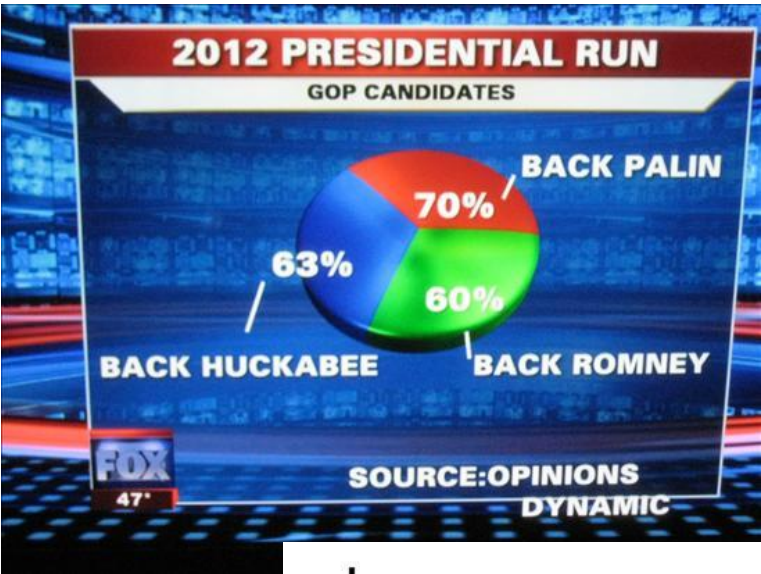
Who 2010 Lib Dems voted for in 2015



Things to think about



Things to think about



The chart type you need

The chart type you need



Arc Diagram



Area Graph



Bar Chart



Box & Whisker Plot



Brainstorm



Bubble Chart



Bubble Map



Bullet Graph



Calendar



Candlestick Chart



Chord Diagram



Choropleth Map



Circle Packing



Connection Map



Density Plot



Donut Chart



Dot Map



Dot Matrix Chart

The chart type you need



Error Bars



Flow Chart



Flow Map



Gantt Chart



Heatmap



Histogram



Illustration Diagram



Kagi Chart



Line Graph



Marimekko Chart



Multi-set Bar Chart



Network Diagram



Nightingale Rose Chart



Non-ribbon Chord Diagram



Open-high-low-close Chart



Parallel Coordinates Plot



Parallel Sets



Pictogram Chart

The chart type you need



Pie Chart



Point & Figure Chart



Population Pyramid



Proportional Area Chart



Radar Chart



Radial Bar Chart



Radial Column Chart



Sankey Diagram



Scatterplot



Span Chart



Spiral Plot



Stacked Area Graph



Stacked Bar Graph



Stem & Leaf Plot



Stream Graph



Sunburst Diagram



Tally Chart

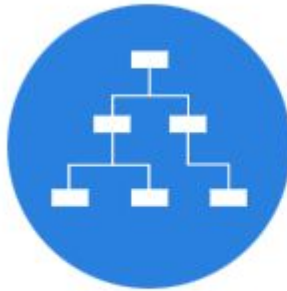


Timeline

The chart type you need



Timetable



Tree Diagram



Treemap



Venn Diagram

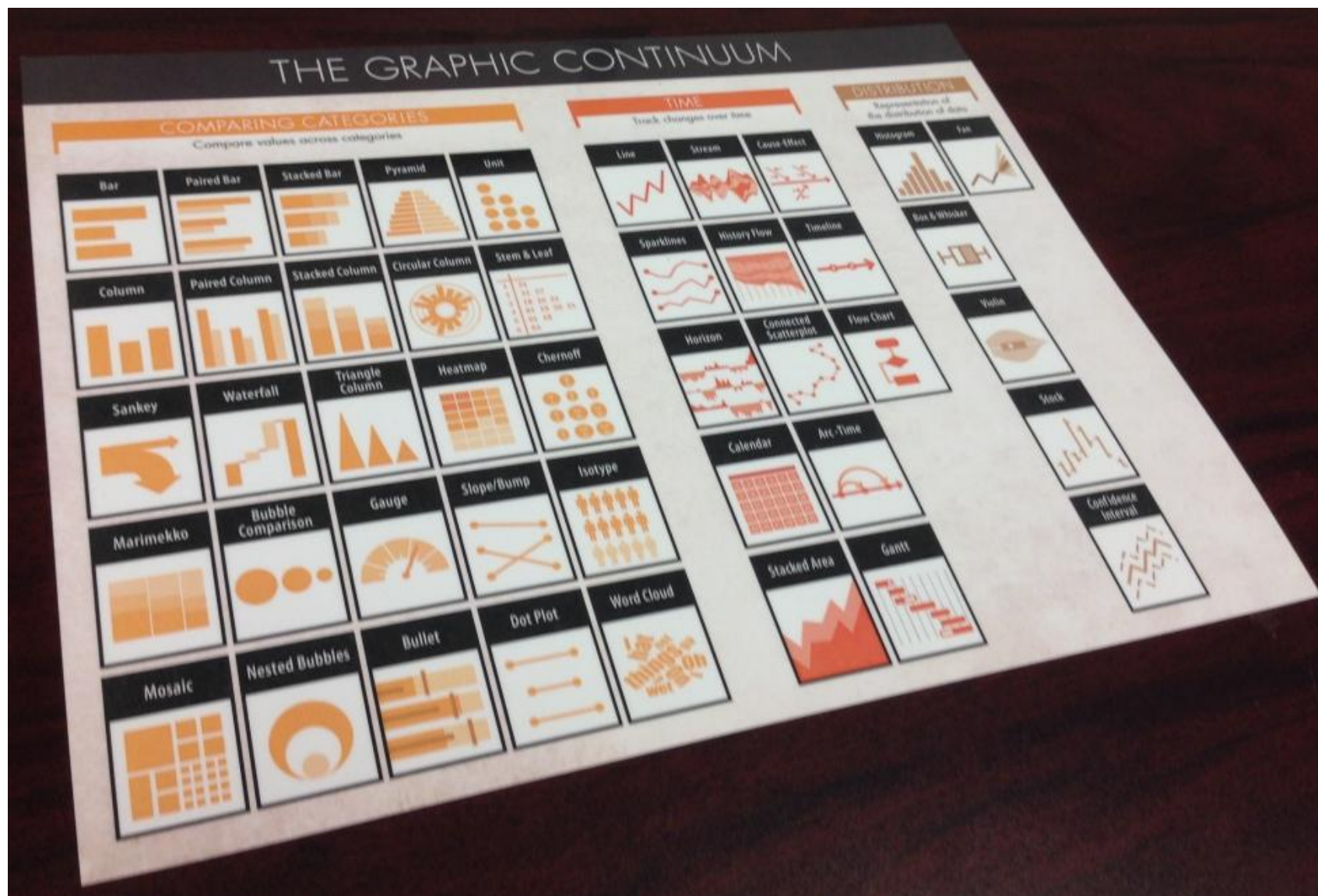


Violin Plot

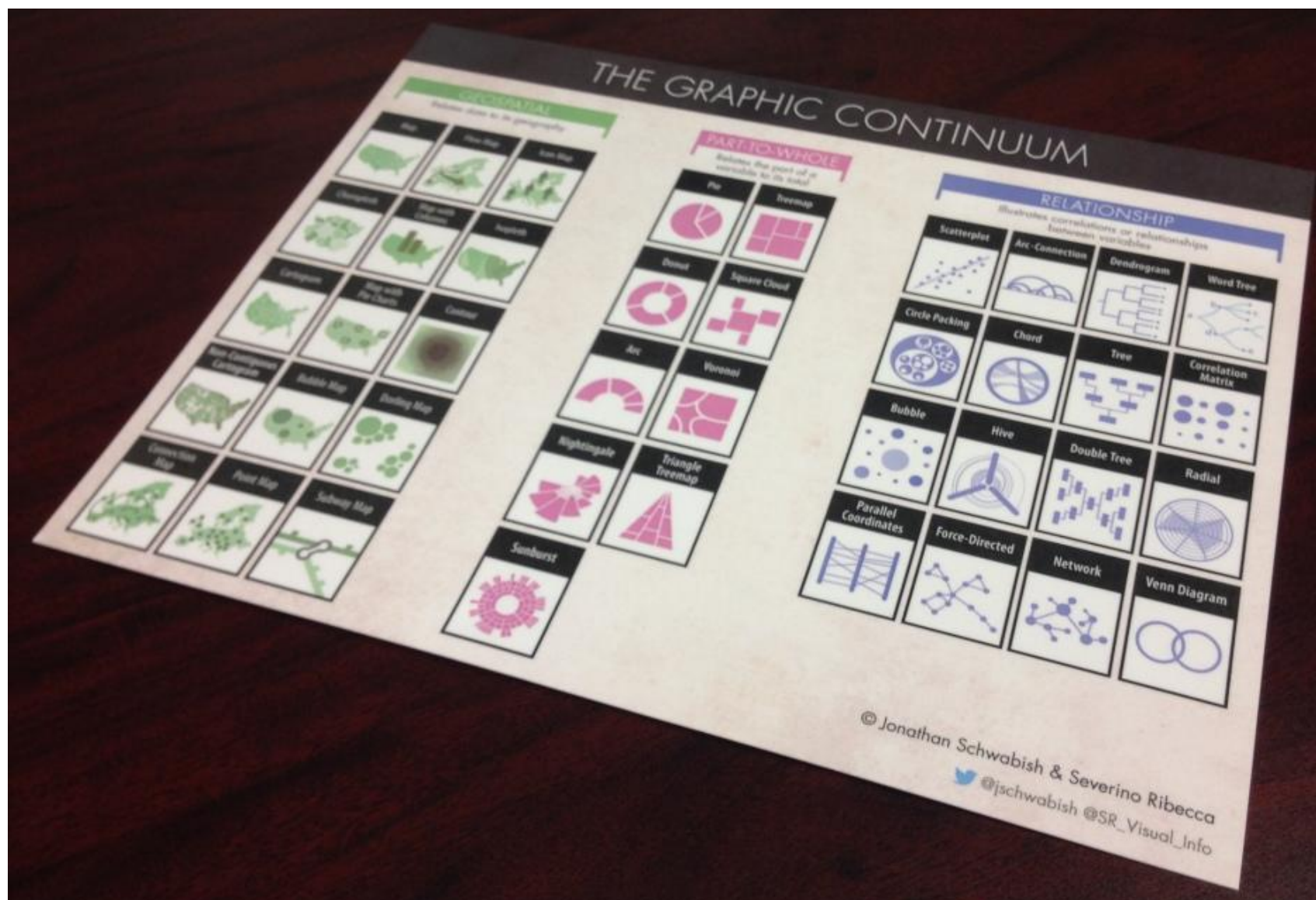


Word Cloud

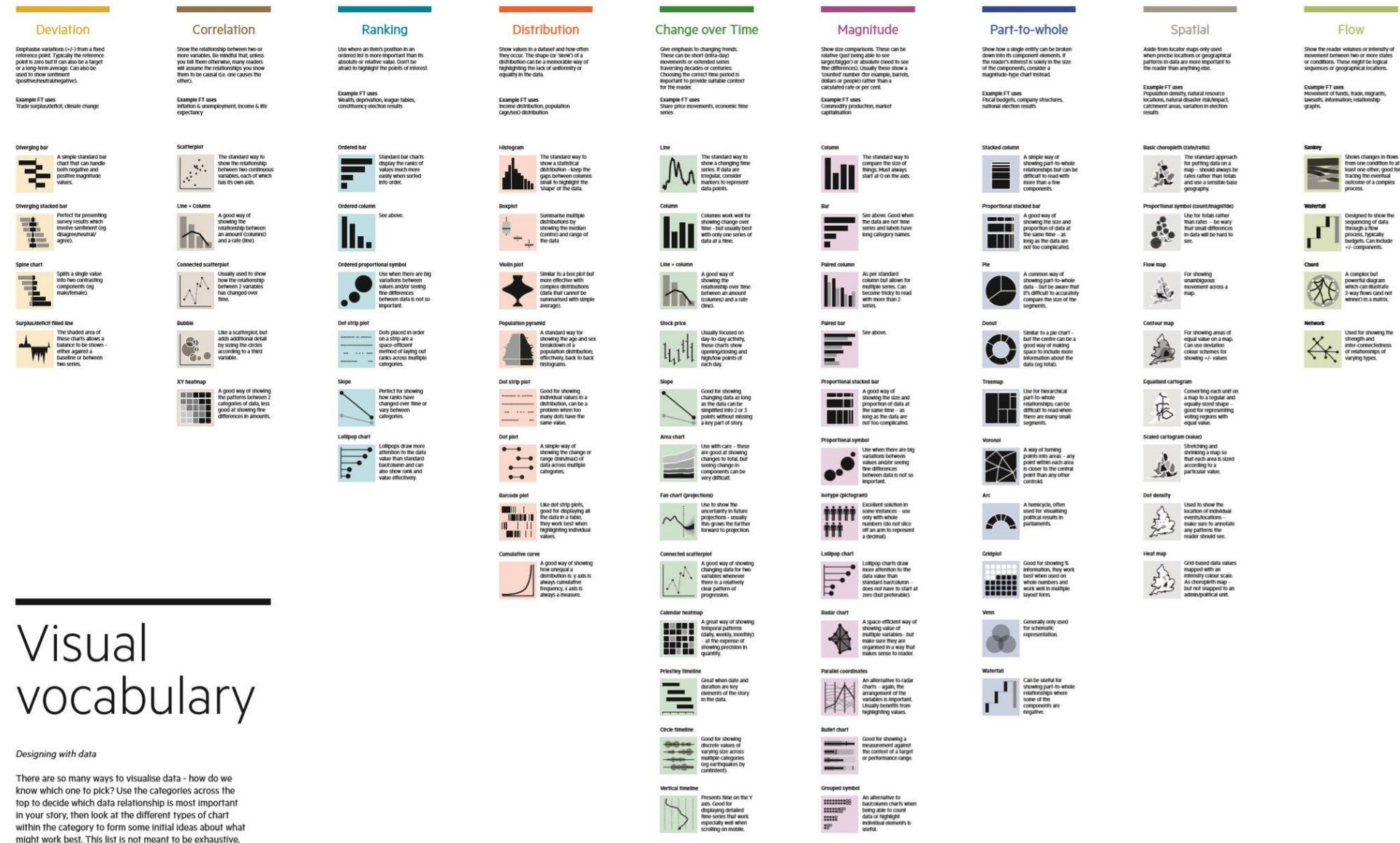
The chart type you need



The chart type you need



The chart type you need



Visual vocabulary

Designing with data

There are so many ways to visualise data - how do we know which one to pick? Use the categories across the top to decide which data relationship is most important in your story, then look at the different types of chart within the category to form some initial ideas about what might work best. This list is not meant to be exhaustive,

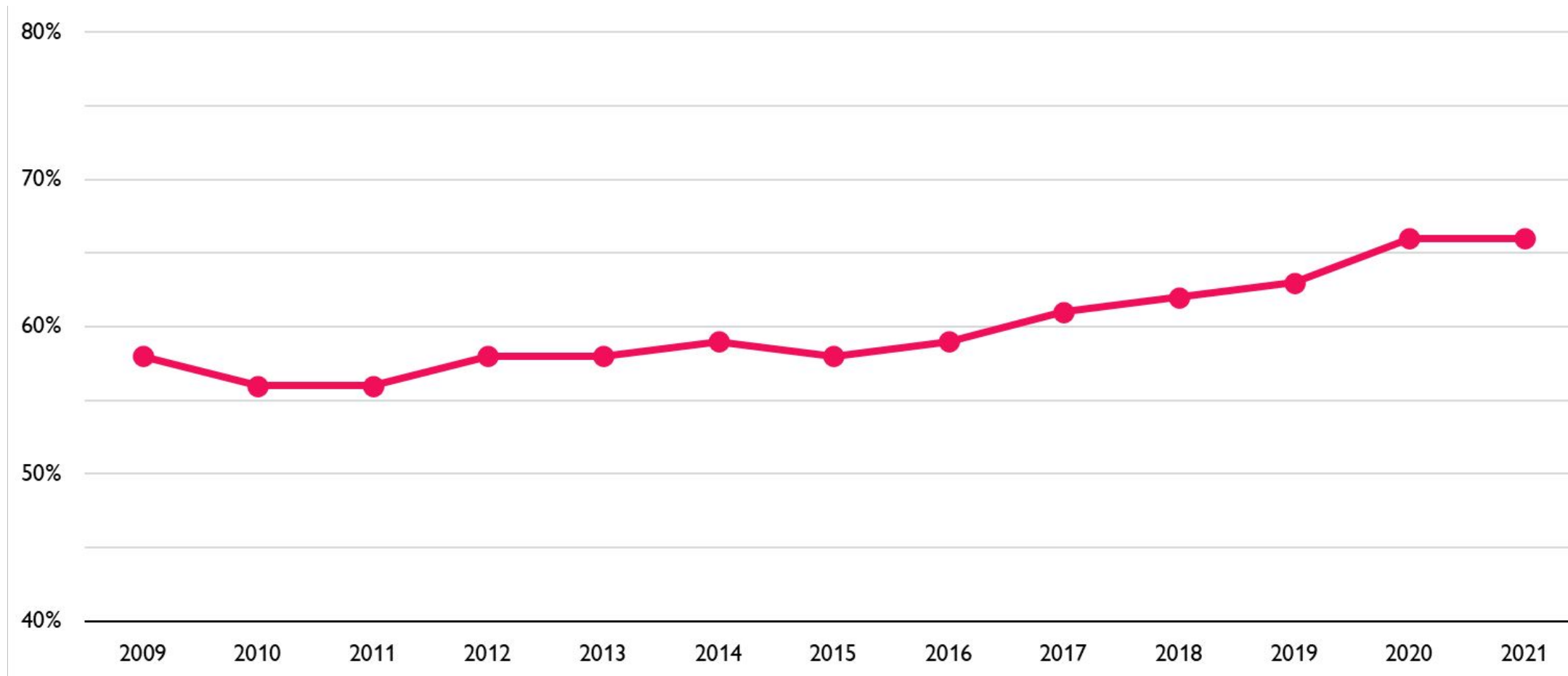
The chart type you need

Civil Service Engagement Index, 2021



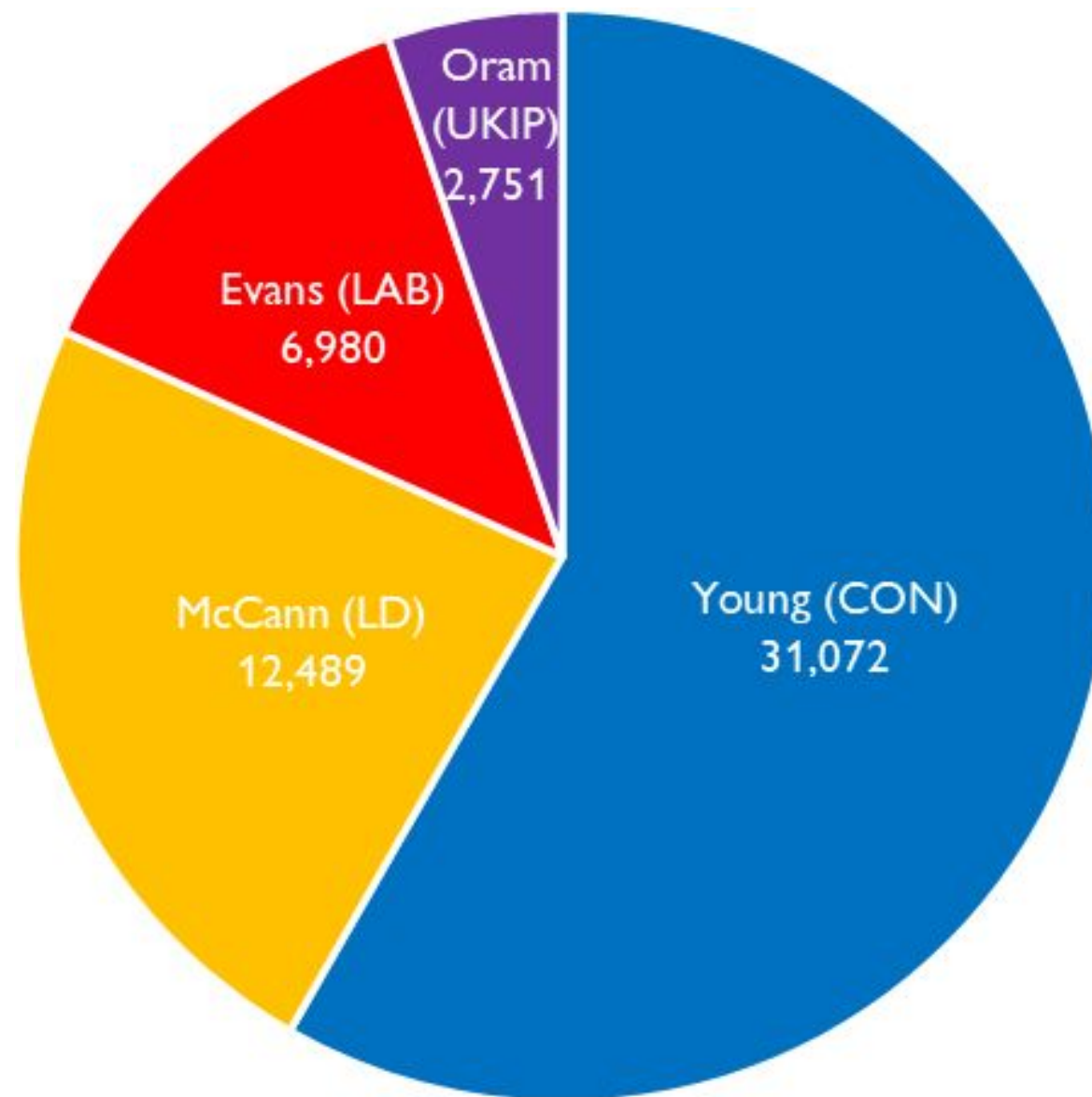
The chart type you need

Civil Service Engagement Index: Civil Service Median, 2009 to 2021



The chart type you need

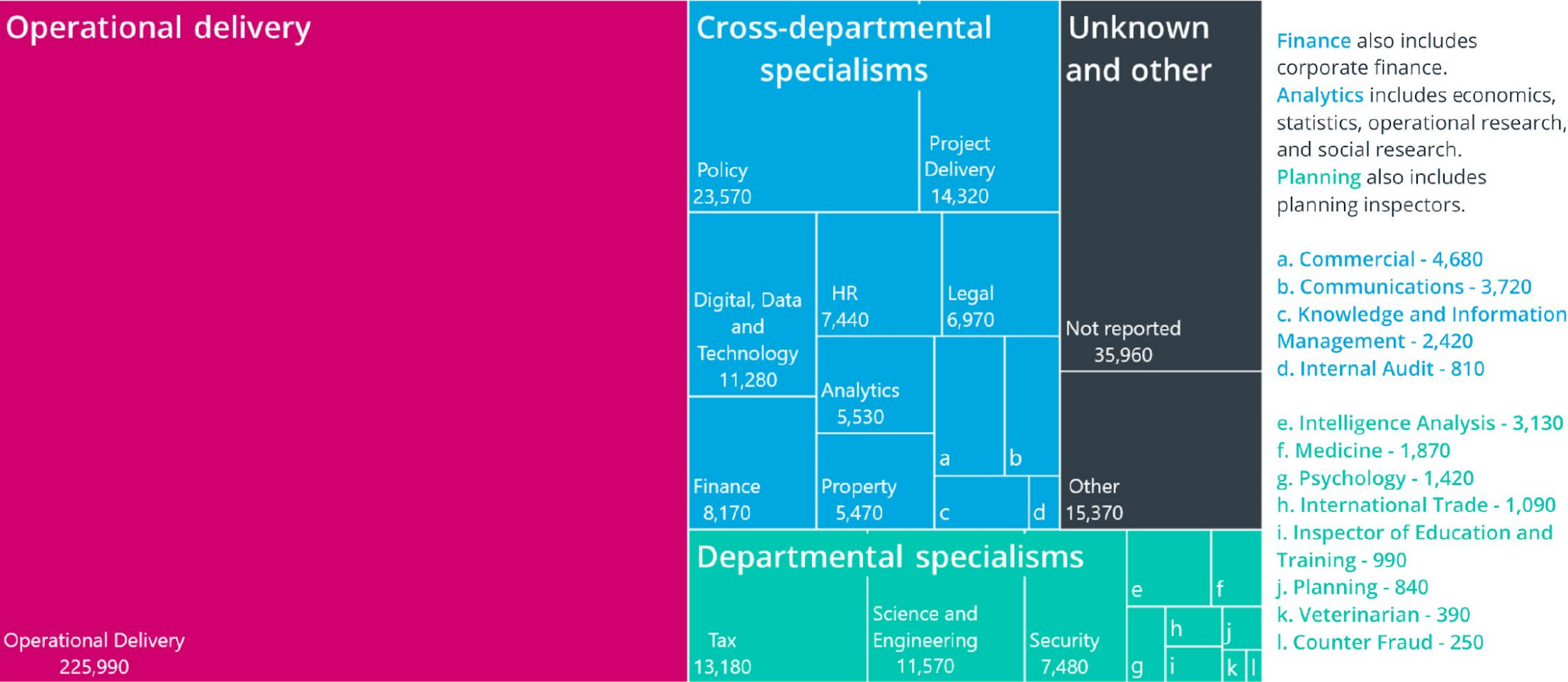
General Election 2010:
Hampshire North West



The chart type you need

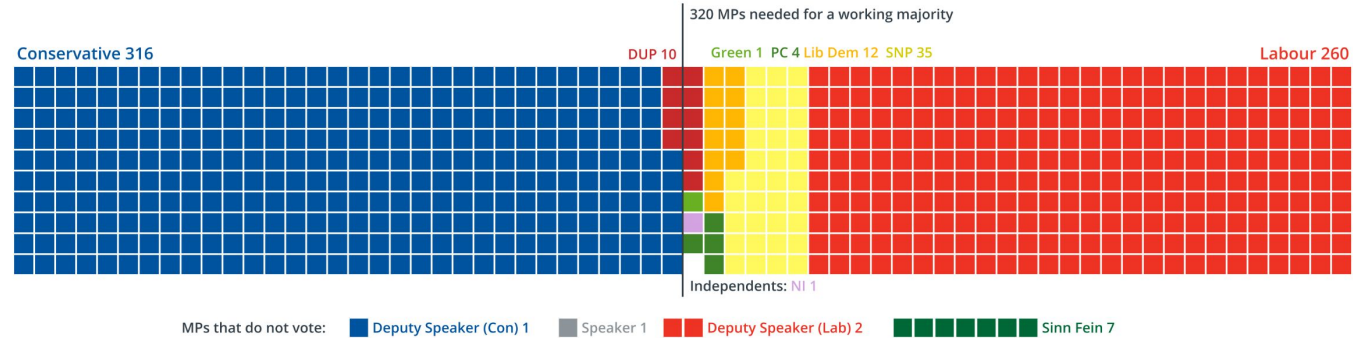
Professions of civil servants (full-time equivalent), 31 March 2019

IfG

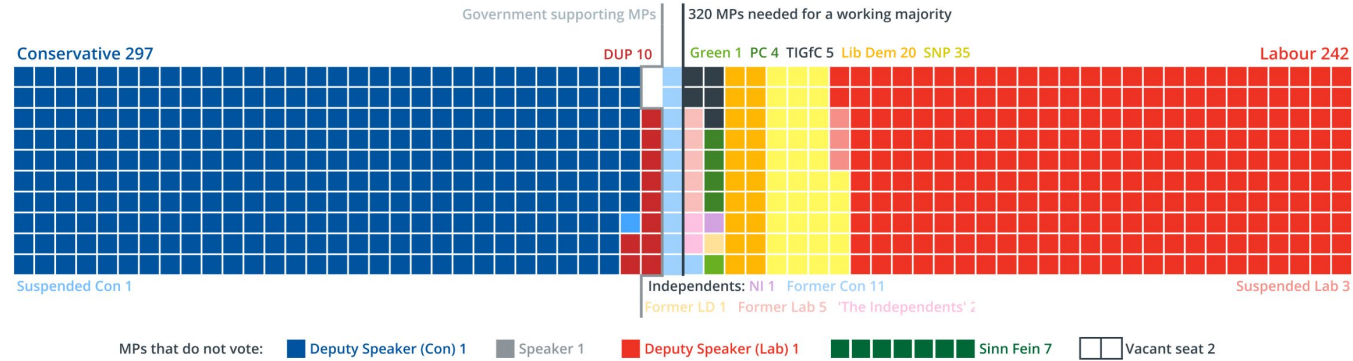


Source: Institute for Government analysis of Cabinet Office, Annual Civil Service Statistics, 2019.

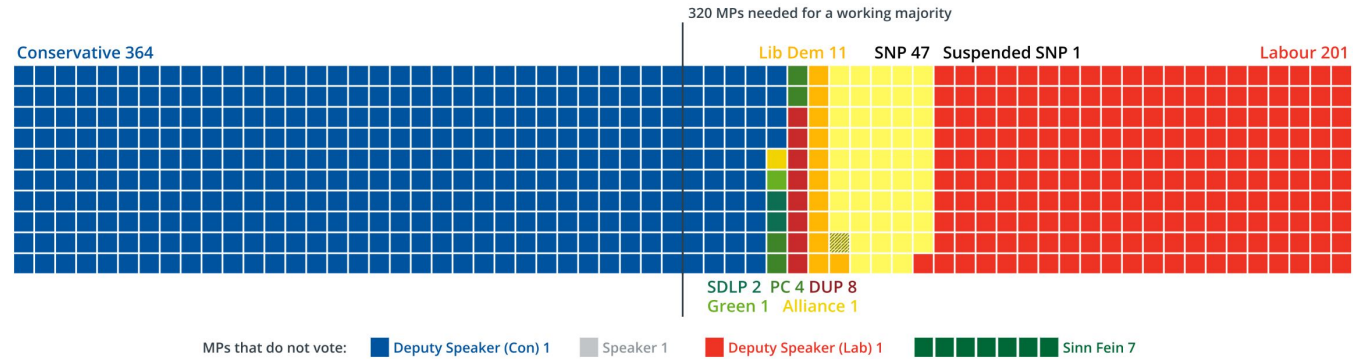
2017 General Election



06 November 2019

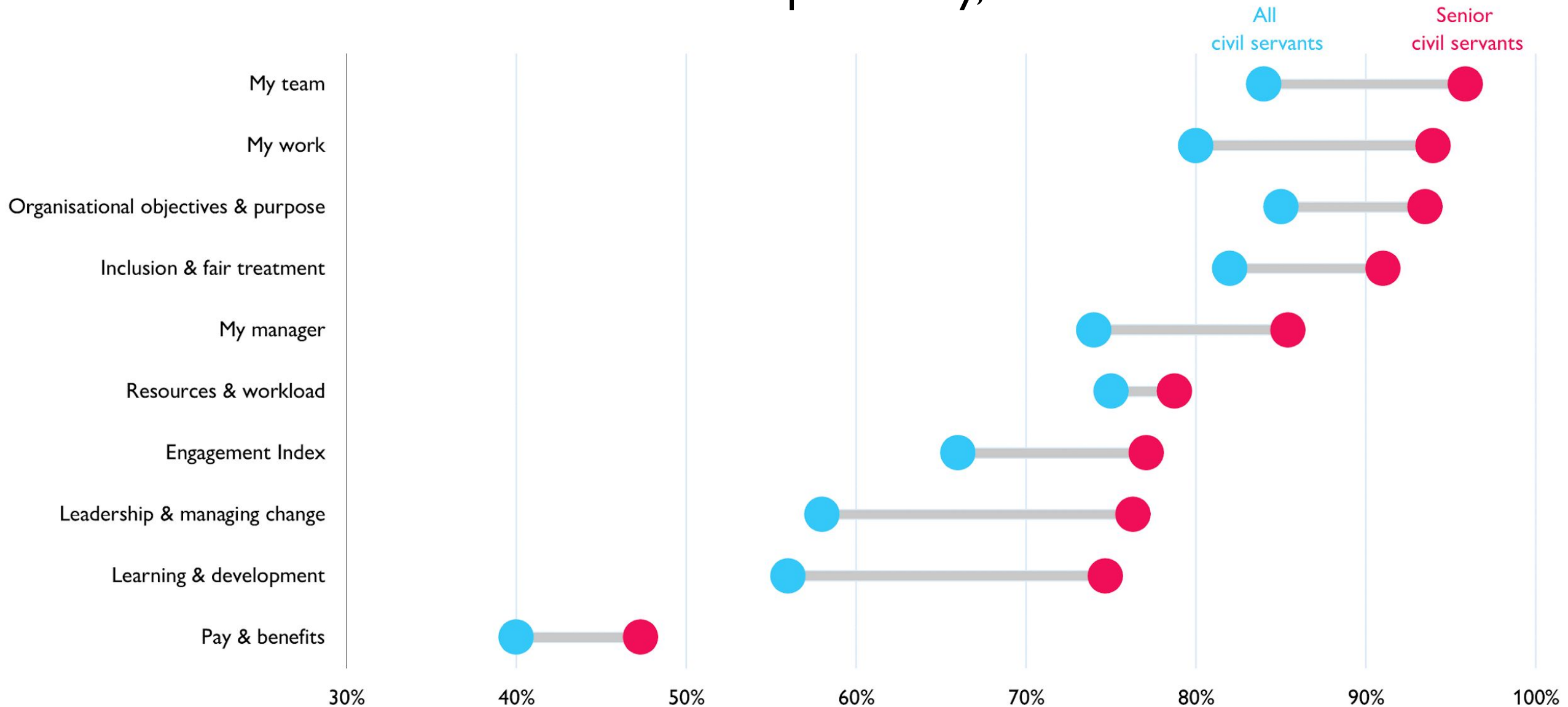


2019 General Election

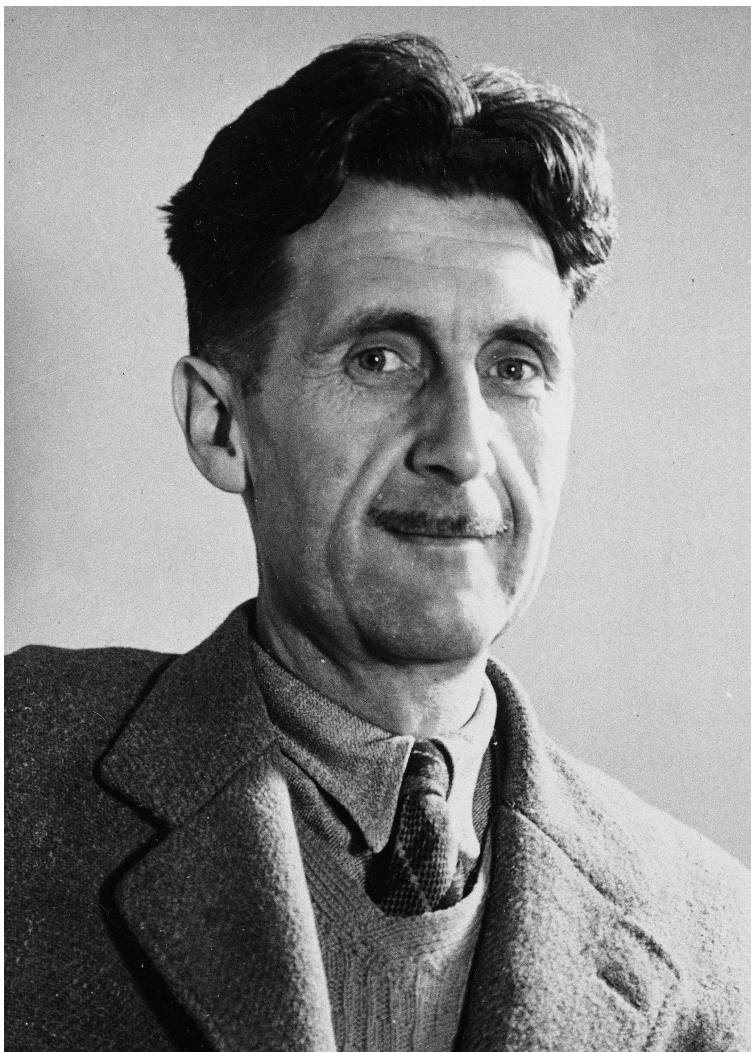


The chart type you need

Civil Service People Survey, 2020



The chart type you need



i. Never use a metaphor, simile or other figure of speech which you are used to seeing in print.

ii. Never use a long word where a short one will do.

iii. If it is possible to cut a word out, always cut it out.

iv. Never use the passive where you can use the active.

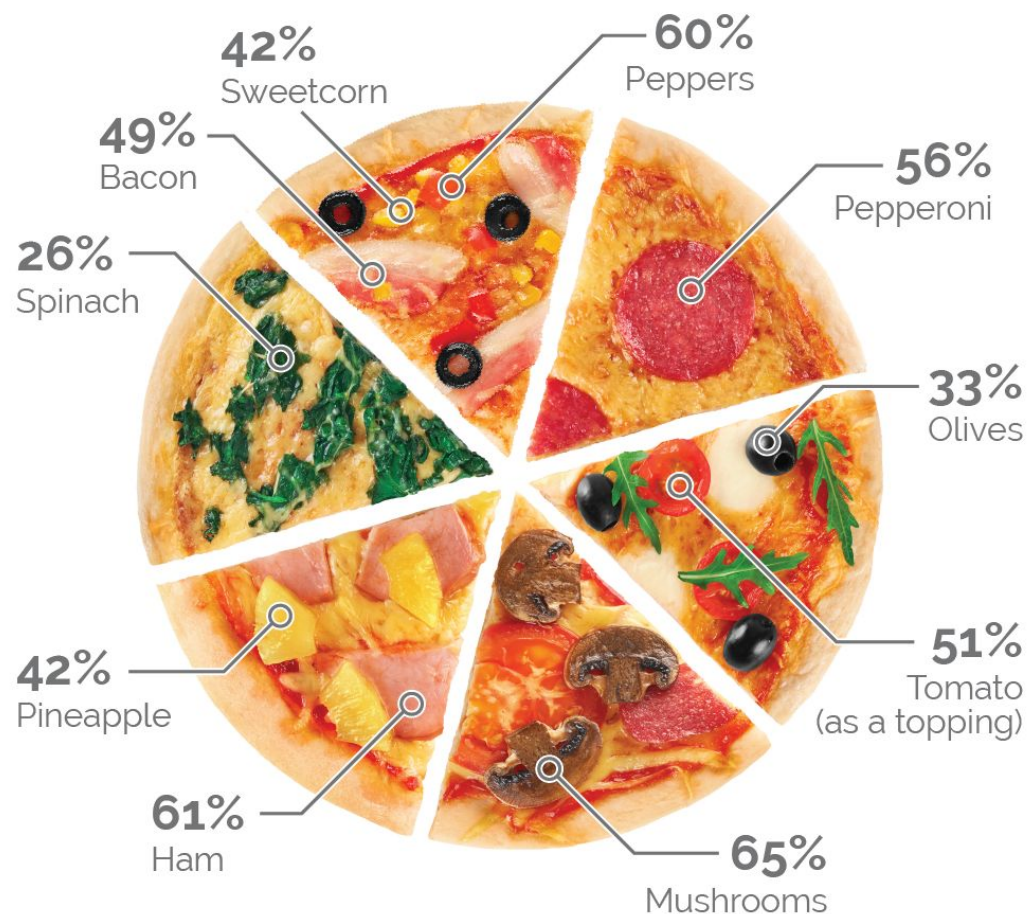
v. Never use a foreign phrase, a scientific word or a jargon word if you can think of an everyday English equivalent.

vi. Break any of these rules sooner than say anything outright barbarous.

The chart type you need

Mushroom is the UK's most liked pizza topping

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



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

The chart type you need



YouGov
@YouGov



We're very sorry for the confusion, but this is NOT a pie chart - it is just a top-down photo of a pizza with some topping stats pointed out

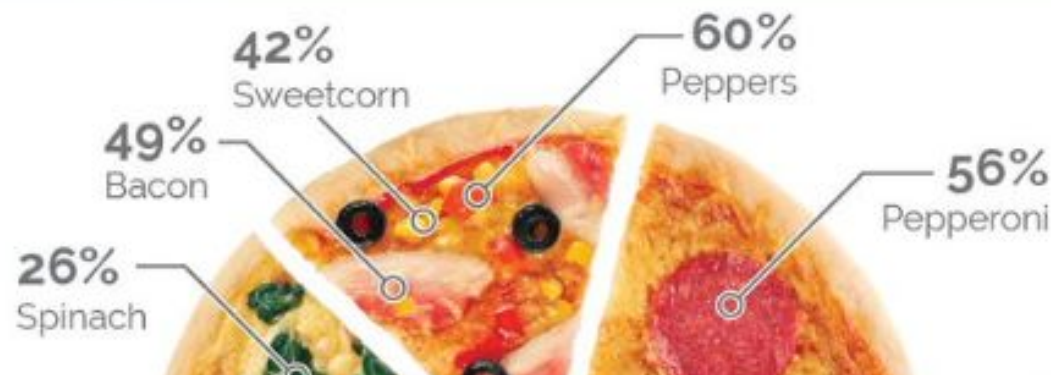


YouGov @YouGov · Mar 6, 2017

Forget pepperoni - mushroom is Britain's most liked pizza topping (65%), followed by onion (62%) and then ham (61%) yougov.co.uk/news/2017/03/0...

Mushroom is the UK's most liked pizza topping

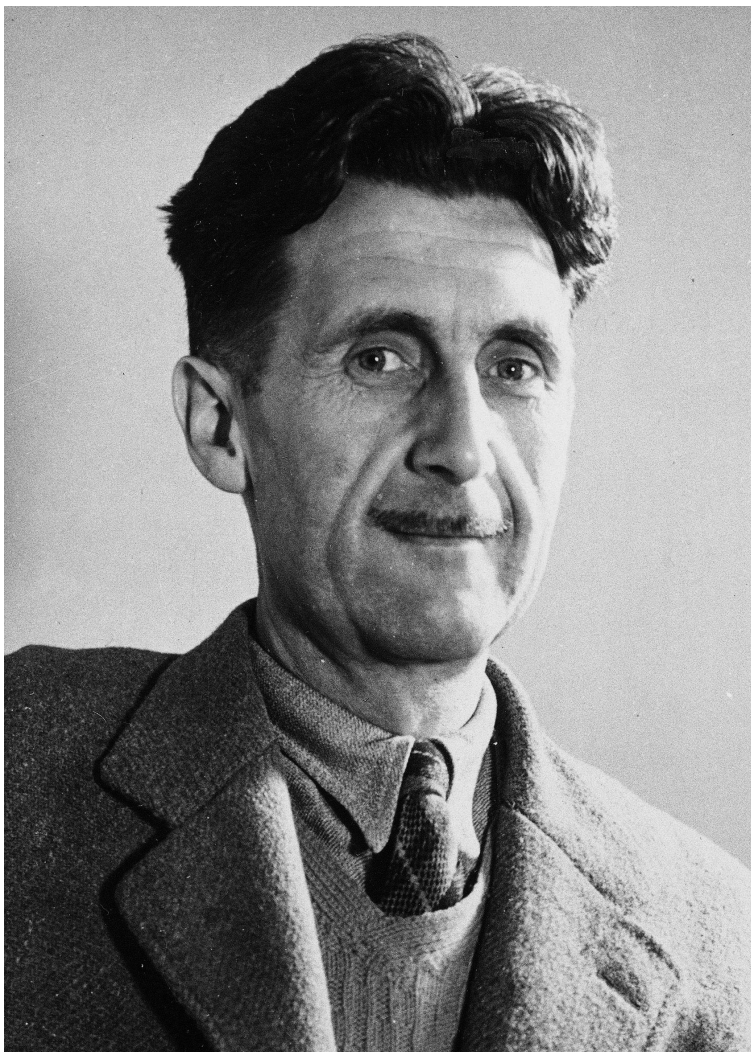
Generally speaking, which of the following toppings do you like on a pizza? Select as many as you like



1:56 PM · Mar 6, 2017 · Twitter Web Client

395 Retweets 166 Quote Tweets 669 Likes

The chart type you need



- i. Never use a metaphor, simile or other figure of speech which you are used to seeing in print.
- ii. Never use a long word where a short one will do.
- iii. If it is possible to cut a word out, always cut it out.
- iv. Never use the passive where you can use the active.
- v. Never use a foreign phrase, a scientific word or a jargon word if you can think of an everyday English equivalent.
- vi. Break any of these rules sooner than say anything outright barbarous.

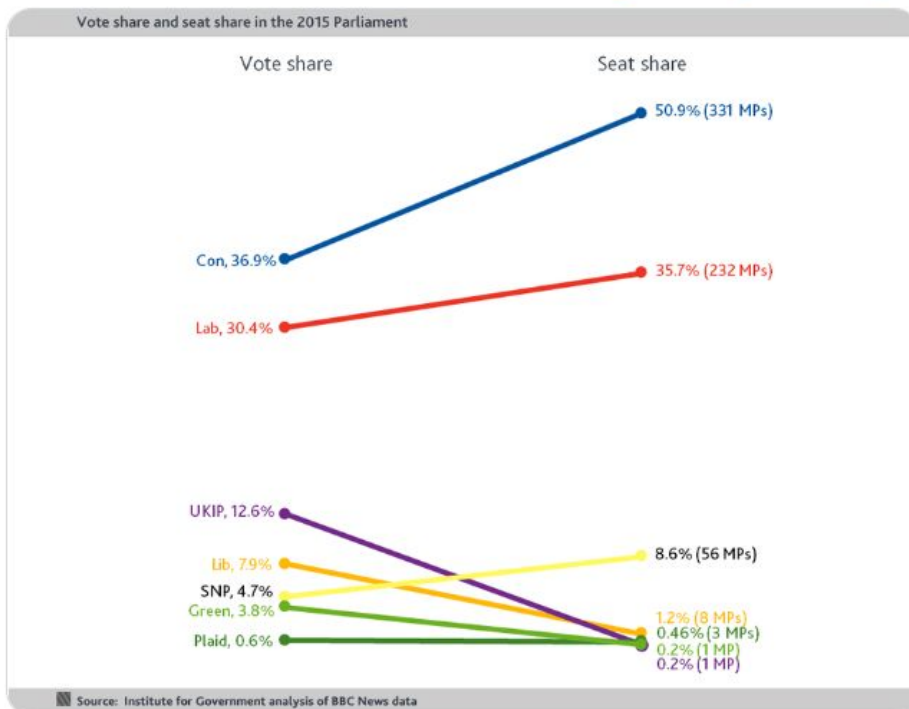
The chart type you need



Gavin Freeguard
@GavinFreeguard

...

The difference between share & seat share - latest graphic on our live blog [@institute forgov](http://bit.ly/1zVlvqM)



10:26 AM · May 12, 2015 · TweetDeck

||| View Tweet analytics

77 Retweets 1 Quote Tweet 25 Likes



PumpkinSpicedObject @samhippen · 12 Mei
@GavinFreeguard @PrimlyStable @institute forgov line charts are for time series line charts are for time series line charts are for time ser



1



Gavin Freeguard @GavinFreeguard · 12 Mei
@samhippen @PrimlyStable @institute forgov We'd nearly always agree, but think the slope chart was the best way of showing that data



1



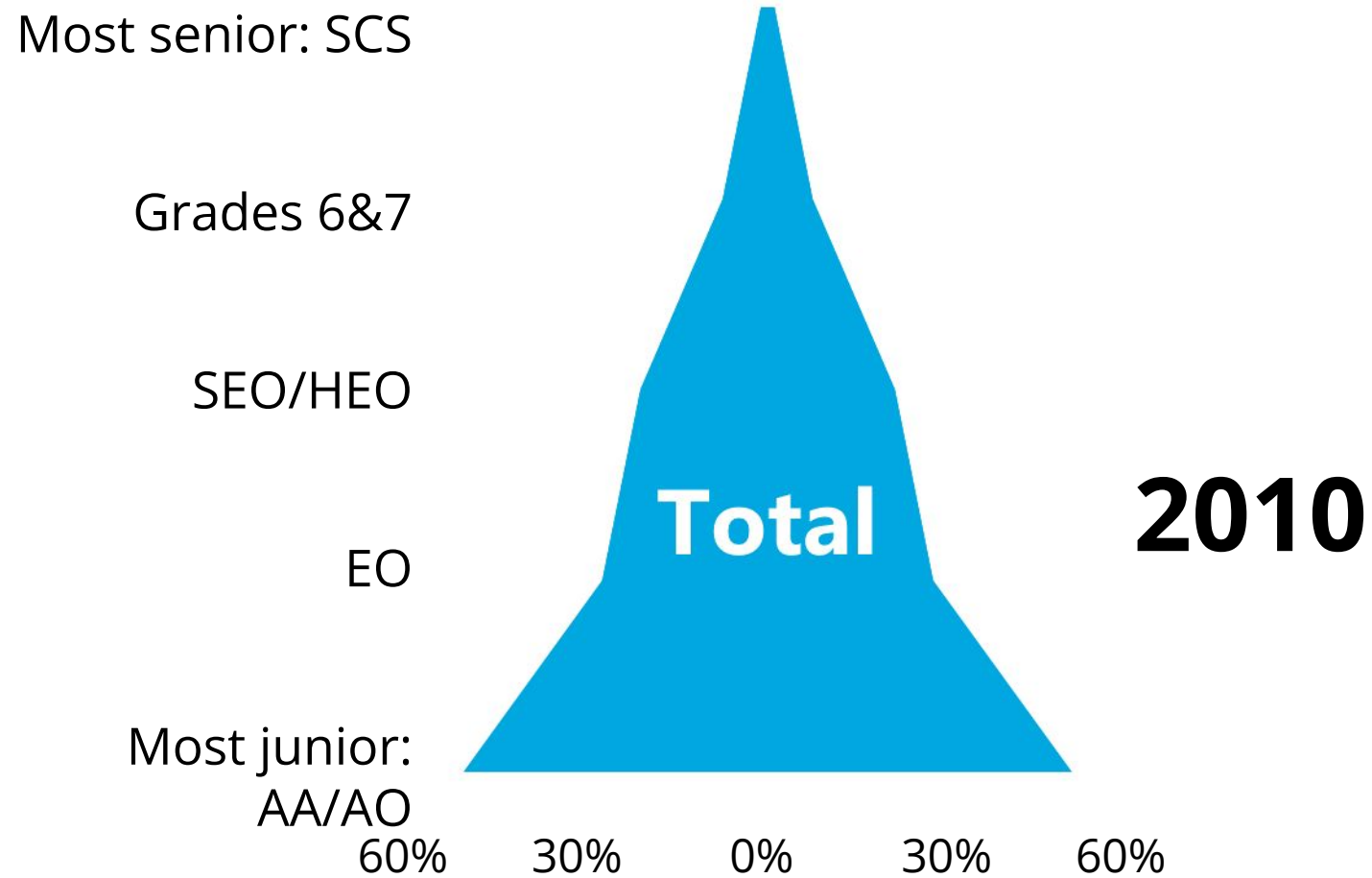
PumpkinSpicedObject @samhippen · 12 Mei
@GavinFreeguard @PrimlyStable @institute forgov I might have done difference of bars



Gavin Freeguard @GavinFreeguard · 12 Mei
@samhippen @PrimlyStable @institute forgov Dot plot also an option. This is interesting from @albertocairo on lines thefunctionalart.com/2015/04/line-c...



The chart type you need



The chart type you need

Most senior: SCS

Grades 6&7

SEO/HEO

EO

Most junior:
AA/AO

60%

30%

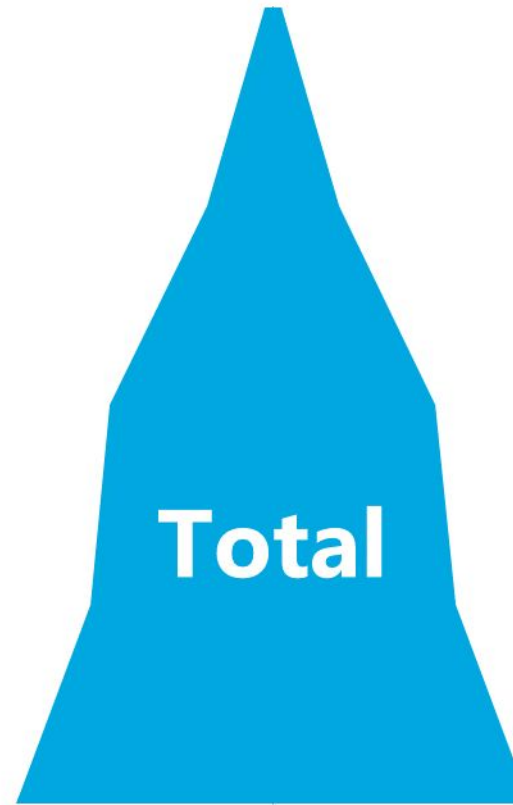
0%

30%

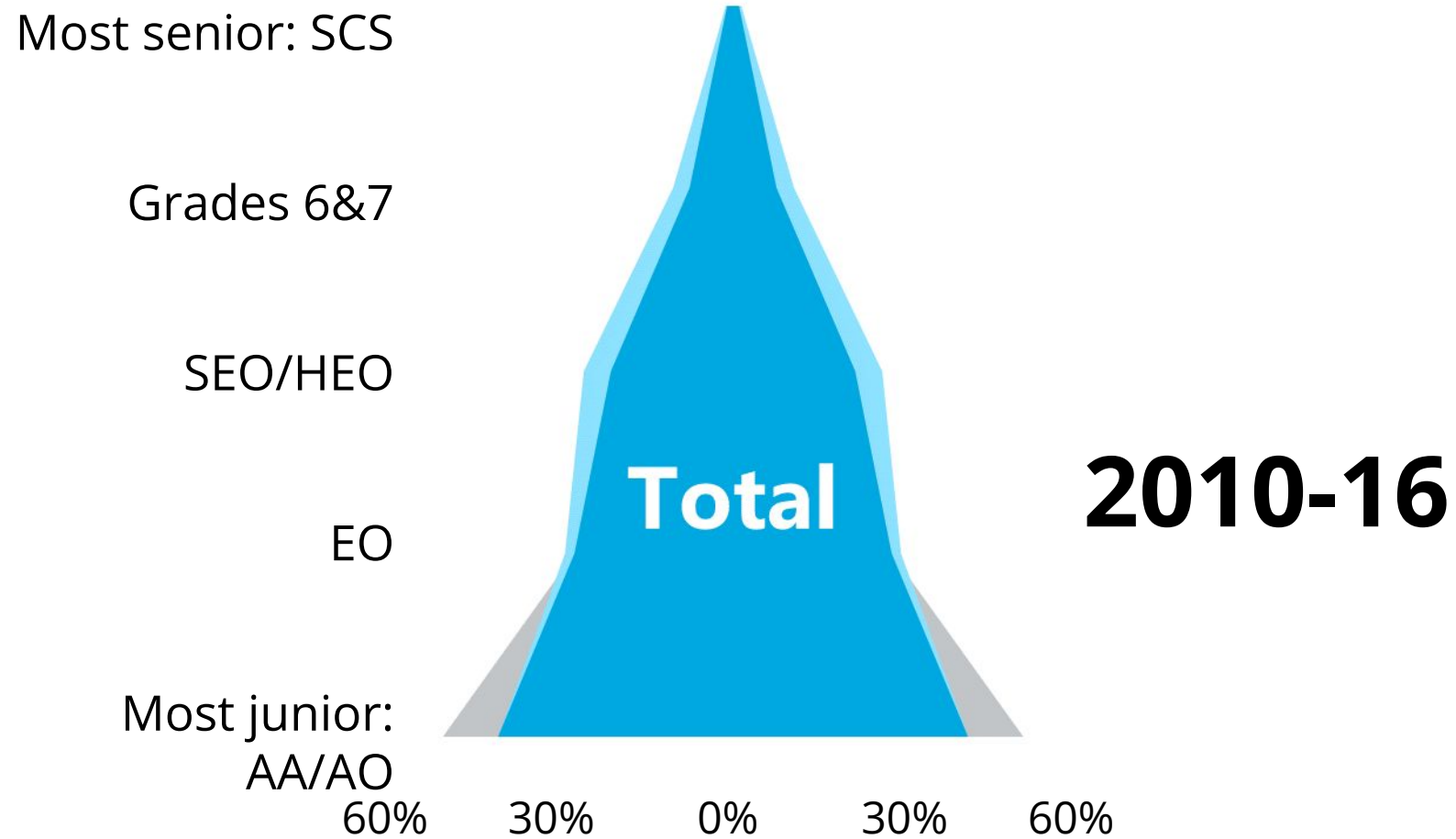
60%

Total

2016



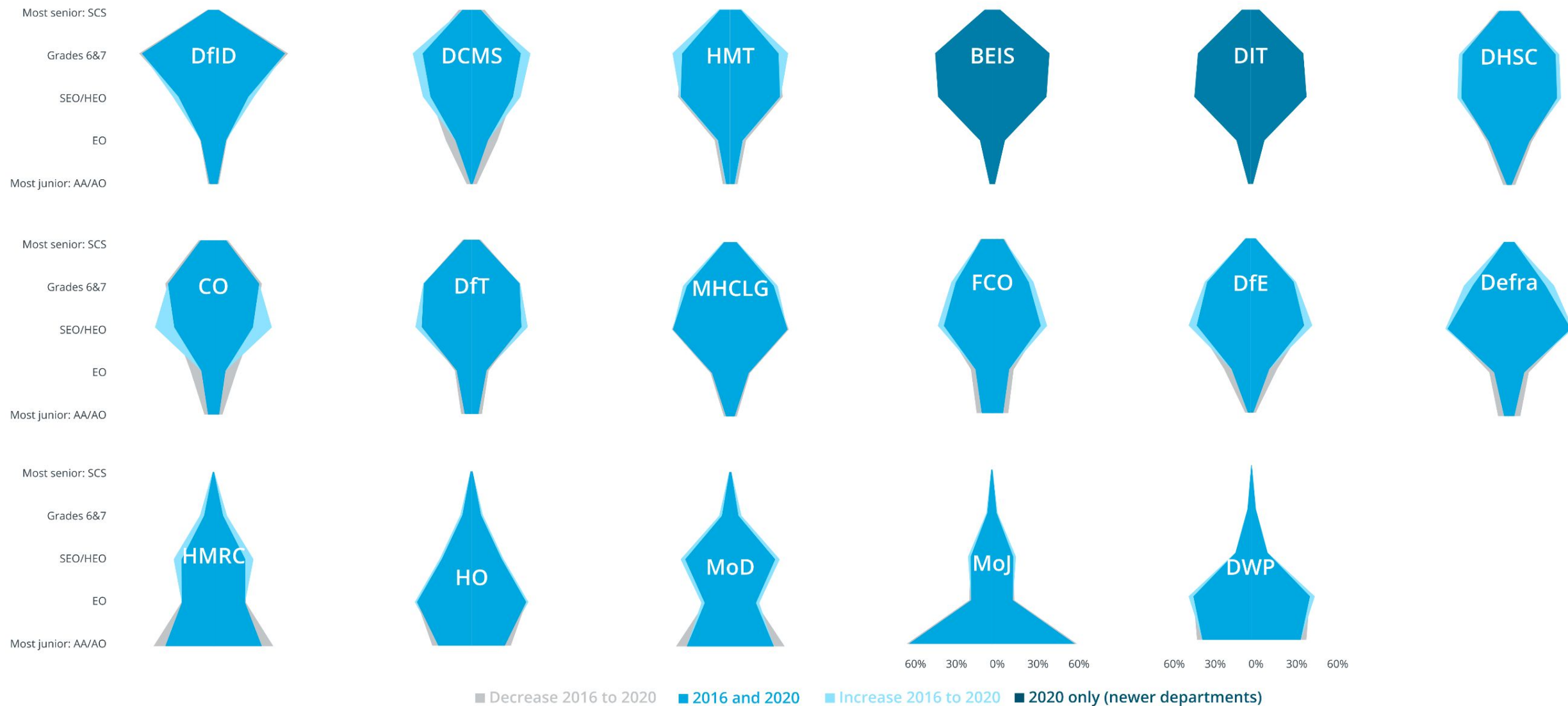
The chart type you need



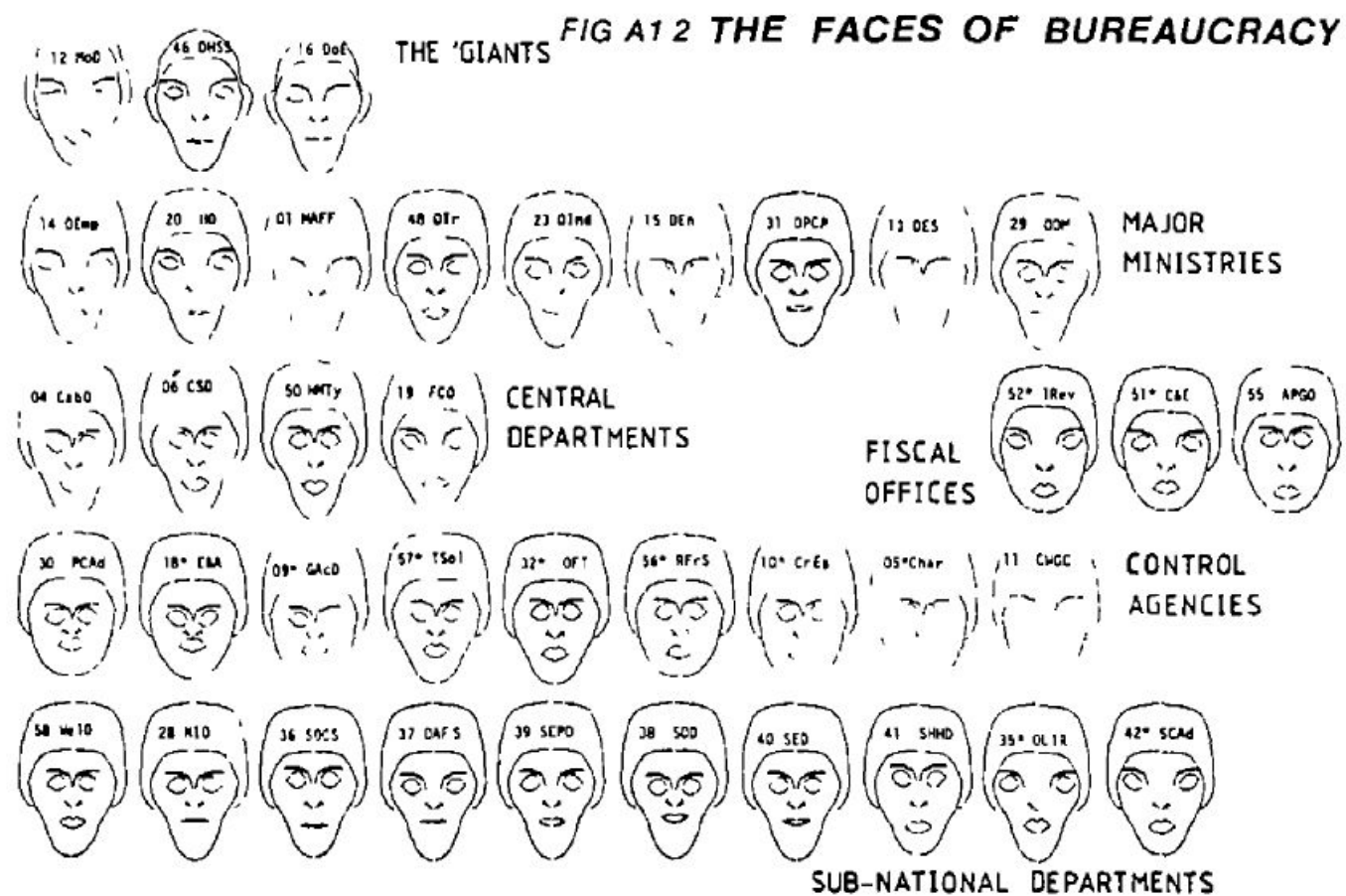
The chart type you need

Grade composition by department, 2016 to 2020 (percentage of staff at each grade, headcount)

IfG



The chart type you need



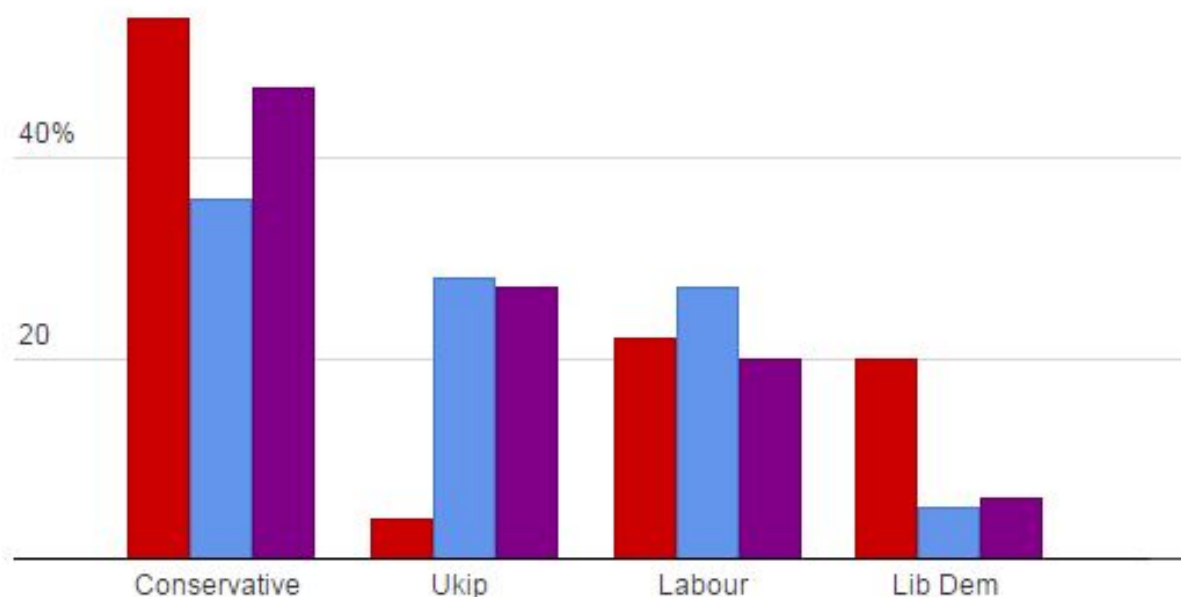
The design touches you need

The design touches you need



Newark by-election: Tories 20pt ahead of Ukip

■ 2010 election ■ Survaton poll ■ Ashcroft poll

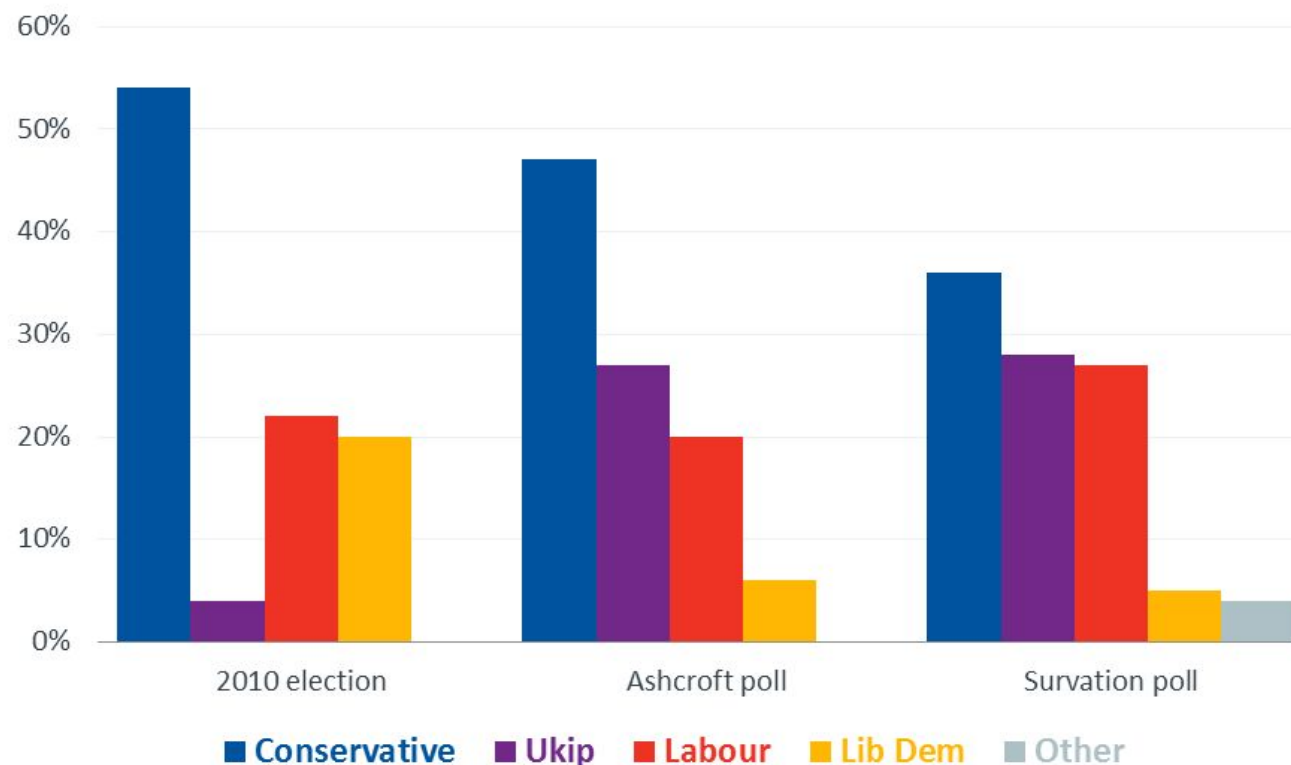


Source: BBC, Survaton, Lord Ashcroft, [Get the data](#)

The design touches you need



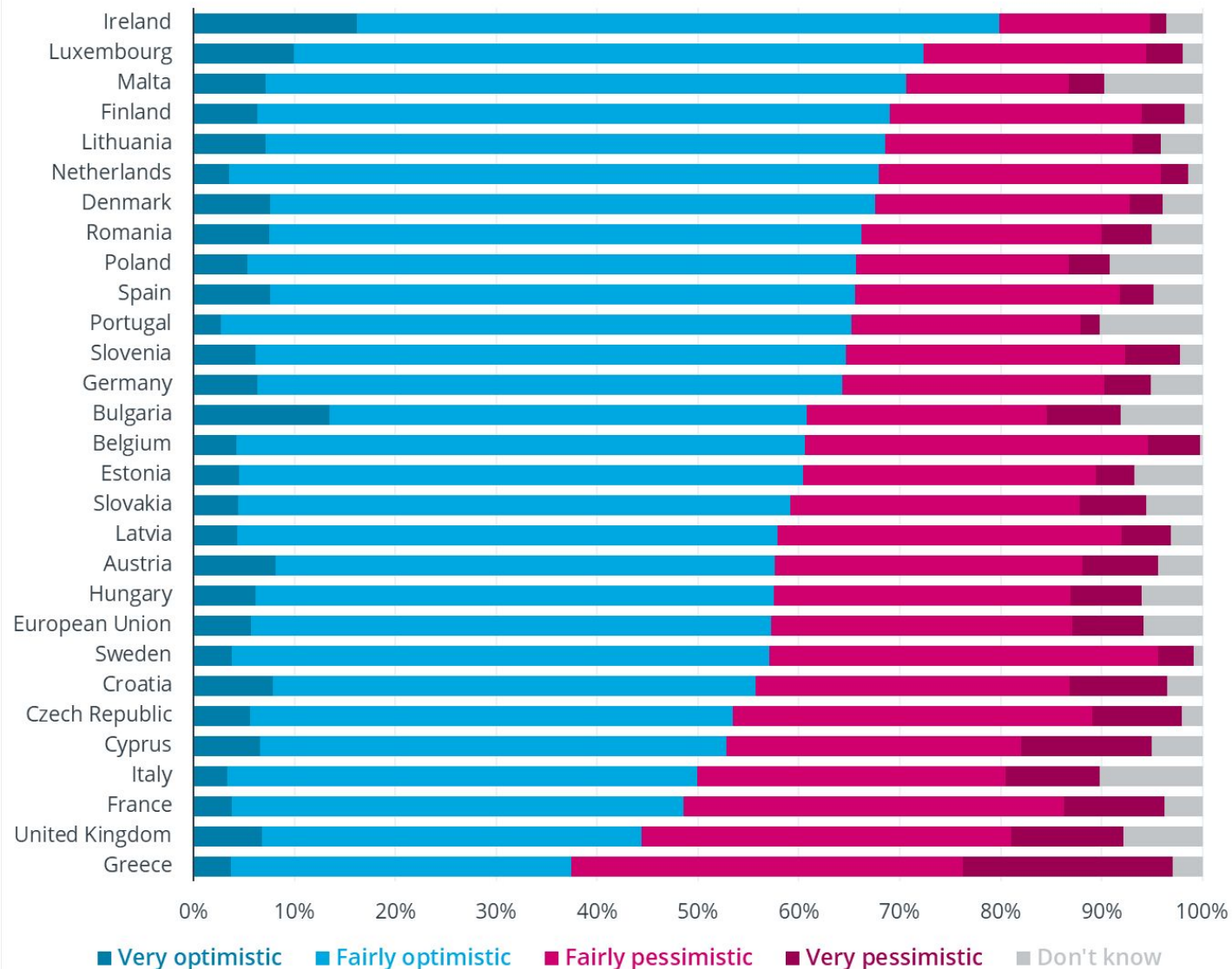
Newark by-election: Tories 20pt ahead of Ukip



Source: BBC, Survation, Lord Ashcroft, [Get the data](#)

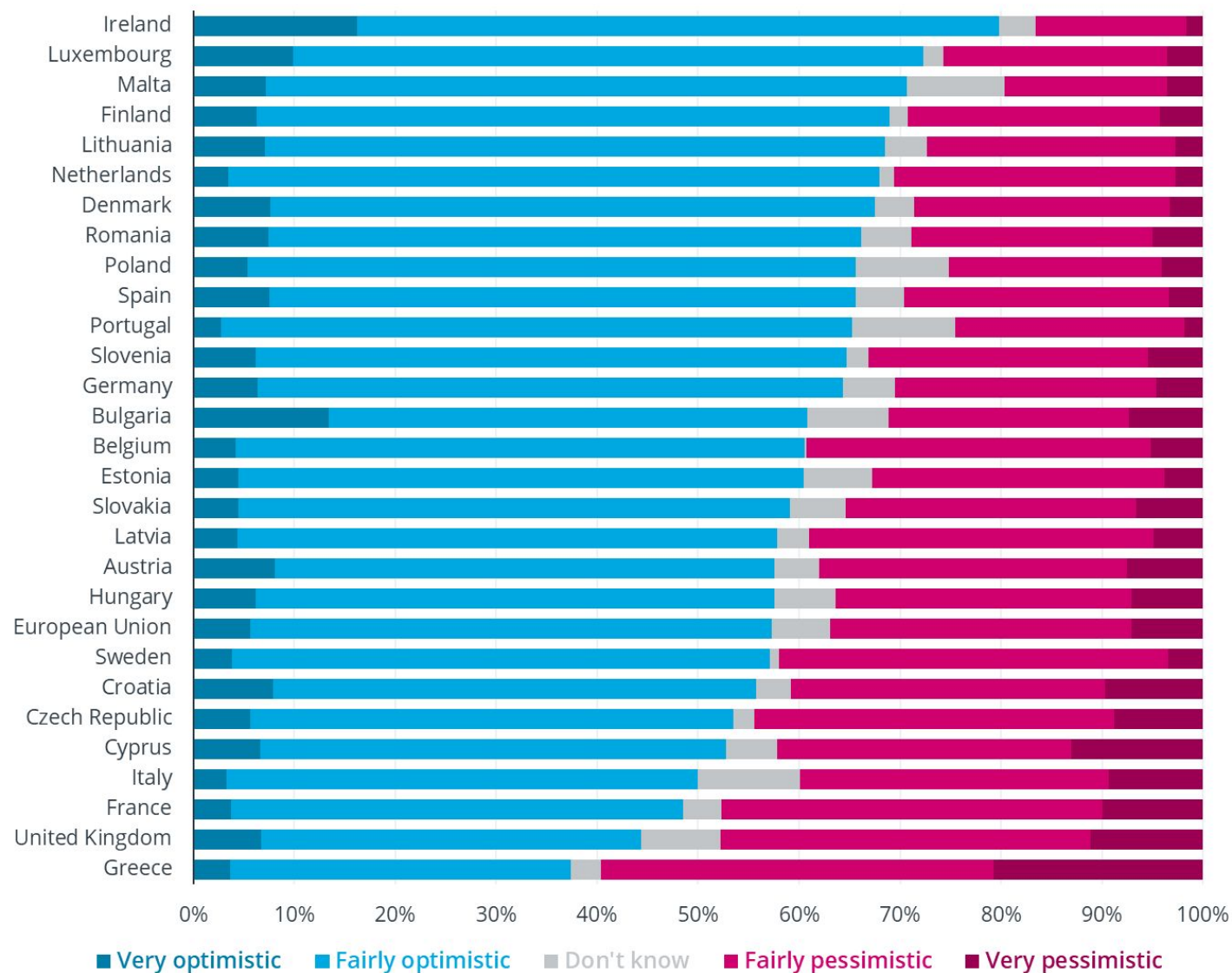
The design touches you need

How do you feel about the future of the EU?



The design touches you need

How do you feel about the future of the EU?



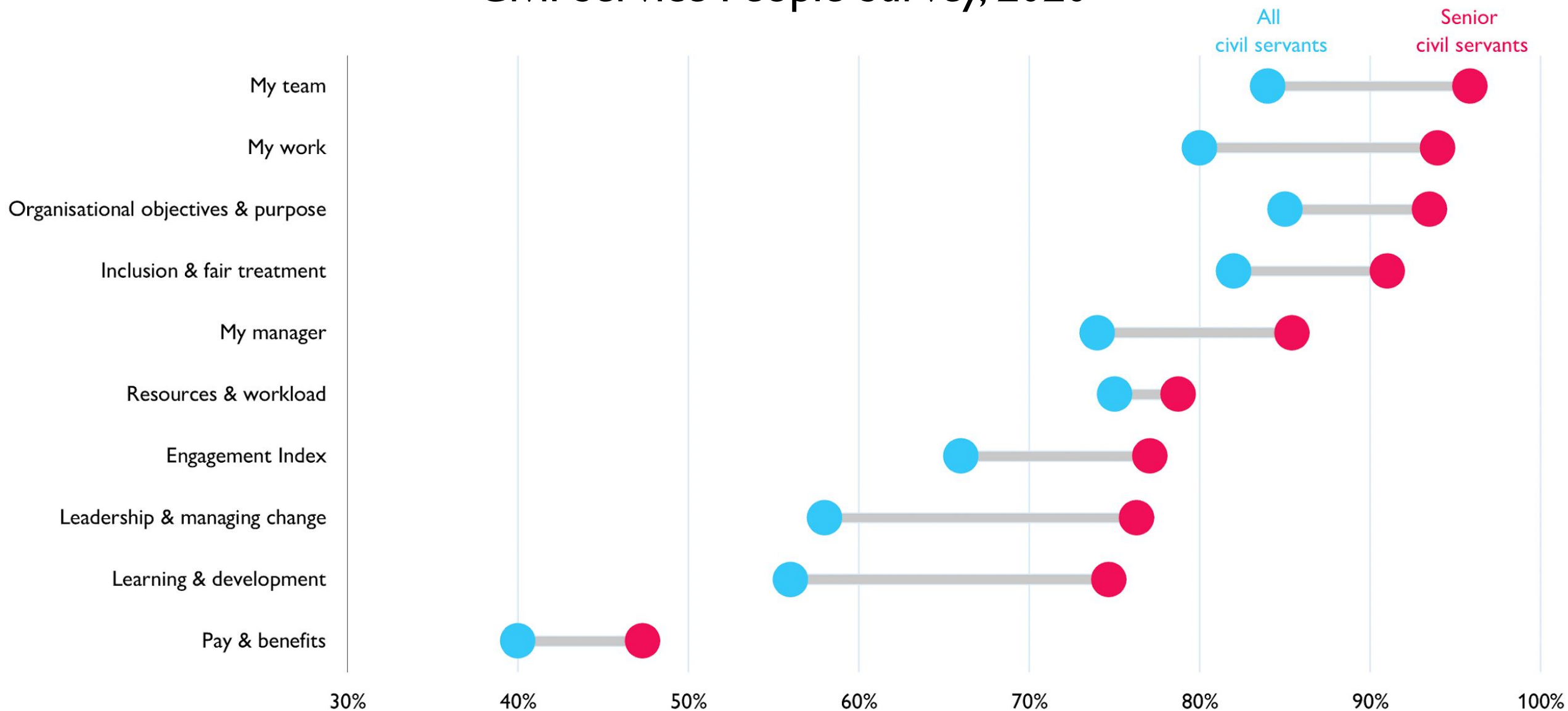
The design touches you need

Civil Service Engagement Index, 2021



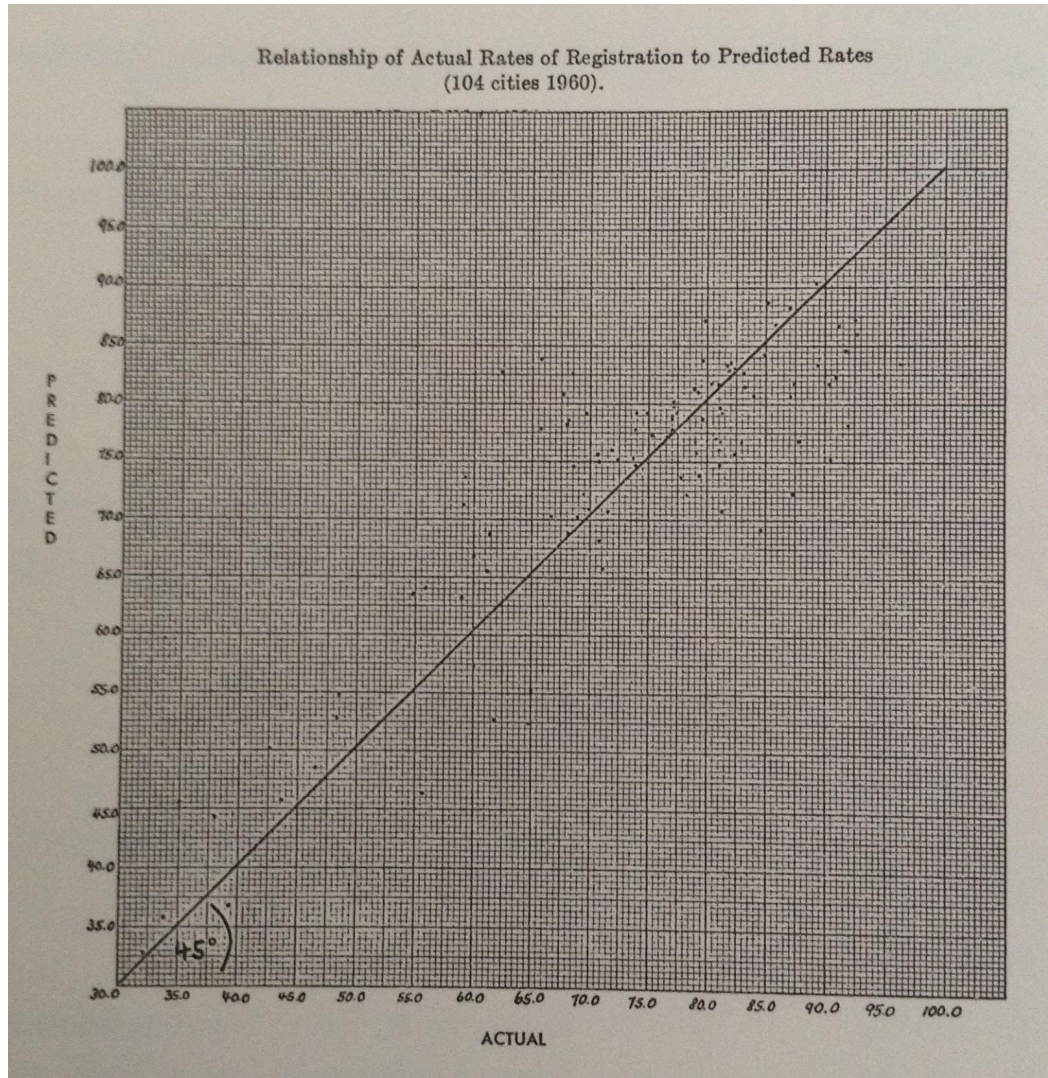
The design touches you need

Civil Service People Survey, 2020

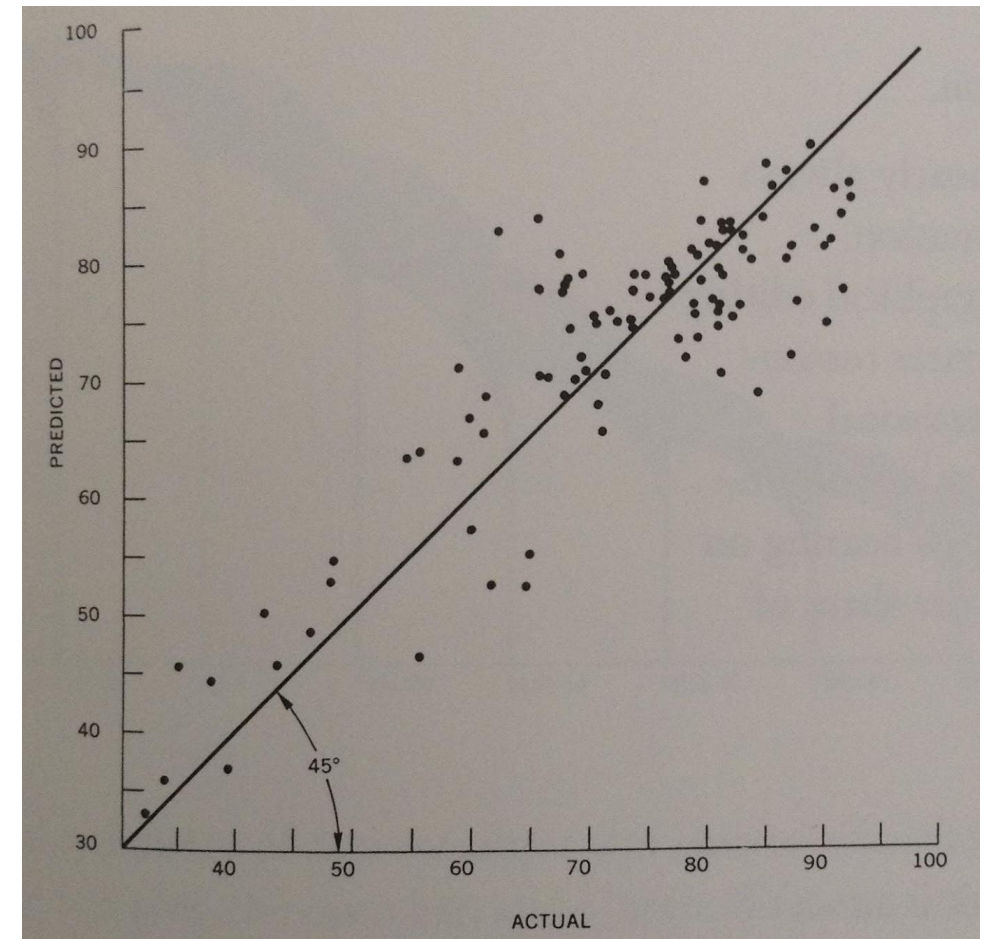


The design touches you need

A

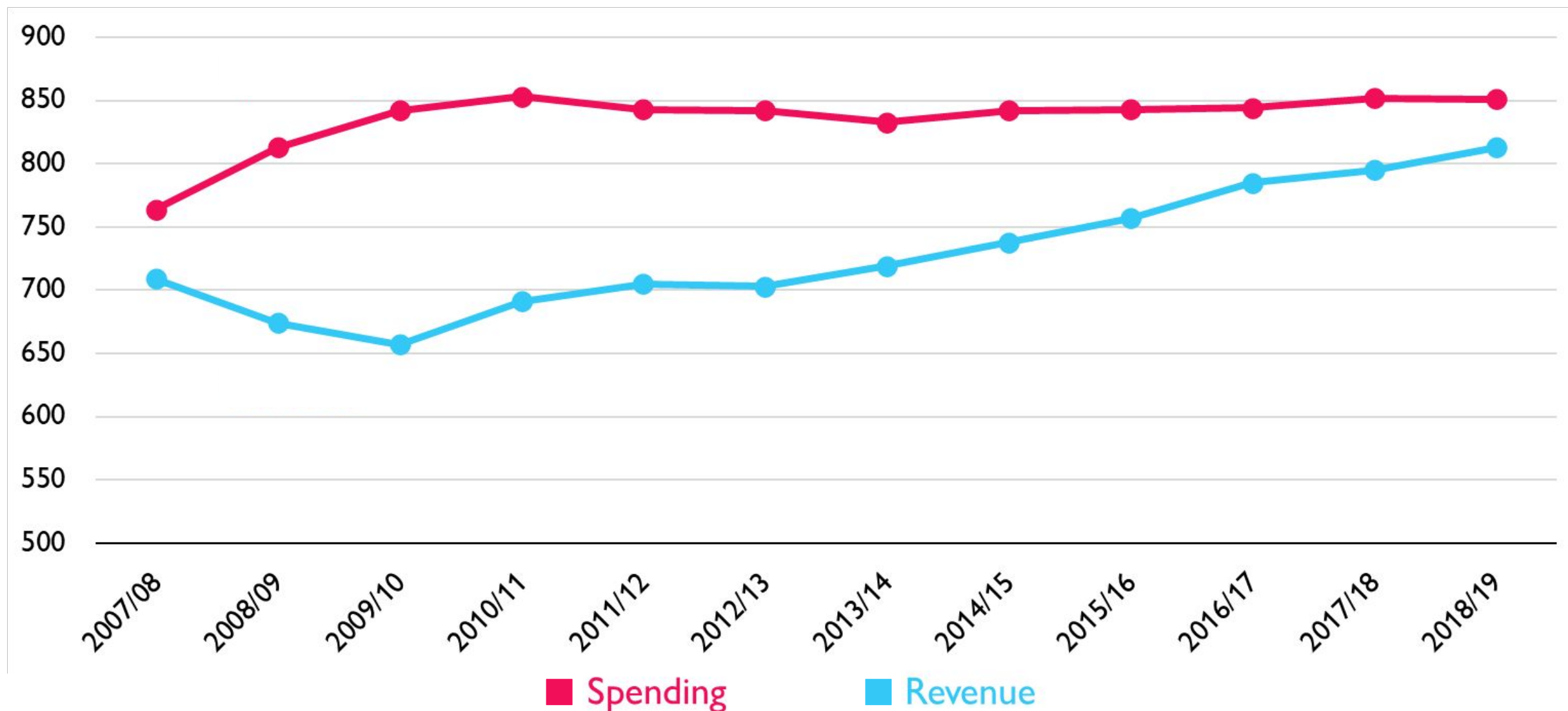


B



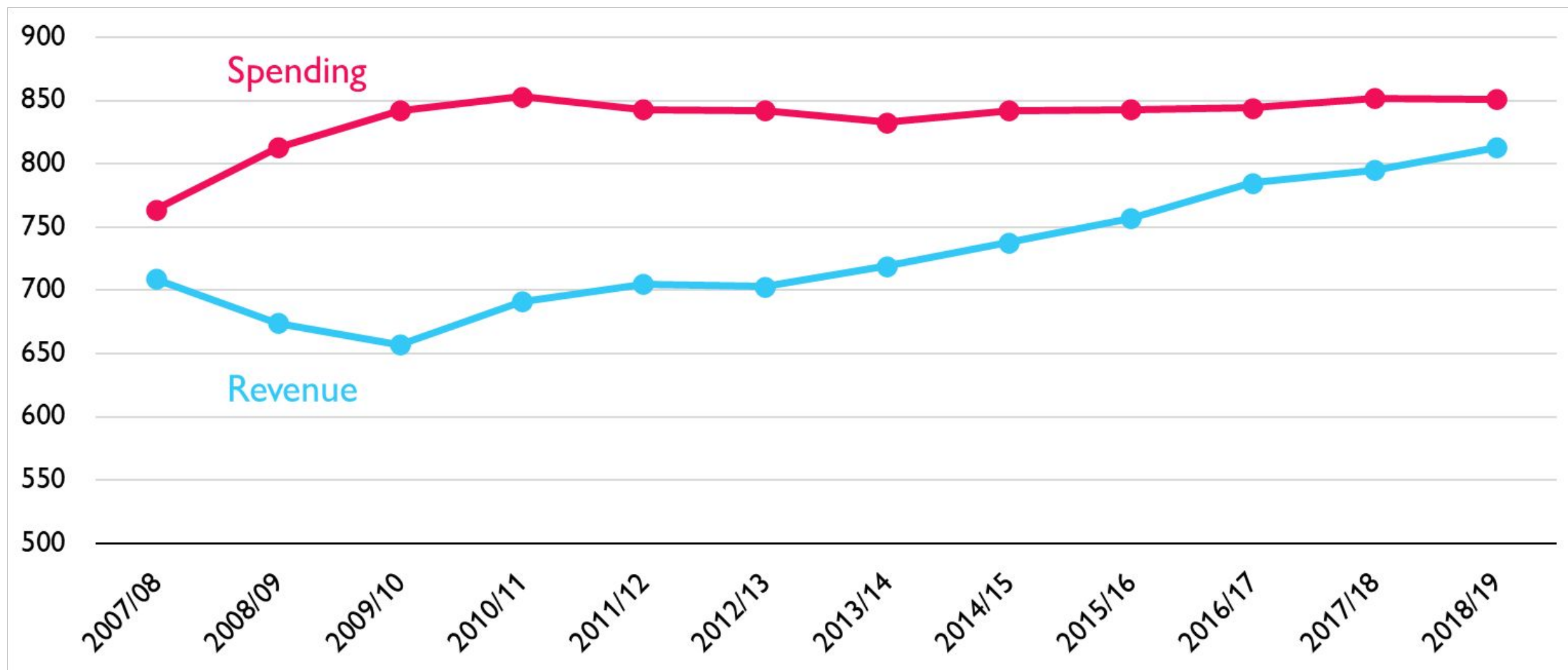
The design touches you need

Government spending and revenue (2018/19 prices, £bn)



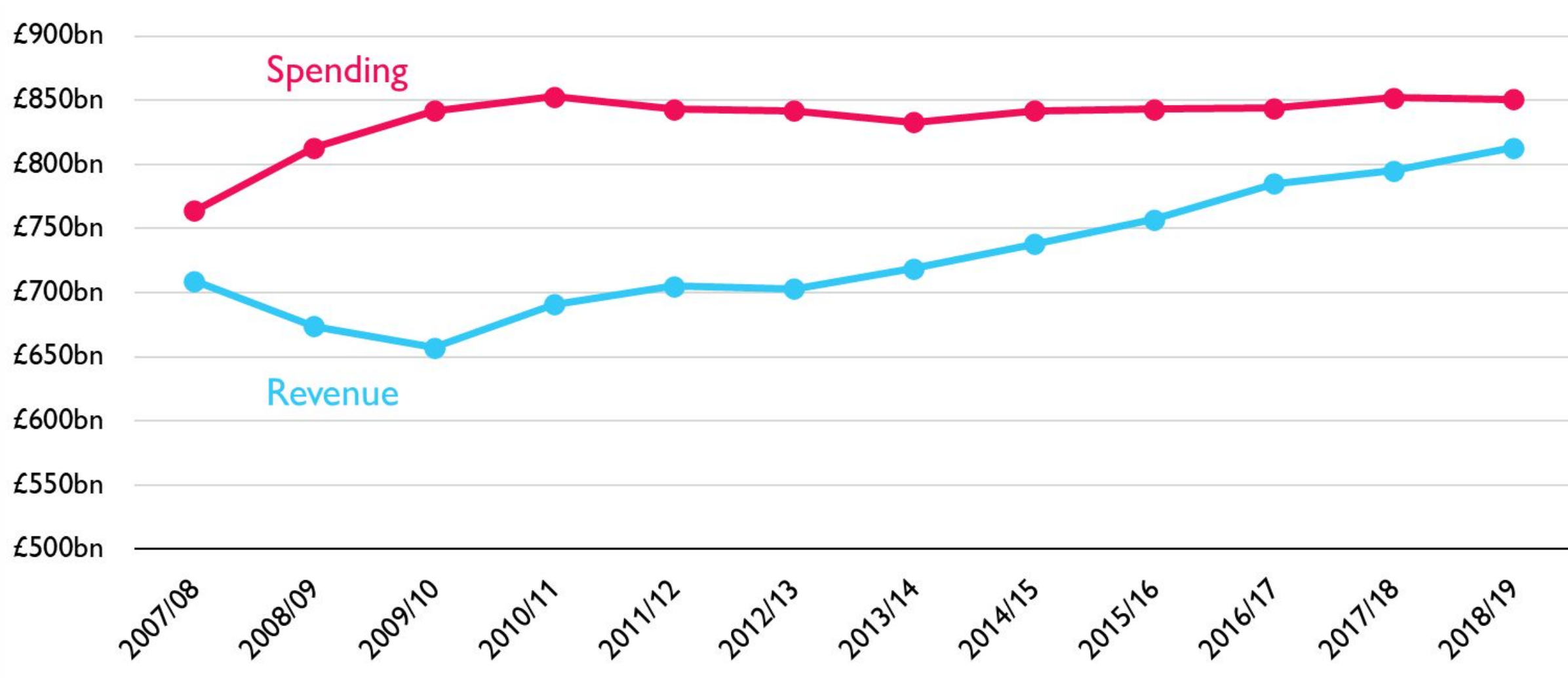
The design touches you need

Government spending and revenue (2018/19 prices, £bn)



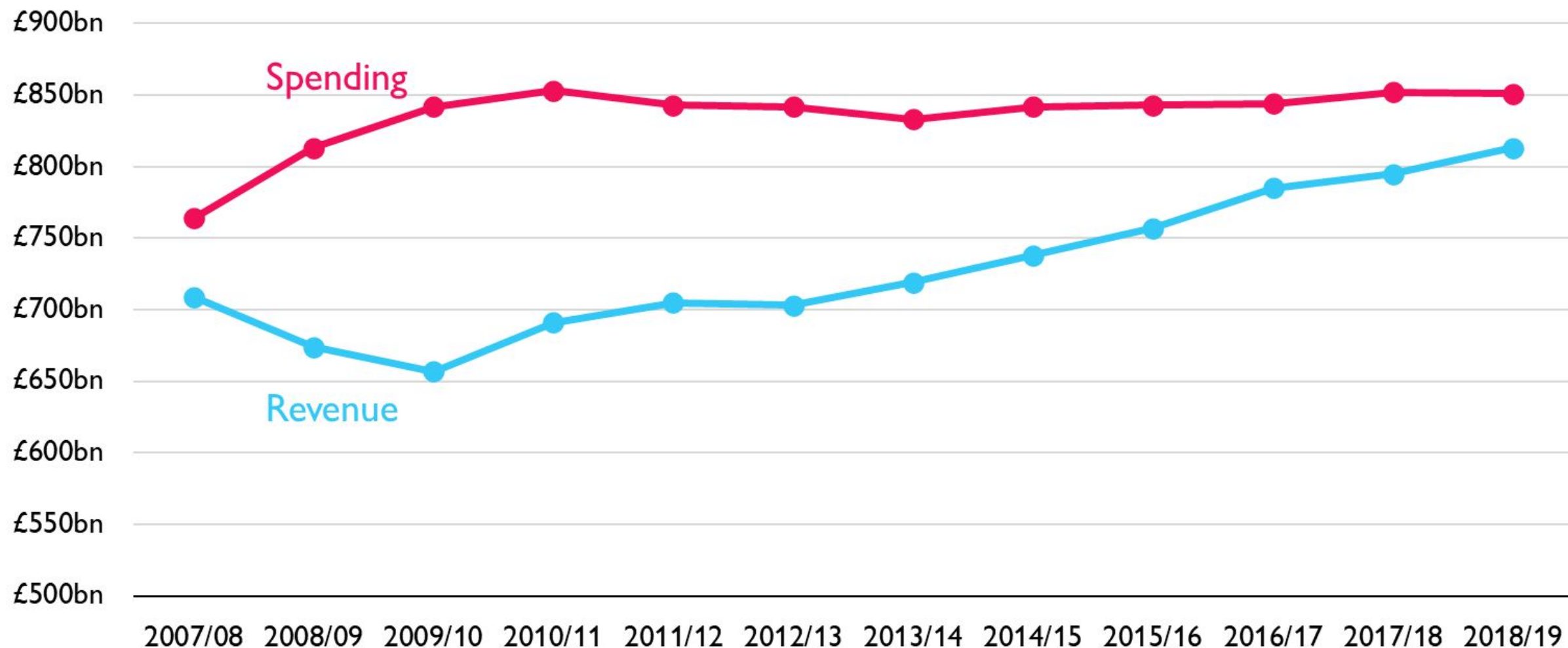
The design touches you need

Government spending and revenue (2018/19 prices)

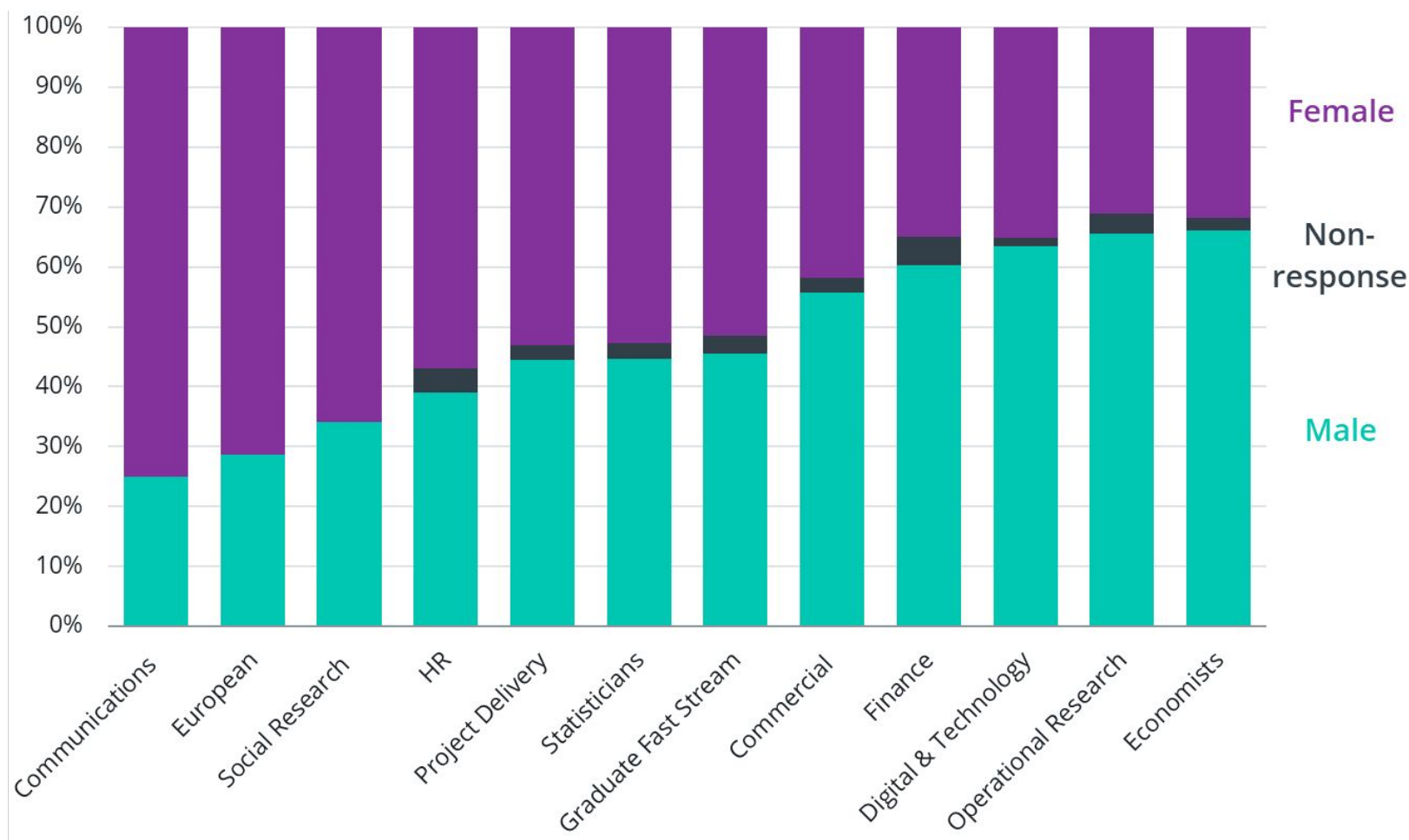


The design touches you need

Government spending and revenue (2018/19 prices)



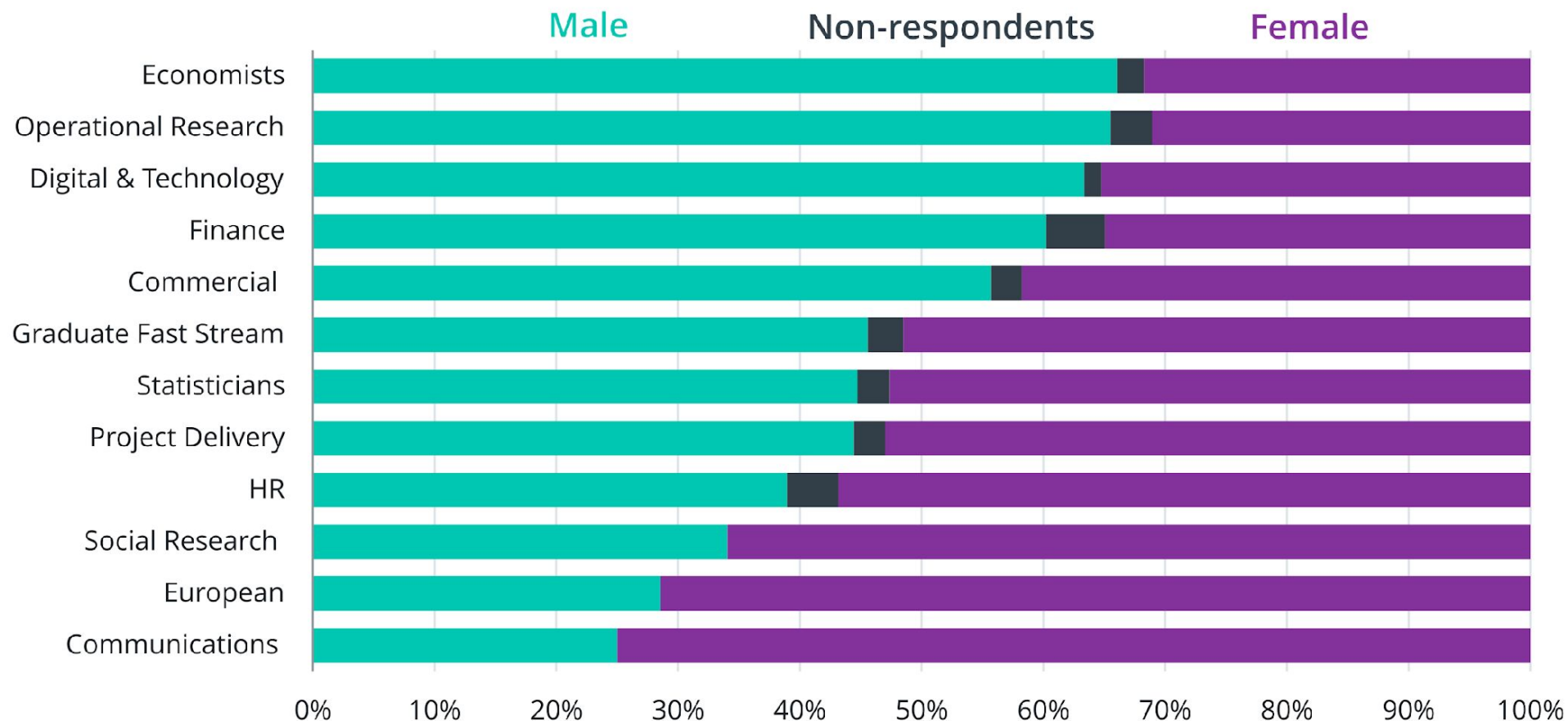
Gender balance of Fast Stream appointments, 2016



The design touches you need

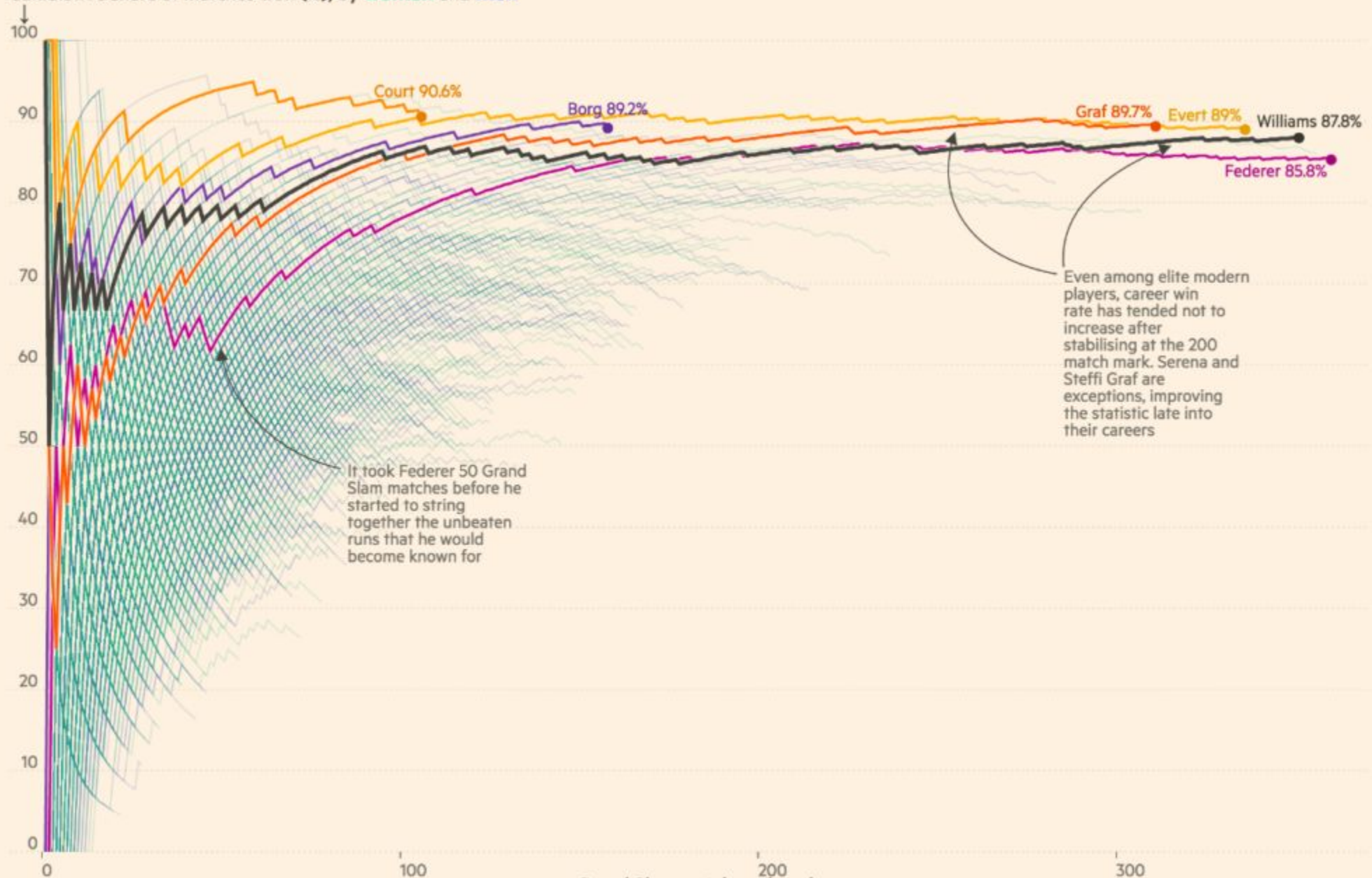
Gender balance of appointments by Fast Stream, 2016 intake

IfG



Source: Institute for Government analysis of Cabinet Office Fast Stream Annual Report, 2016.

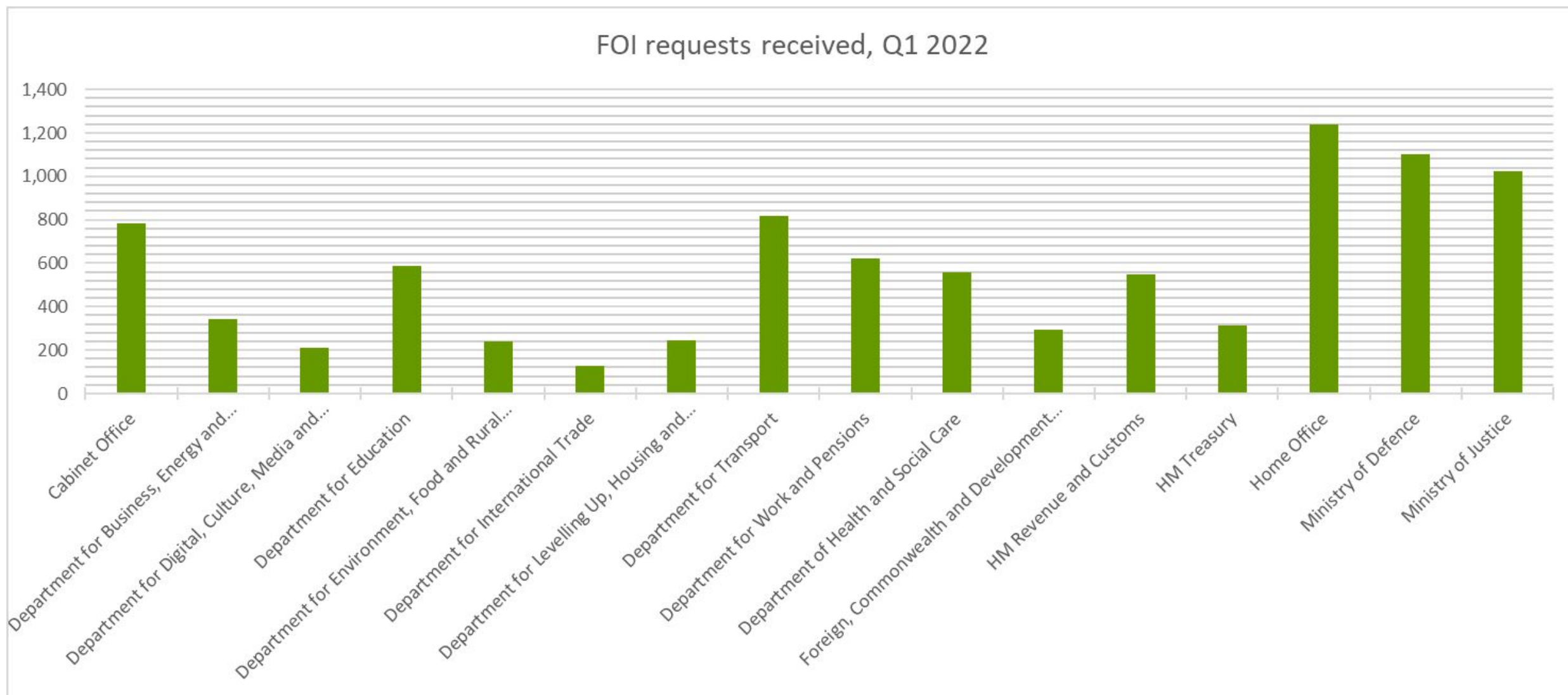
Cumulative share of matches won (%), by **women** and **men**



Lines show the 2,637 players with at least one Grand Slam match win
 Source: ITF, FT research
 Graphic by John Burn-Murdoch / @jburnmurdoch

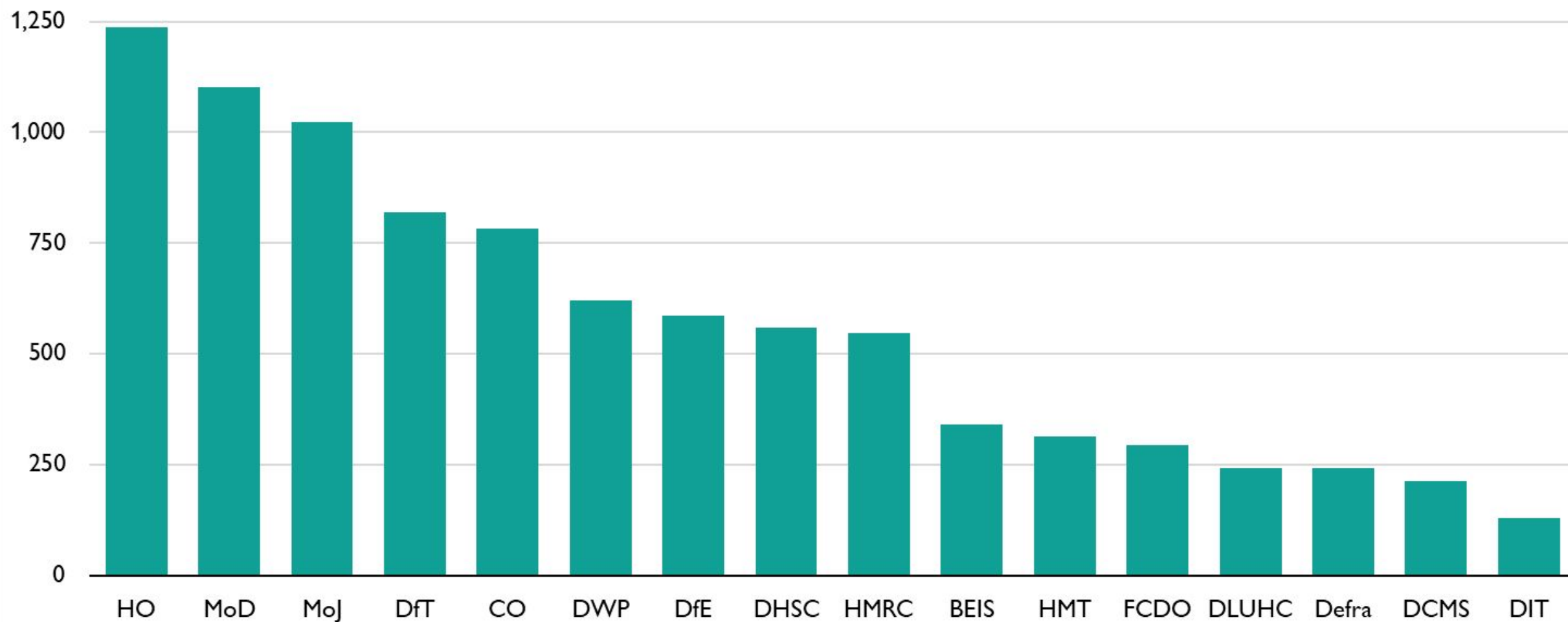
← Grand Slam matches played →

The design touches you need



The design touches you need

FOI requests received by government departments, Q1 2022



- Good dataviz design matters – you need to think about it
- Think about what chart type best tells the story
- Think about the different elements of the chart and minimize ‘chart junk’
- There are lots of resources to help

Thank you!

gavin@gavinfreeguard.com
@GavinFreeguard

Gavin Freeguard
apolitical
3 July 2024

apolitical