Women in
C-suite
positions
19%
data visualisation

By the end of today you should know:

- How to choose the right chart for the story
- How to edit that chart to tell a story
- Pitfalls to avoid

First: the reading review

- Who hasn’t read it? What are the barriers — and how can you tackle those?
- What didn’t make sense? What questions did you have?
- What do you remember? What can you **use**?

How to use it (portfolio)

- Tips on finding data
- On generating ideas
- On cleaning
- Questions to ask of data
- Picking the right chart…

How to use it (evaluation)

There are a number of ways of telling a data story, including X, Y, and Z (Bradshaw 2024)

Bibliography

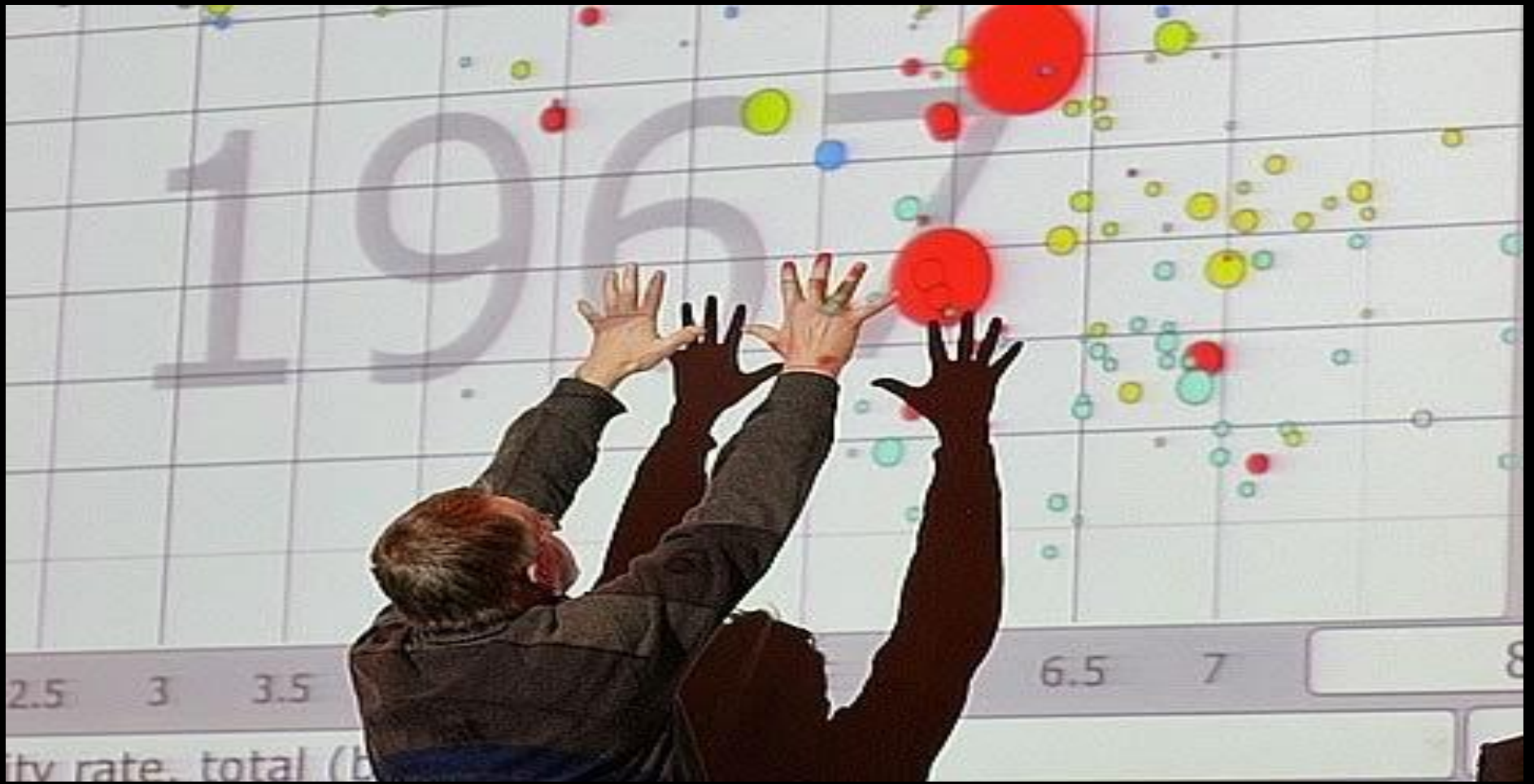
Bradshaw, Paul (2024) The Online Journalism Handbook, Routledge

Do the quiz on Moodle!

- Review the answers and which areas you need to work on

Phones in flight mode…

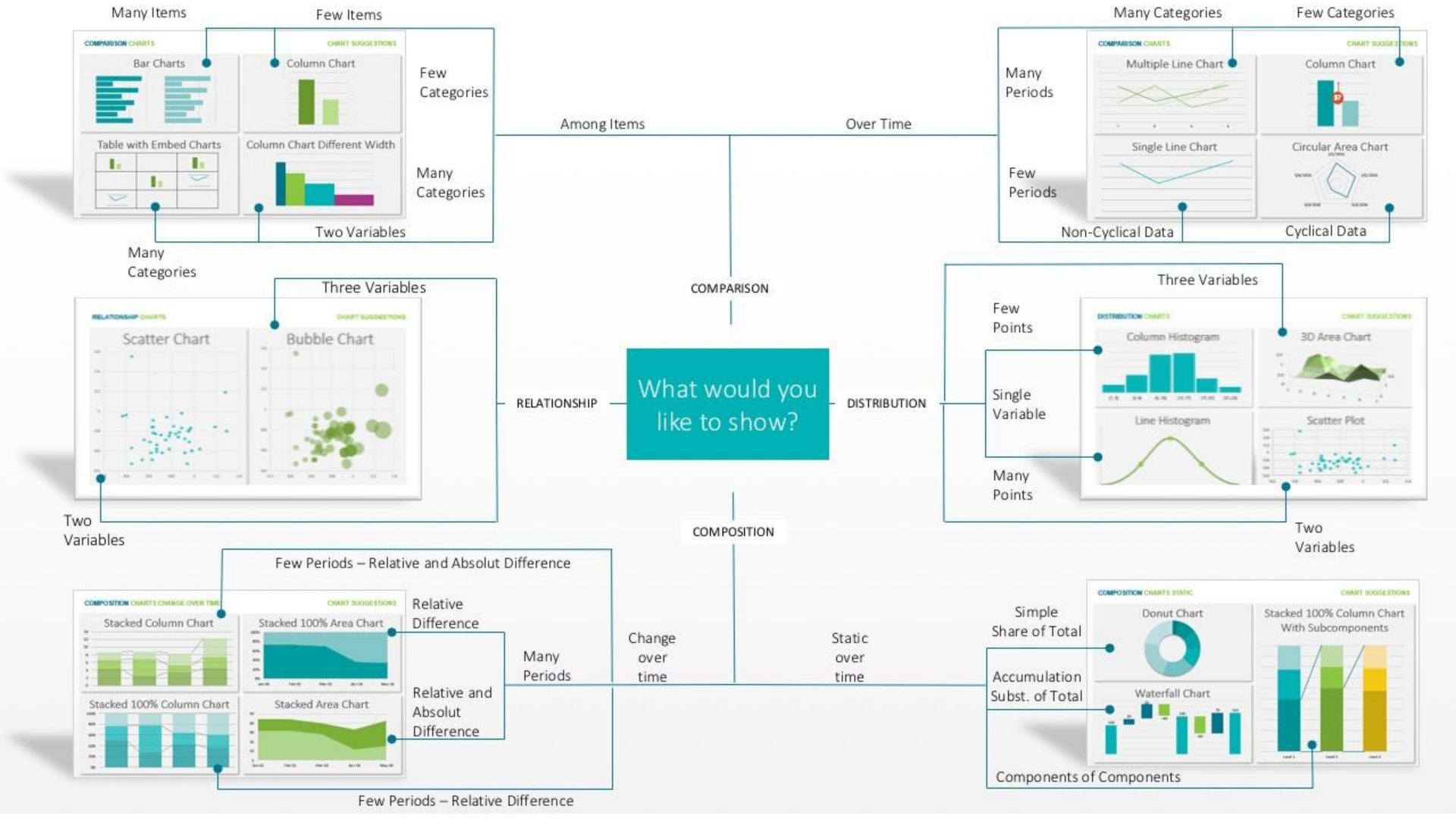
Don’t multitask (it’s actually “task-switching”, which negatively impacts learning and is stressful)



https://www.youtube.com/watch?v=hVimVzgtD6w#t=3m14s

“WHENEVER I AM INFURIATED, I REVENGE MYSELF WITH A **NEW DIAGRAM.**”

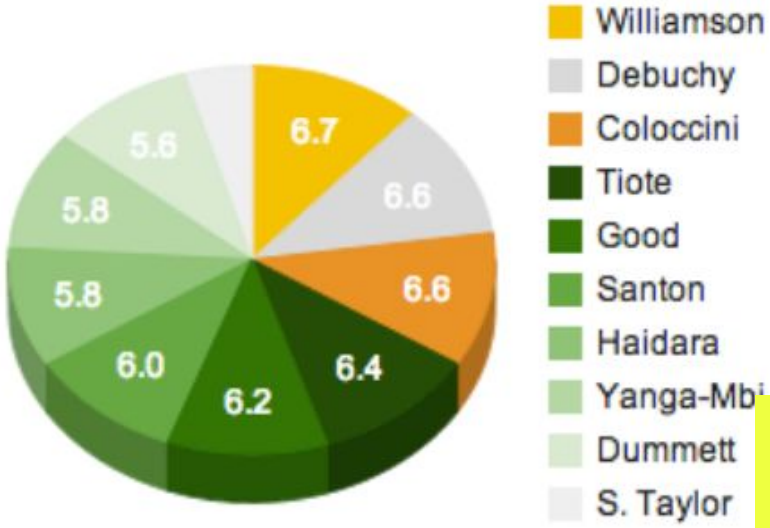
FLORENCE NIGHTINGALE


What would you like to show?
COMPARISON
RELATIONSHIP
DISTRIBUTION
COMPOSITION
Among Items
Over Time
Many Items
Few Items
Few Categories
Many Categories
Two Variables
Many Categories
Bar Charts
Column Chart
Table with Embed Charts
Column Chart Different Width
Many Categories
Few Categories
Many Periods
Few Periods
Multiple Line Chart
Column Chart
Single Line Chart
Circular Area Chart
Non-Cyclical Data
Cyclical Data
Three Variables
Two Variables
Scatter Chart
Bubble Chart
Three Variables
Few Points
Many Points
Single Variable
Column Histogram
3D Area Chart
Line Histogram
Scatter Plot
Two Variables
Few Periods – Relative and Absolut Difference
Few Periods – Relative Difference
Relative Difference
Relative and Absolut Difference
Many Periods
Stacked Column Chart
Stacked 100% Area Chart
Stacked 100% Column Chart
Stacked Area Chart
Change over time
Static over time
Simple Share of Total
Accumulation Subst. of Total
Components of Components
Donut Chart
Waterfall Chart
Stacked 100% Column Chart With Subcomponents

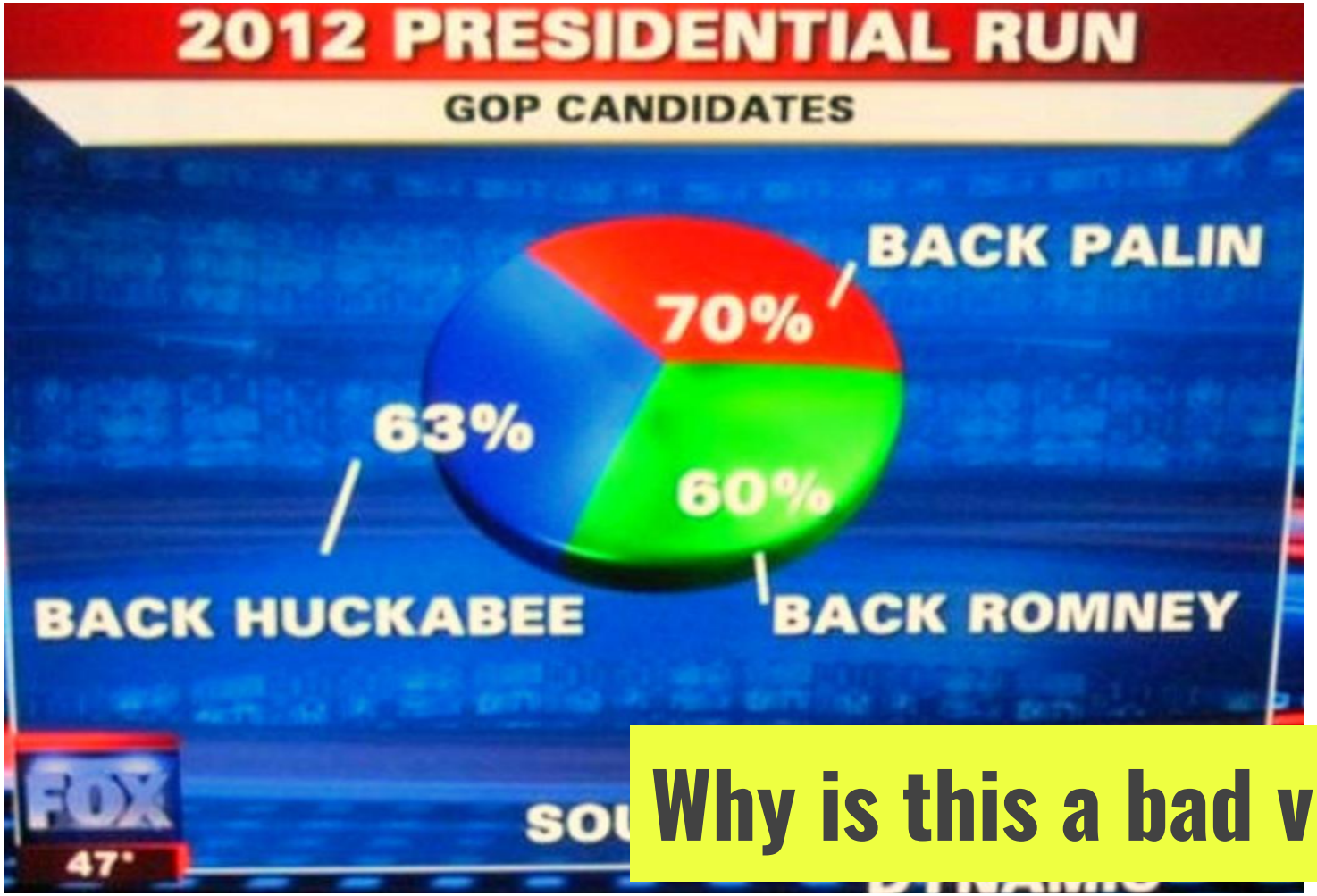
Newcastle United player stats: The season so far

See how each of the Newcastle United FC players stack up against each other, as rated by fans

Defenders

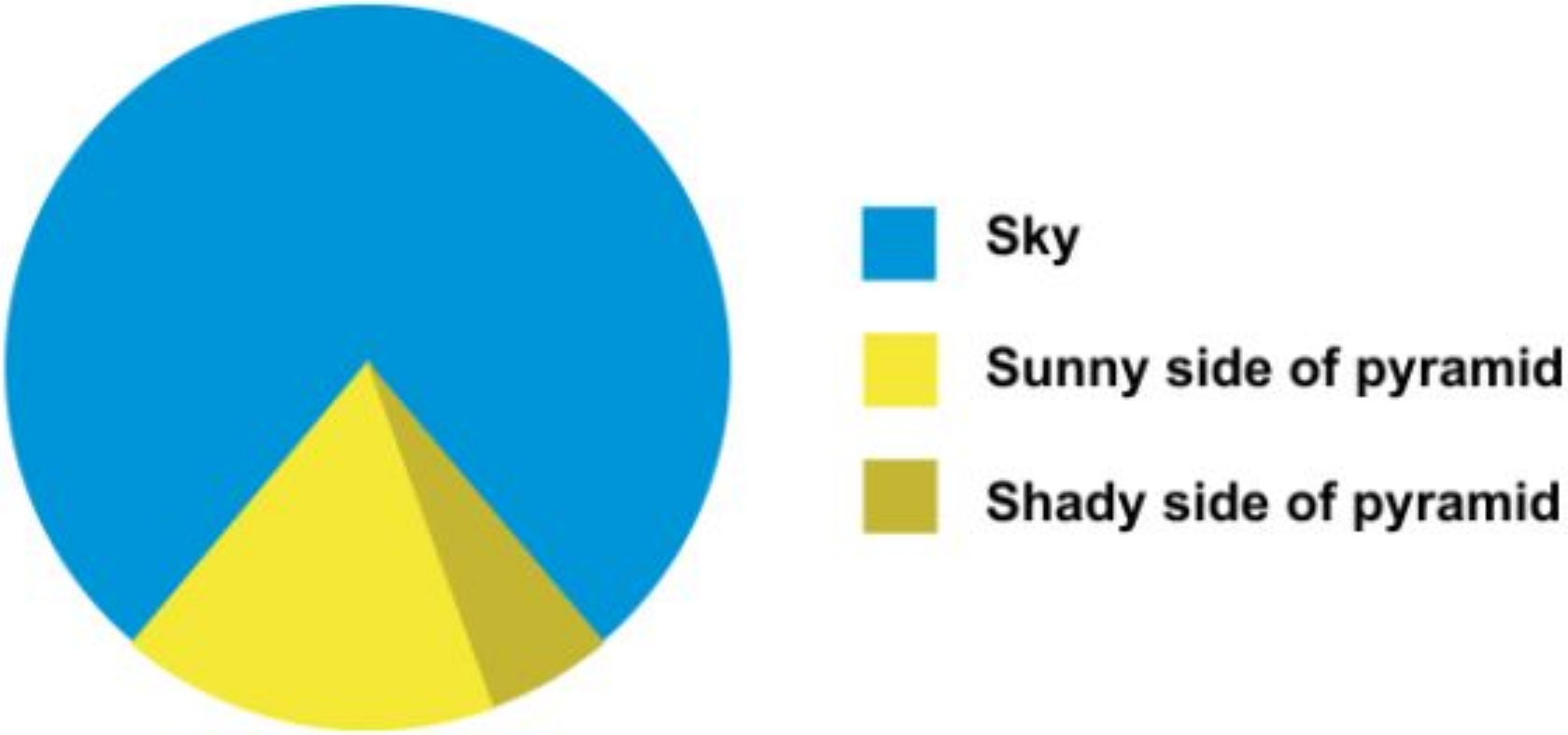


Why is this a bad vis?



Why is this a bad vis?

Composition stories are told by pie charts...



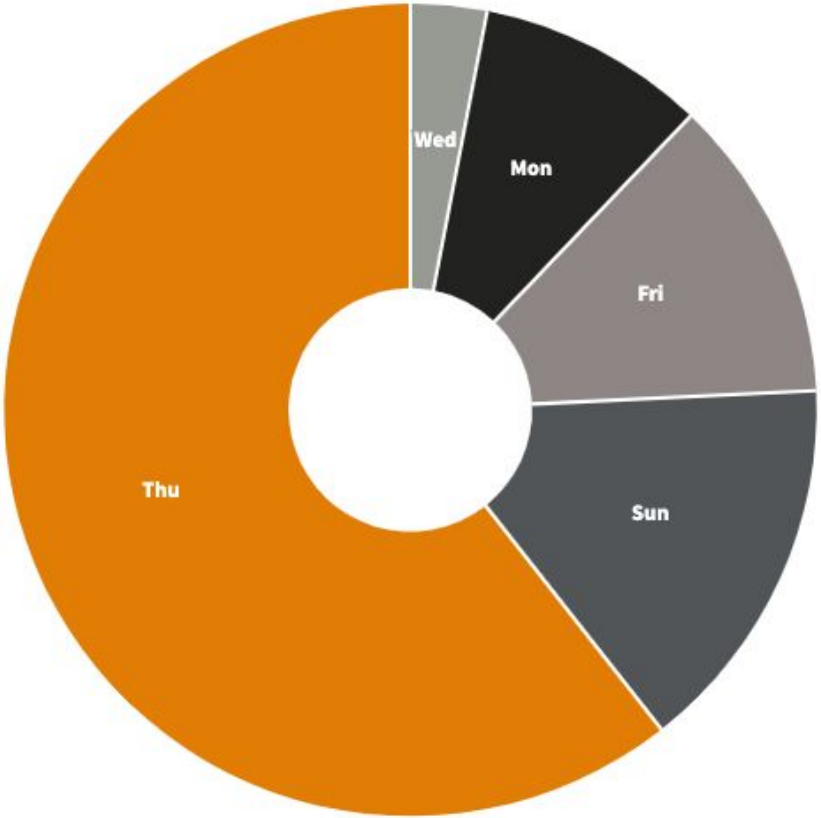
Composition stories:

- “X% of crimes are unsolved”
- “A third of schoolchildren in poverty”
- “Toasters cause a quarter of fires”

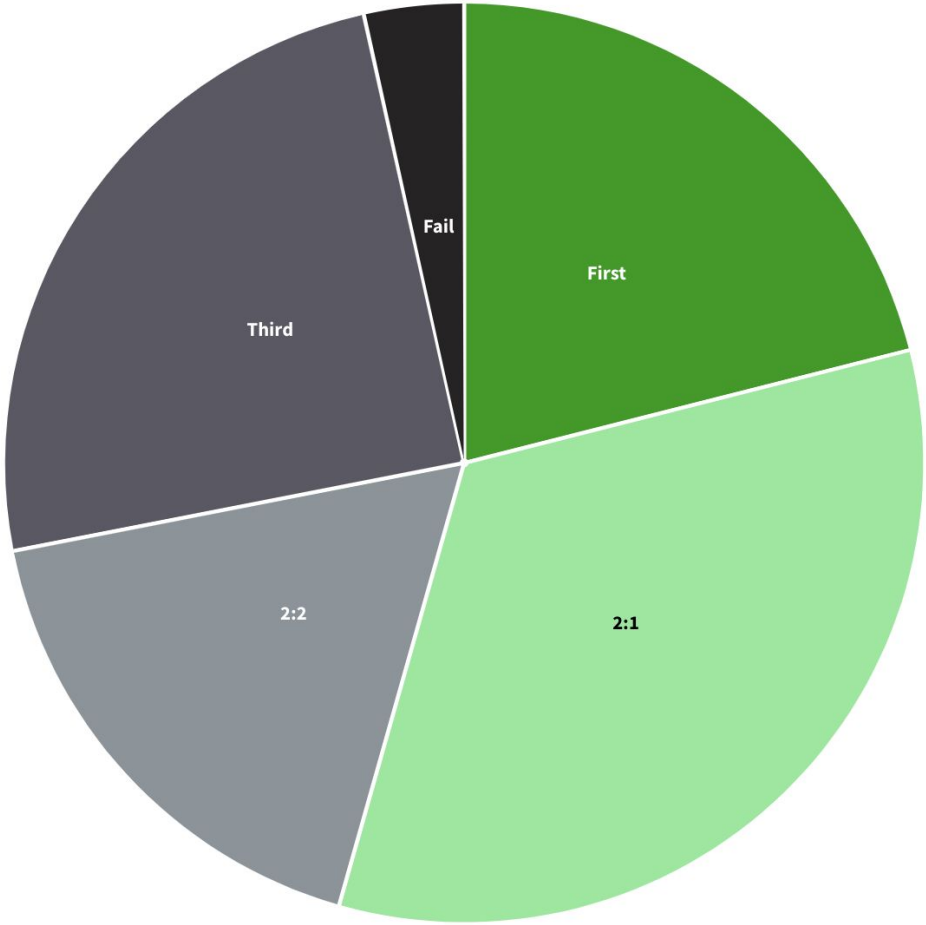
These are also all **scale** stories.

More than half of all students who accessed the reading did so the day before the next class

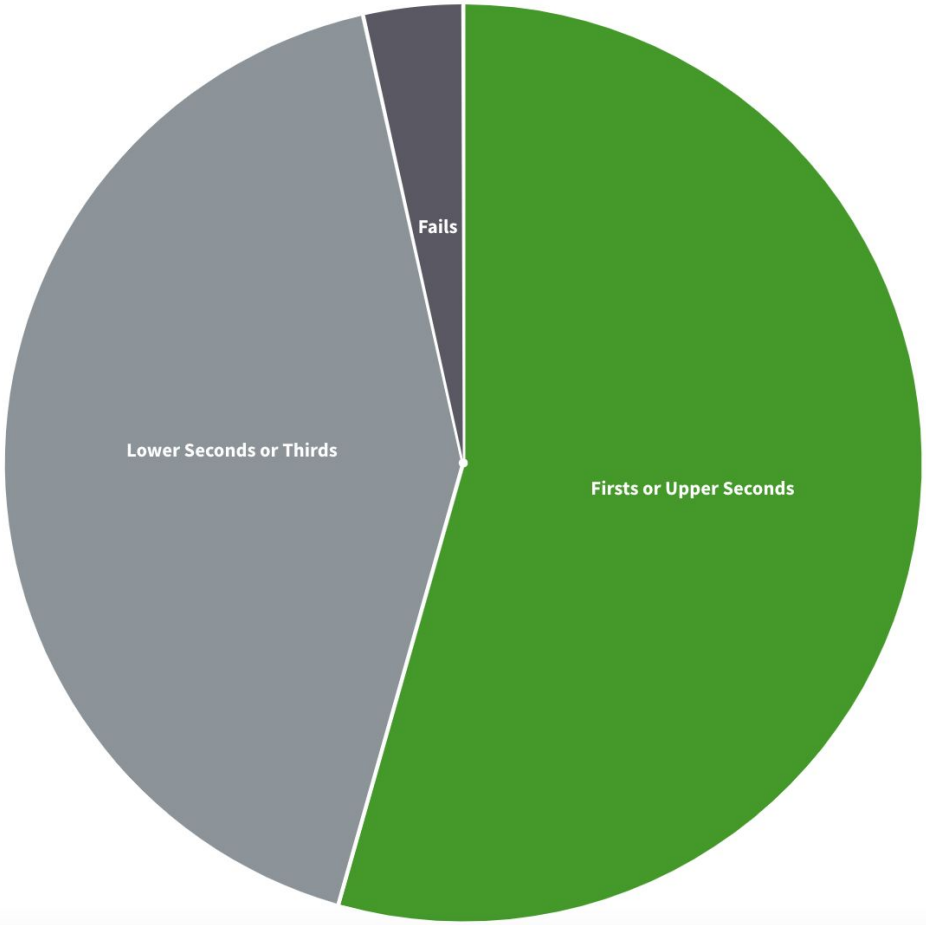
No one accessed the reading at all on Tuesday or Saturday



Most students get one of the top two grades



Most students get one of the top two grades



Comparison stories are told by bar charts...

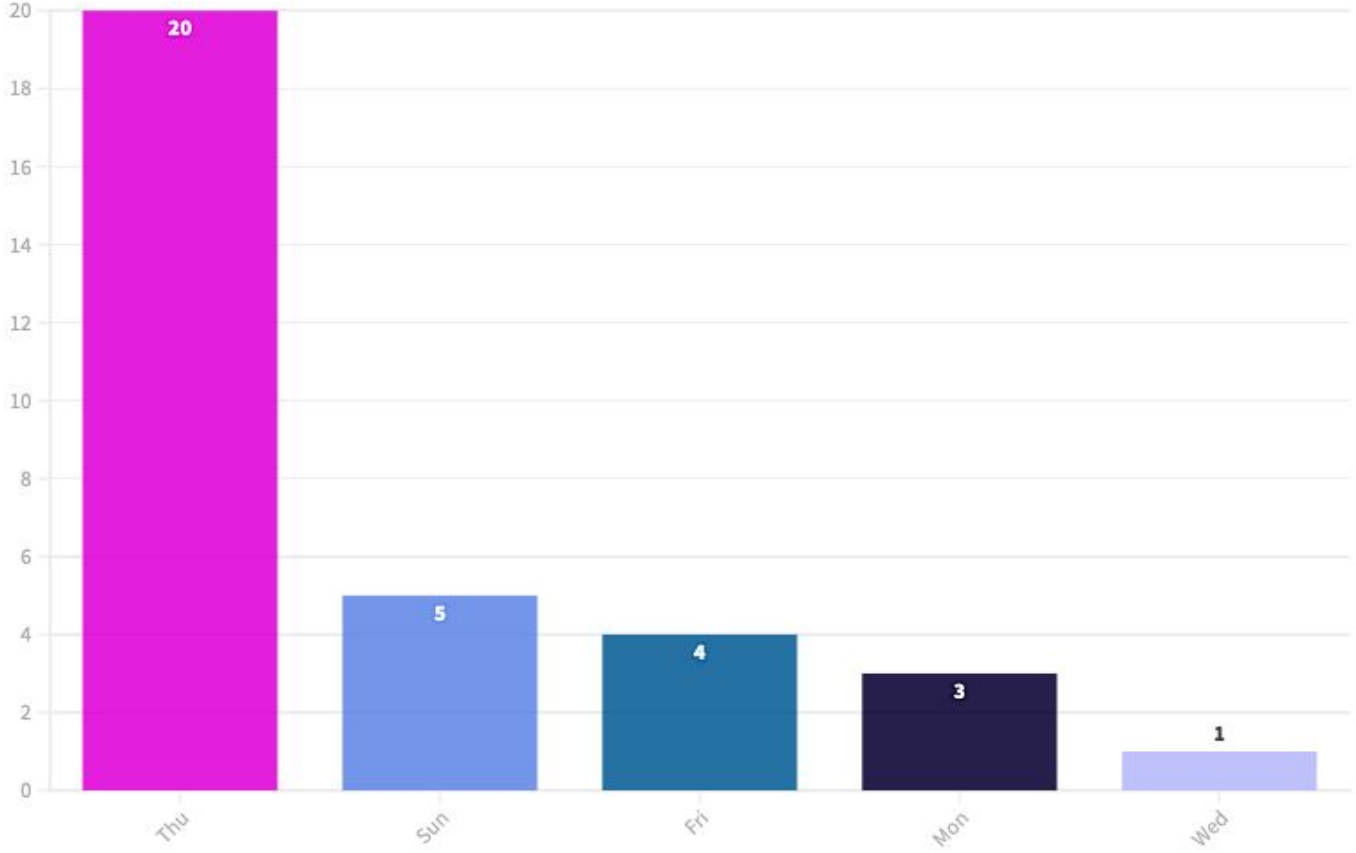
Comparison stories:

- “Toasters second-biggest cause of fires”
- Birmingham tops table for car crime

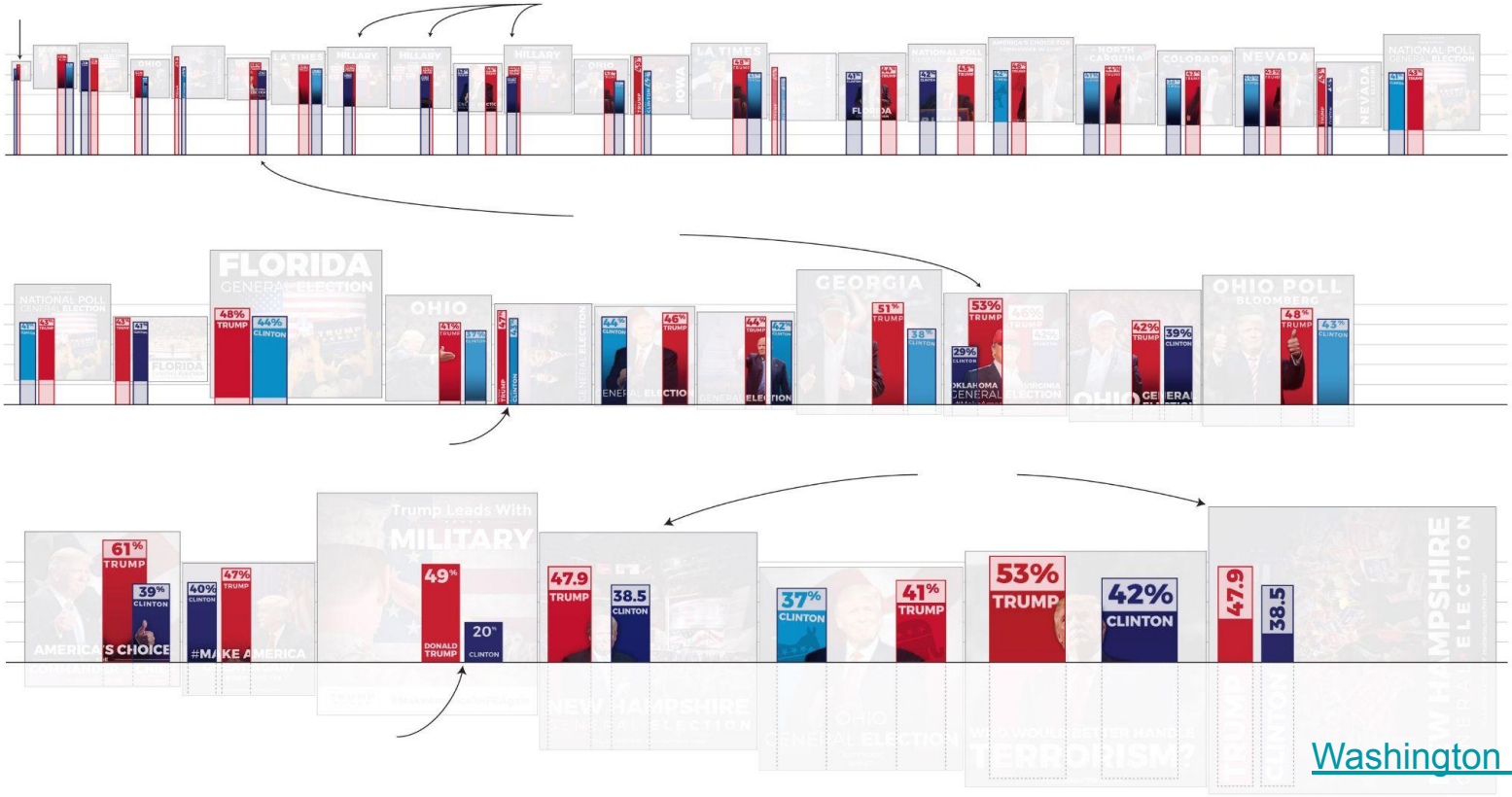
These are also all **ranking** stories.

Thursday was the most common day for accessing the reading

No one accessed the reading at all on Tuesday or Saturday

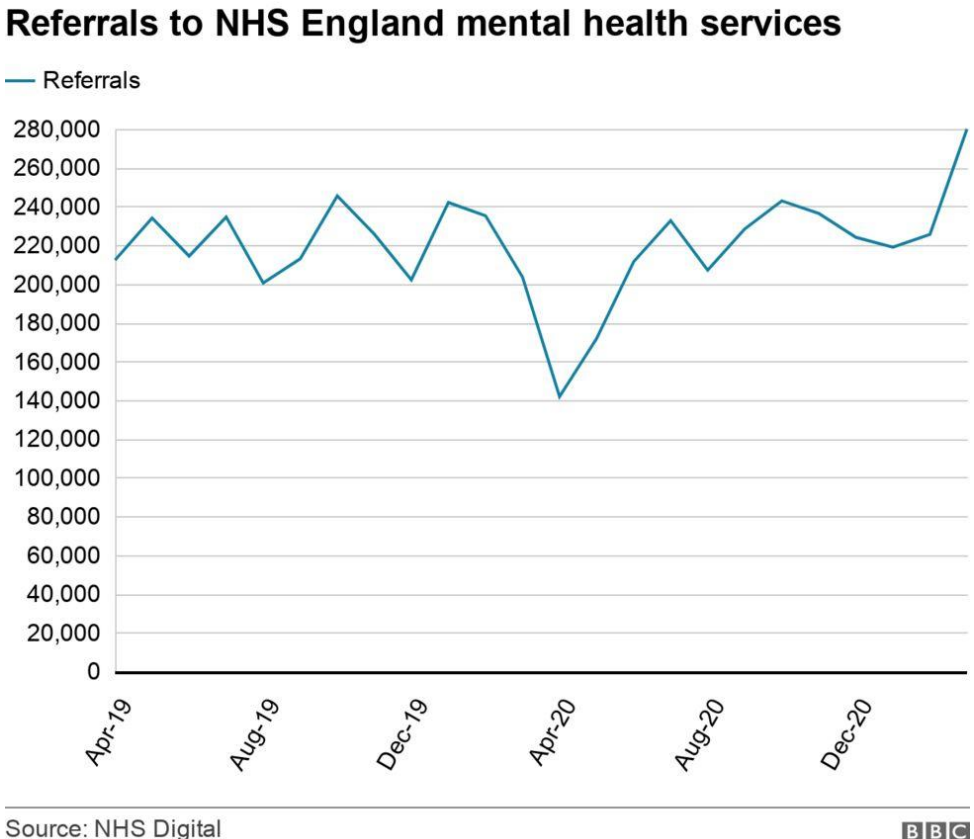


(And baselines should always be zero)

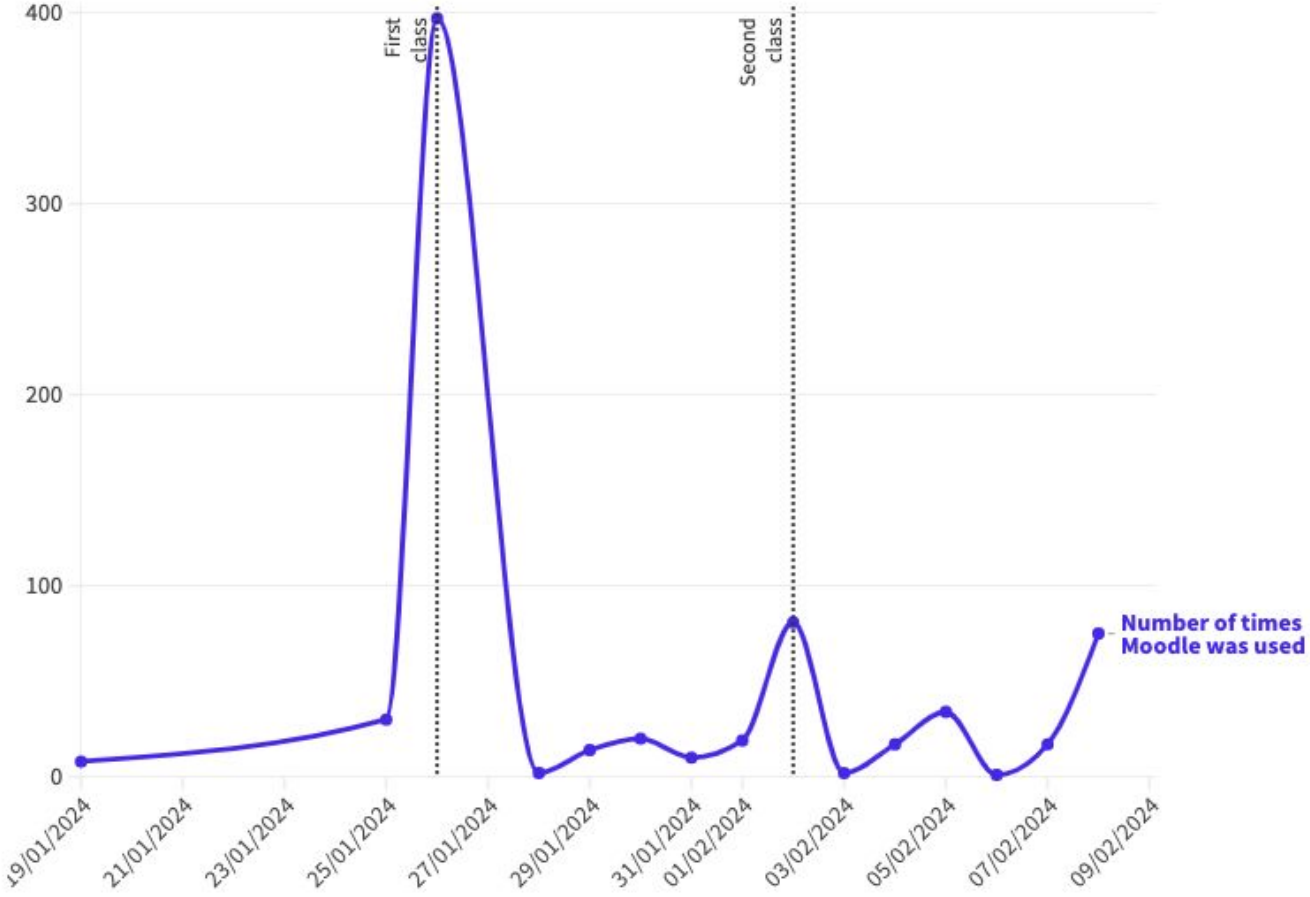


Washington Post

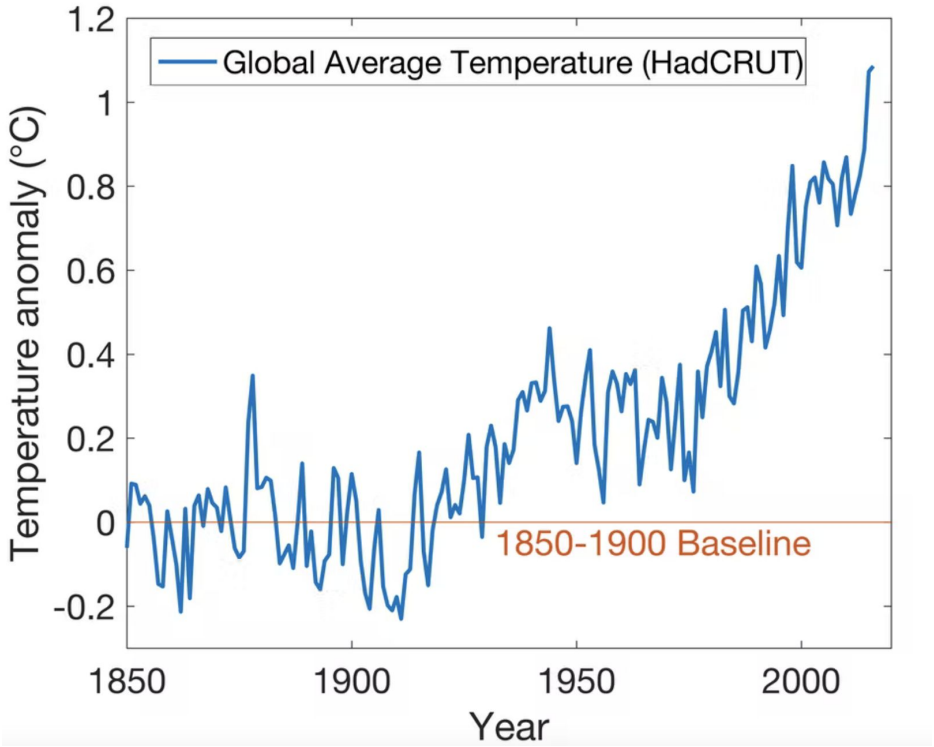
Comparison over time: line charts

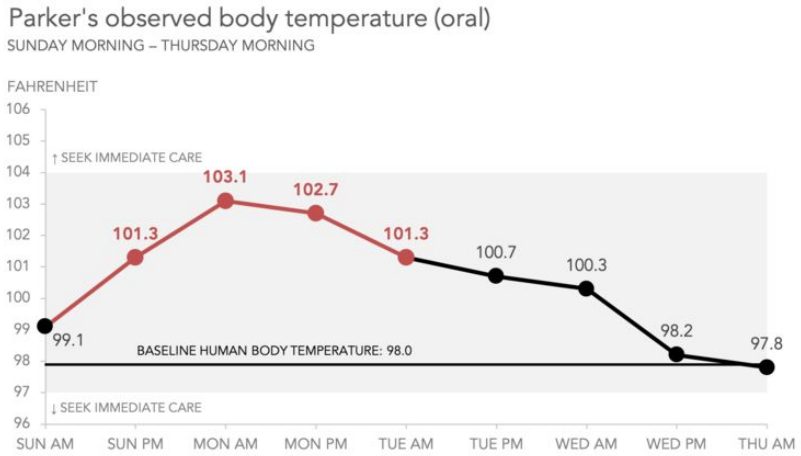


Use of Moodle is picking up again



(And baselines shouldn't always be zero)

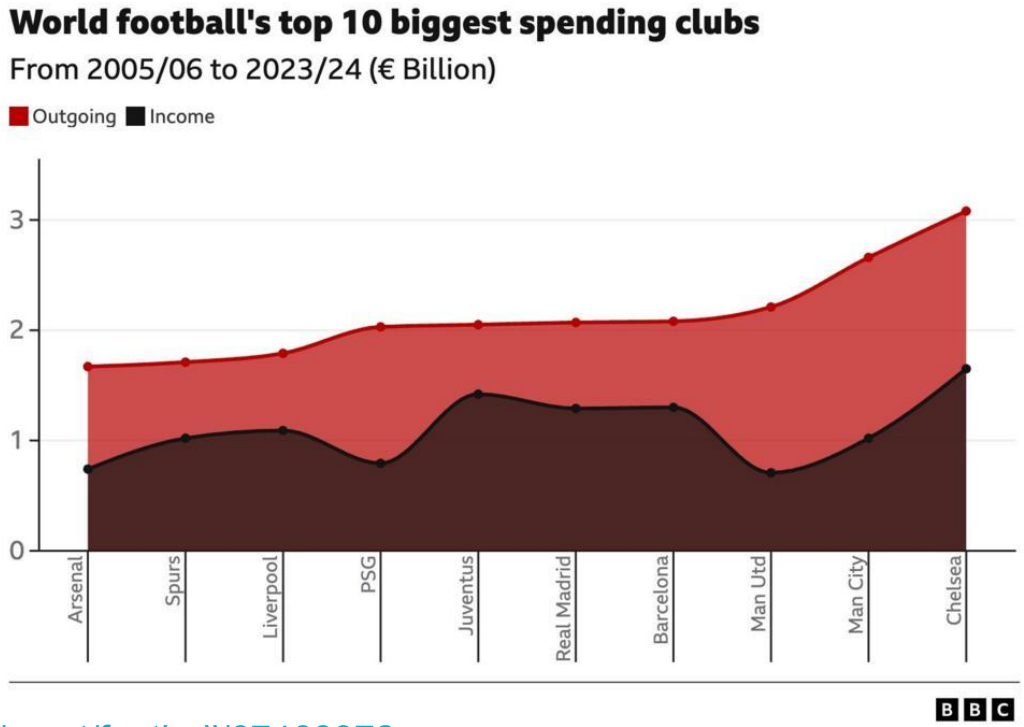




- E.g. relationship to zero isn't meaningful
- Or range of values is small, & far from zero
- Or some measurements are negative

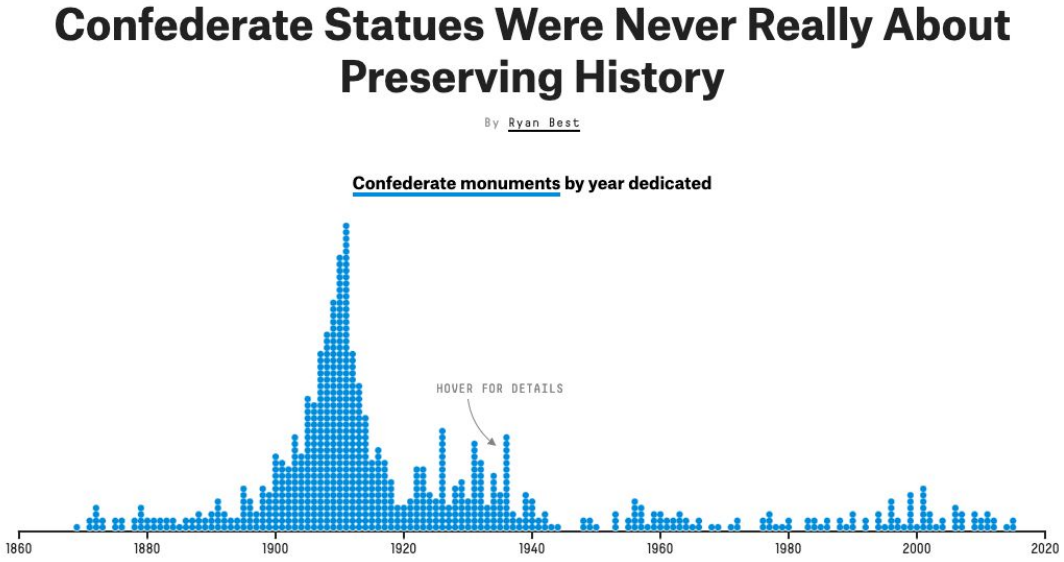
  Tip: separate X & Y axis

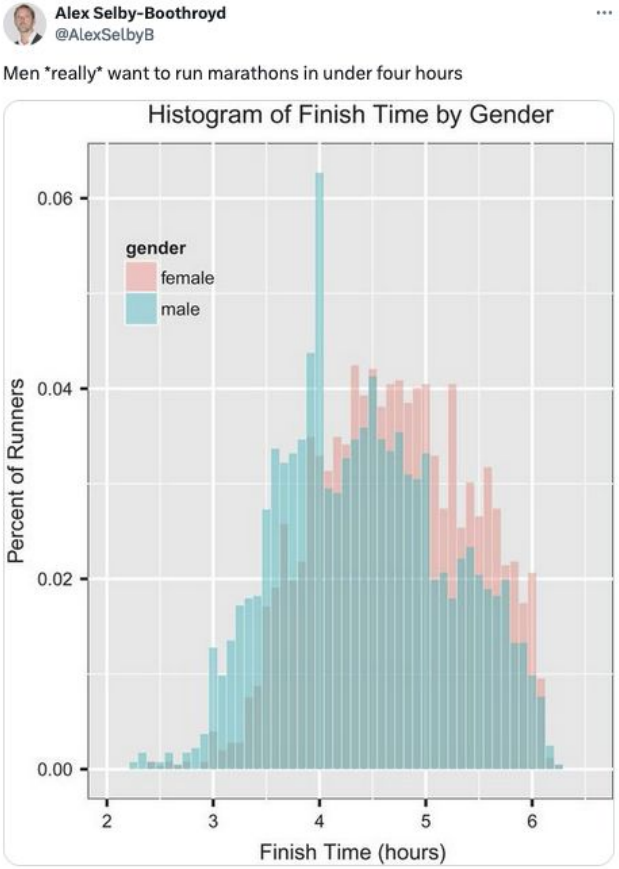
What's wrong with this chart? What should it be?



https://www.bbc.co.uk/sport/football/67468372

Distribution stories are told with histograms…

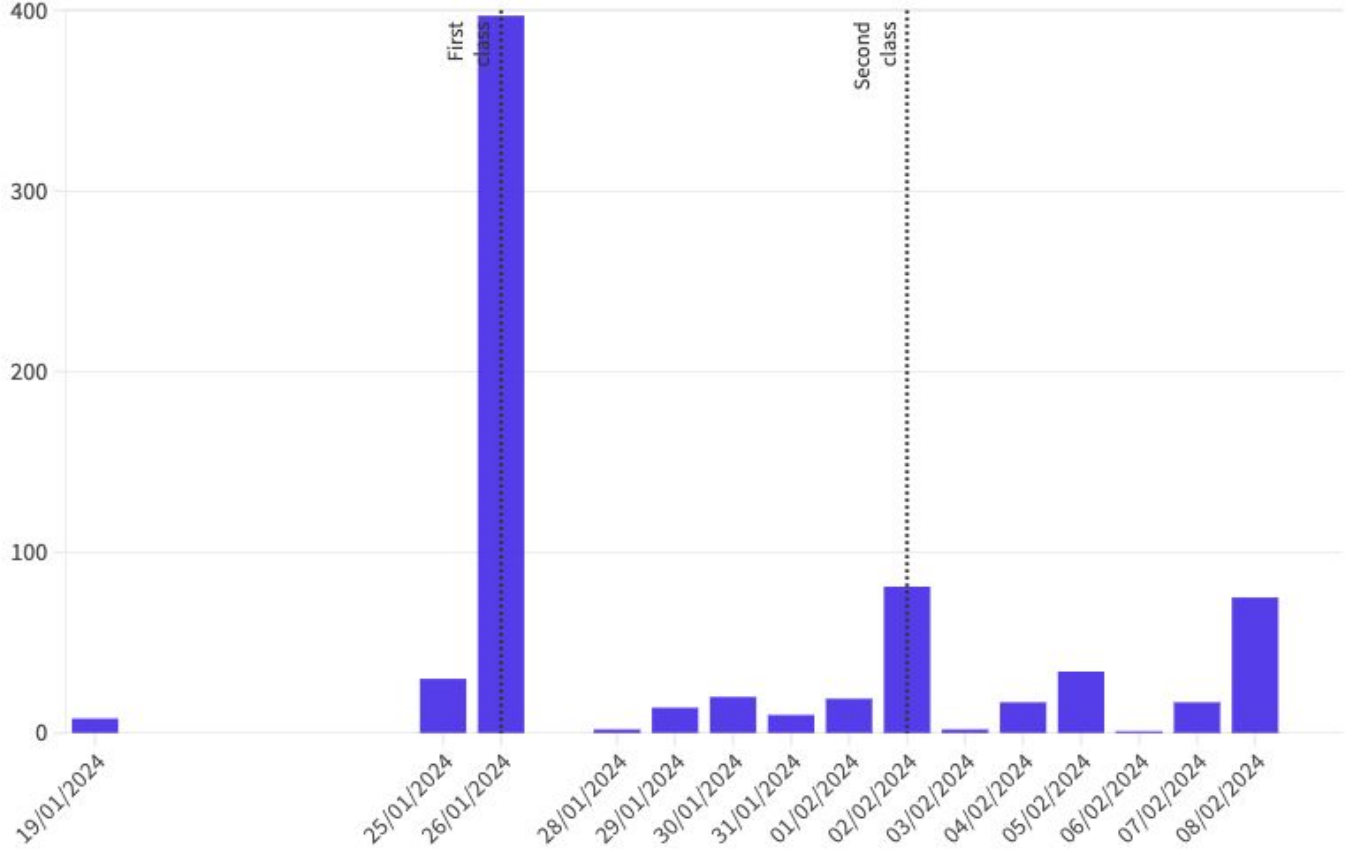




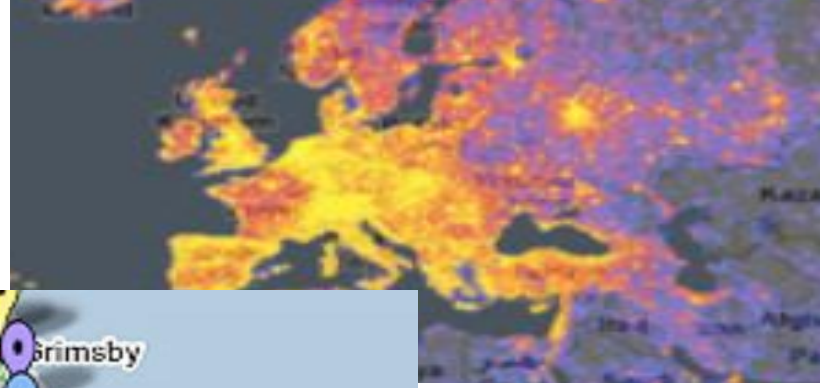
https://projects.fivethirtyeight.com/confederate-statues
https://twitter.com/AlexSelbyB/status/1650101850782179333

The biggest peak in Moodle use was on the day of the first class

The day of the second class saw the second biggest peak



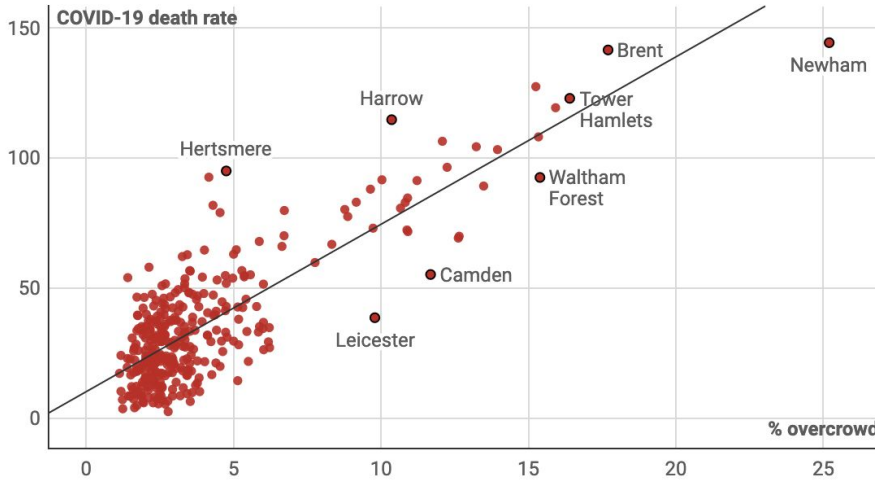
...or maps



Dublin
Swansea
Bournemouth
Portsmouth
Eastbourne
Calais
Dunkerque

Distribution *or* **relationships**: scatterplots

COVID-19 death rates versus housing overcrowding



COVID-19 death rates shown per 100,000 people between 1 March and 17 April

Chart: Nathaniel Barker • Source: ONS • Get the data • Created with Datawrapper

COVID-19 death rates versus prevalence of HMOs

(Houses in multiple occupation)

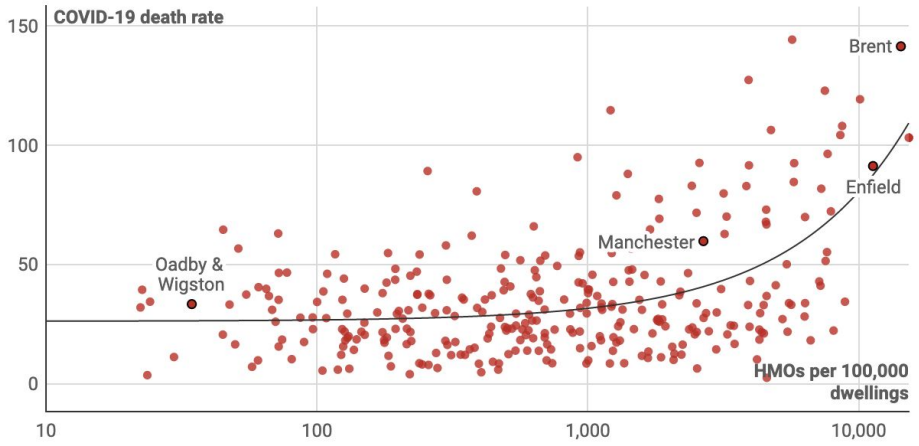
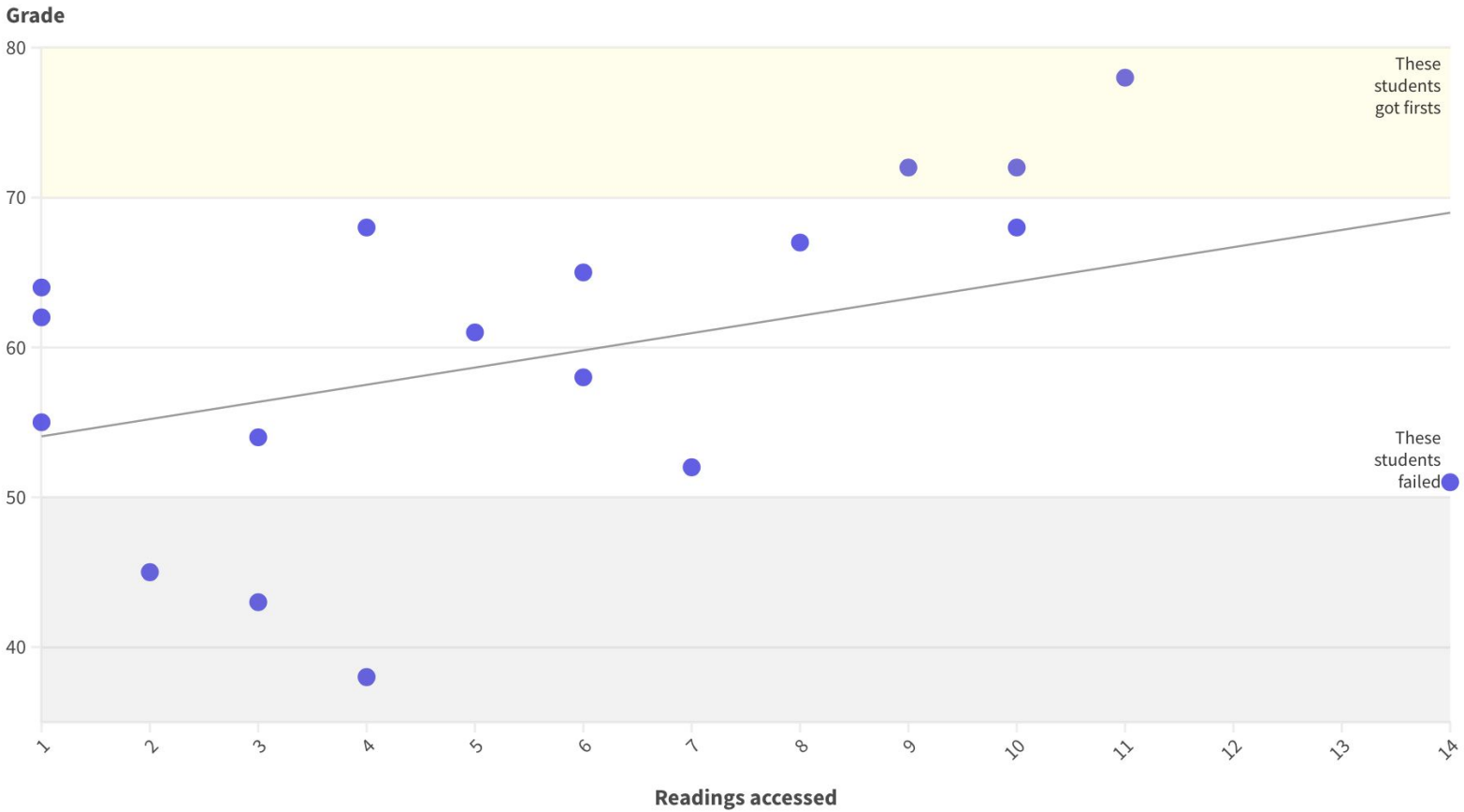


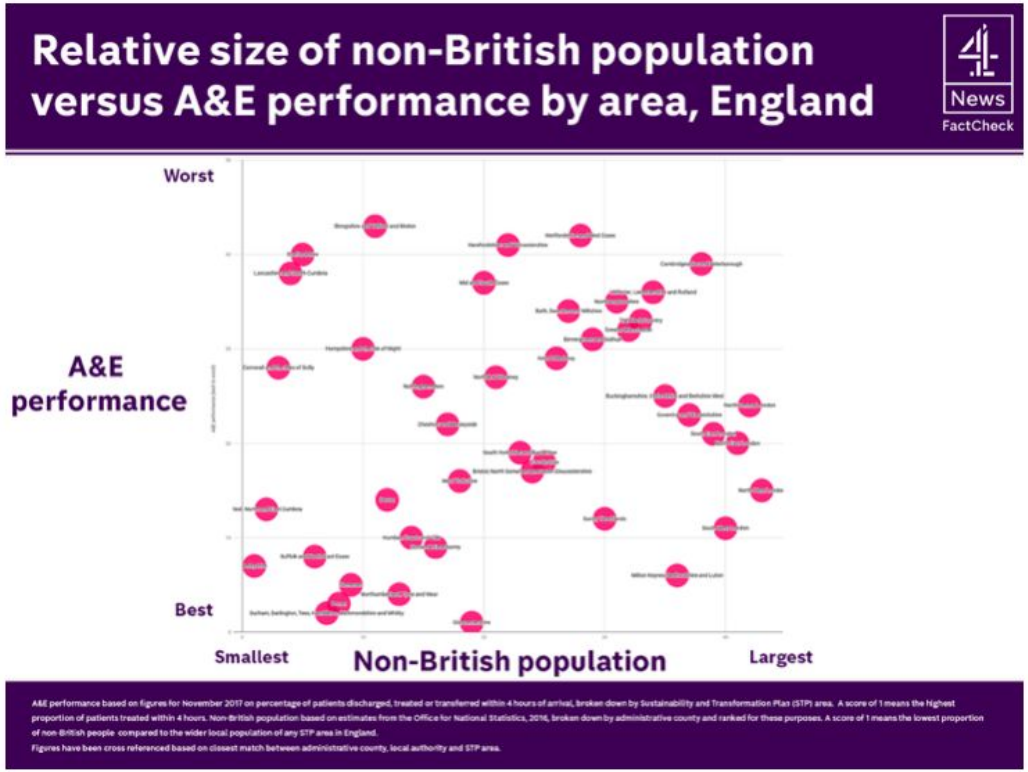
Chart: Nathaniel Barker • Source: ONS/MHCLG • Get the data • Created with Datawrapper

https://www.insidehousing.co.uk/insight/the-housing-pandemic-four-graphs-showing-the-link-between-covid-19-deaths-and-the-housing-crisis-66562

The fewer readings students accessed, the more likely they were to fail the assignment

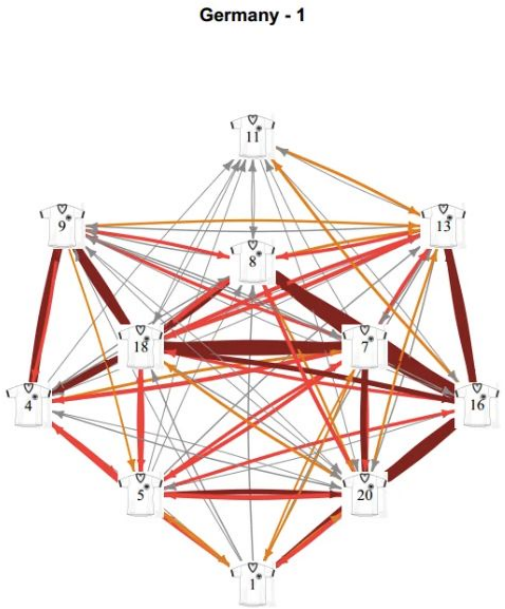


Scatterplots can also show a **lack** of relationship



Channel 4 News: https://www.channel4.com/news/factcheck/high-immigration-nhs-crisis

Network graphs can show relationships



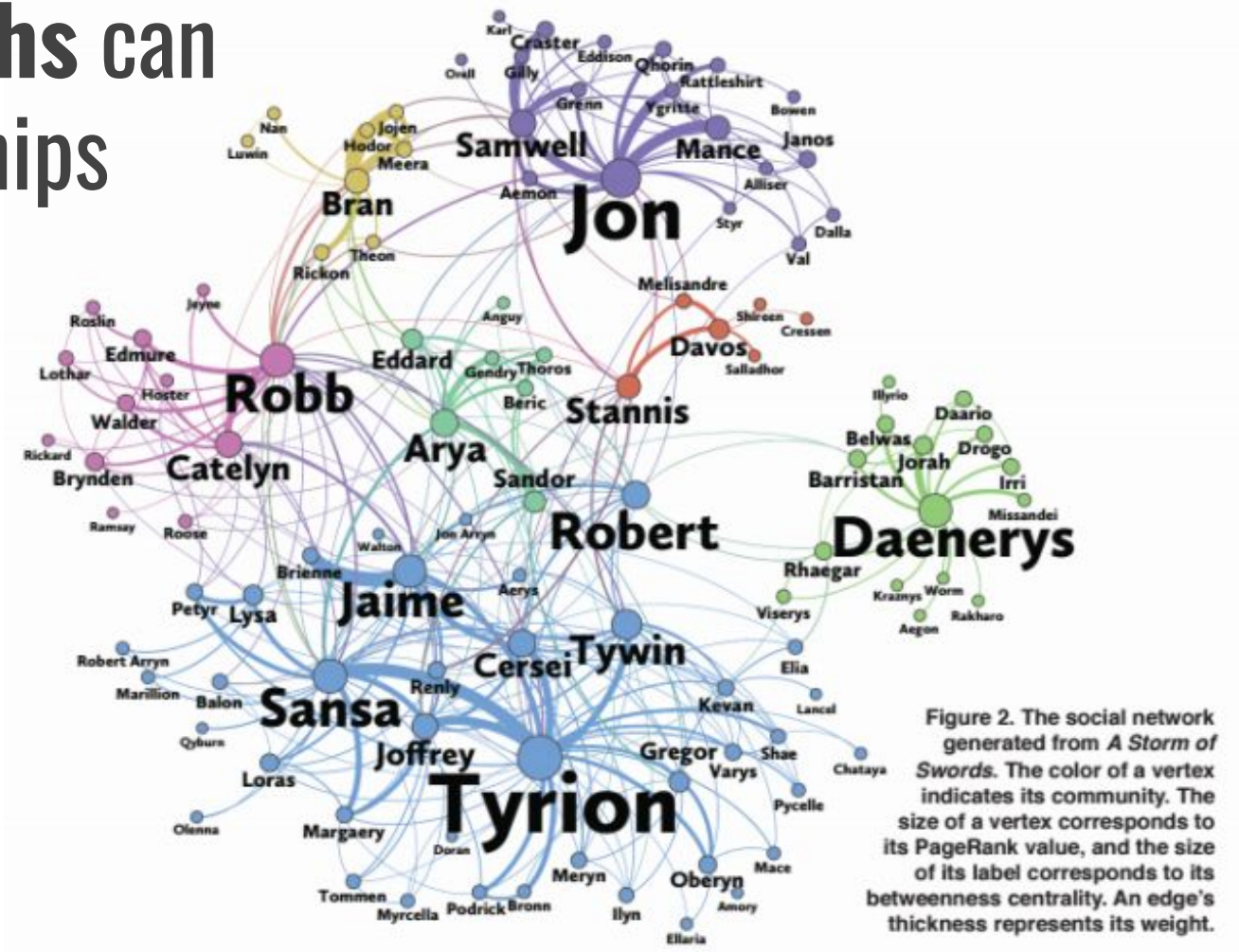


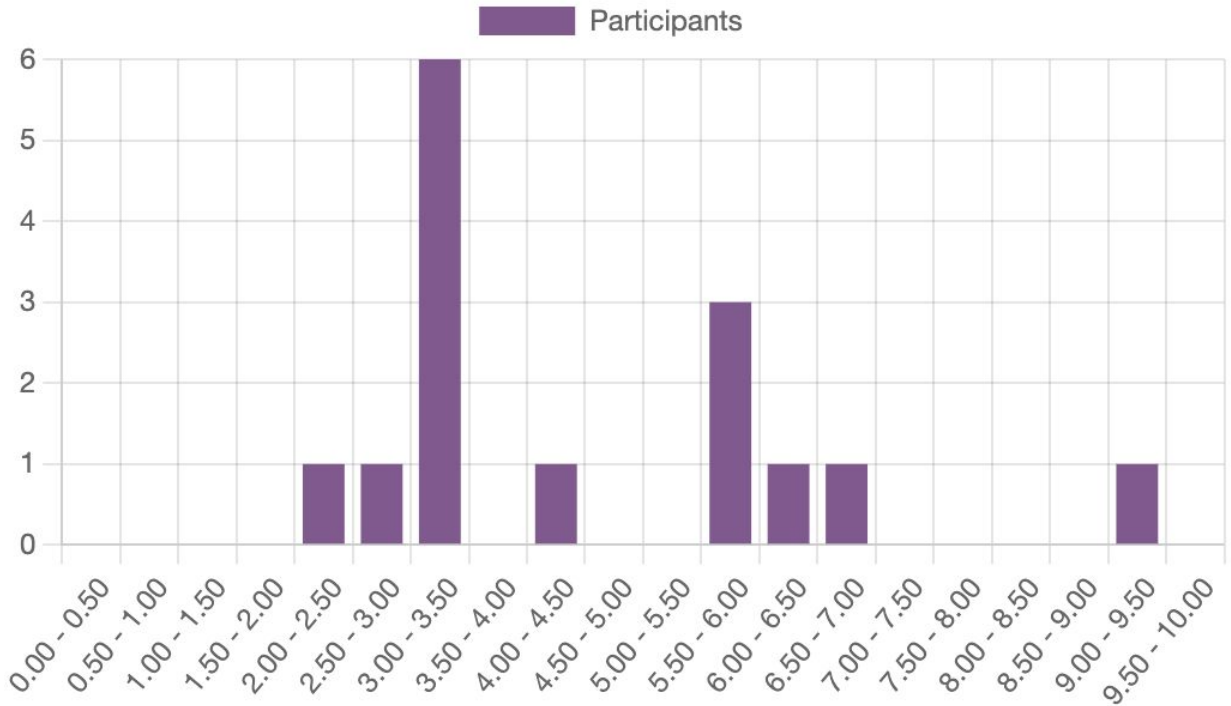
Figure 2. The social network generated from *A Storm of Swords*. The color of a vertex indicates its community. The size of a vertex corresponds to its PageRank value, and the size of its label corresponds to its betweenness centrality. An edge's thickness represents its weight.

[Source]

What chart would you use for…

- A story on the influencers with the biggest followings?
- A story about how much of NHS spending goes on mental health
- A story about the times when most goals are scored?
- A story about how teams buy success?

Here's how the quiz marks were *distributed*



Phones in flight mode again!

For the workshop: play around!
(It’s just to get you started)

Workshop

- Follow the steps in the brief on Moodle:
- Visualising Olympic medals data or
- Visualising stop and search data

THE FIFA WORLD RANKING
SINCE 2000
Spain
Germany
Netherlands
Brazil
Italy
Argentina
Croatia
England
Russia
Portugal
2009

https://public.flourish.studio/visualisation/10313817/

Datavis tools...

- Basic charts: Datawrapper, Flourish, Infogram, Highcharts
- Charts & infographics: Infogram, Piktochart
- Maps: Datawrapper, Flourish
- Network graphs: Kumu, Flourish, Gephi
- Word clouds: Wordle, Tagxedo
- Other: StoryMap JS, Timeline JS, Juxtapose JS, RAWGraphs.io

Think about your story

- Is your story about composition, or comparison, or relationships or distribution?
- What charts are you likely to use in your story to convey that?

Chart checklist 1:

- Colour: is there one clear point of focus (one highlight colour; others neutral)?
- Filtering: have you filtered to the top 10 (bar) or 5 (pie/line)?
- Have you turned off the legend if it's not needed?
- Have you converted numbers to percentages?
- Have you sorted from largest to smallest? (Clockwise on pie)
- Have you added credits

Chart(junk) checklist:

- Can anything be removed and the chart still work?
- “Could I do the same thing in another way? Maybe there’s a different method or an even better chart type to achieve a specific result.”
- “Does it have a purpose or does it just look good? Most chartjunk happens because we like to customize our charts to make them pop.”

Reference: Flourish (2024) We have to talk about chartjunk

https://medium.com/plotly/maximizing-the-data-ink-ratio-in-dashboards-and-slide-deck-7887f7c1fab

Text checklist:

- Title: does it tell a story?
- Secondary text (subtitle/further text): add extra context
- Are axes or data points labelled?
- Footers with details on the source data and any caveats
- Any annotations highlighting particular points
- An alternative description for users who cannot see the chart

10th Annual
Adobe 99U
Conference

Using in a story: dos and don’ts

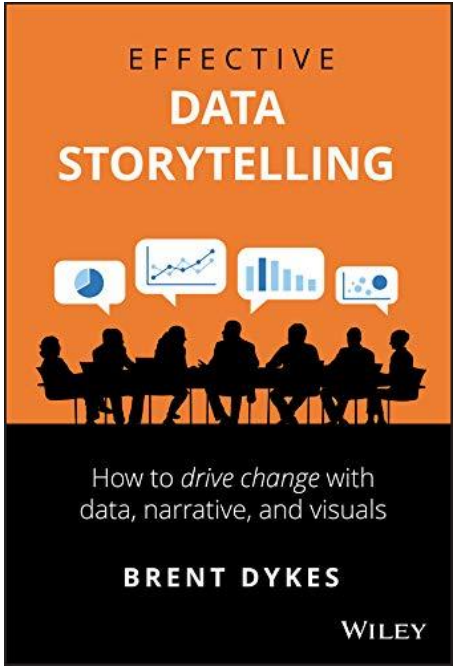
- DON’T refer to the chart in your story - treat it like a photo
- DON’T write “as you can see” or “this chart shows”
- DON’T mix measures (e.g. percentages and totals)
- DO check that the chart shows what it says
- DO check that it’s clear what is being measured
- DO replace lots of numbers in the story with a chart instead

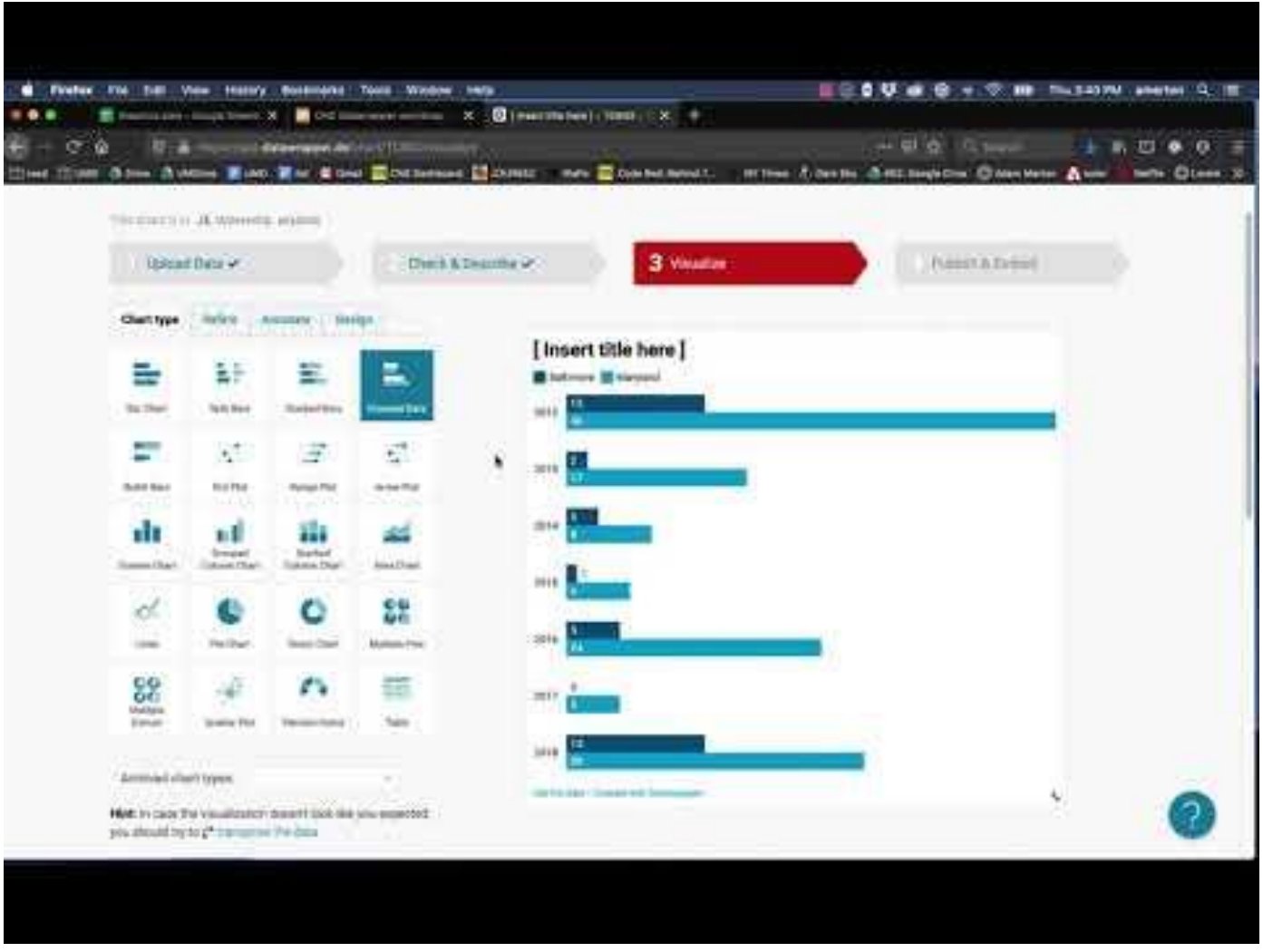
Key points to remember

- Decide what story you are telling — choose the chart that tells it
- Is it explanatory (the chart tells the story) — or exploratory? (The user is invited to find their own story)
- Spend time on colour, scale and text.

Directed study

- Read: Effective Data Storytelling ch7 (1 hour max)
- 4 hours: Create at least one story using visualisation (use the data provided, or other data you find) - it can be a thread, carousel or short article (keep it simple)
- Share the results on Moodle - and explore others




Upload Data
Check & Describe
3 Visualize
Chart type
[Insert title here]

https://help.flourish.studio/article/180-how-to-add-annotations-to-your-visualization