

An introduction to data visualisation

James Akers, Wednesday 6 October 2021




Digital Culture
Network



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digitalculturenetwork.org.uk



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ENGLAND

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About

Knowledge Hub

We've created resources and advice for you to use during the COVID-19 lockdown.

Read More

Digital skills for the arts

Welcome to your Digital Culture Network

We are here to develop your organisation's digital skills. Working across the arts and culture sector, the Network is led by nine specialist Tech Champions. We want you to be a part of it.

Browse our Knowledge Hub



Knowledge Hub



Beginner Read
Video and Digital Content

Podcasting and how to get started

This resource provides information and advice on making podcasts. As well as considerations for generating content, it contains guidance on hardware, software, and distribution methods.

 Marc Burns · 2 months ago



Beginner Read
Social Media

Engaging Audiences with Social Media

Whilst your audiences, participants or stakeholders may not be able to engage with you physically at the moment, you can still reach people through social media.

 Haydn Corrodus · 2 months ago



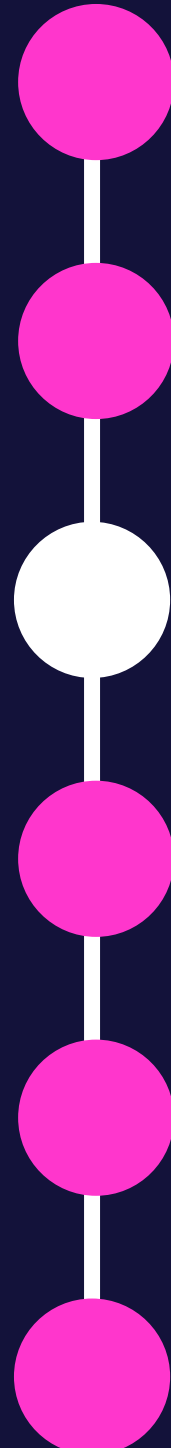
Beginner Read
Social Media

Introduction to Social Media

Social media is a unique and powerful way to help your organisation thrive and engage with your audience. Read on to find out more.

 Haydn Corrodus · 4 months ago

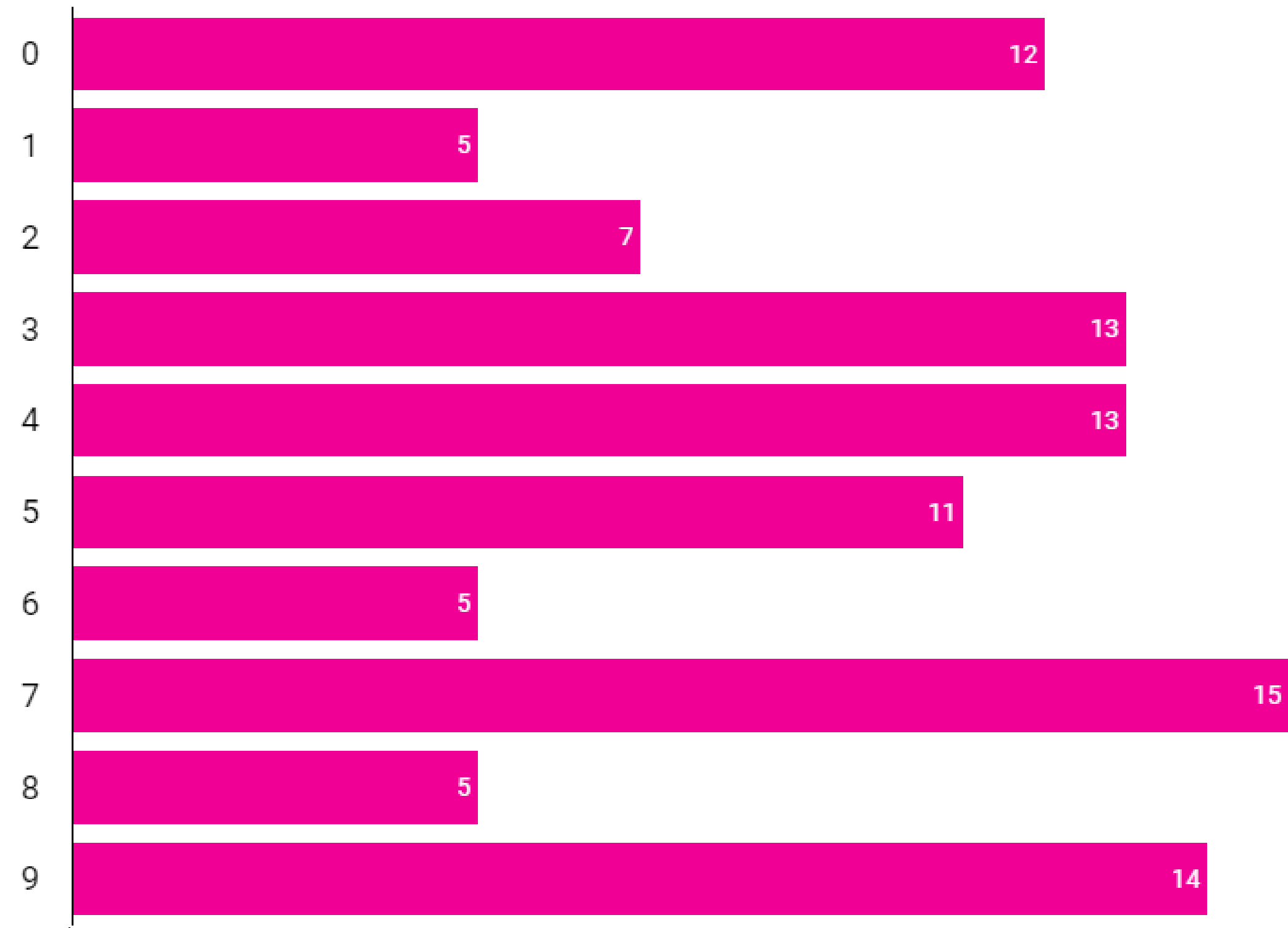


- 
- Exploratory visualisations
 - Preattentive attributes
 - [Short break]
 - Explanatory visualisations
 - Tools and further reading
 - Q&A

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9507393332432536940879753500836984
49752270711265080951445773204773

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

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



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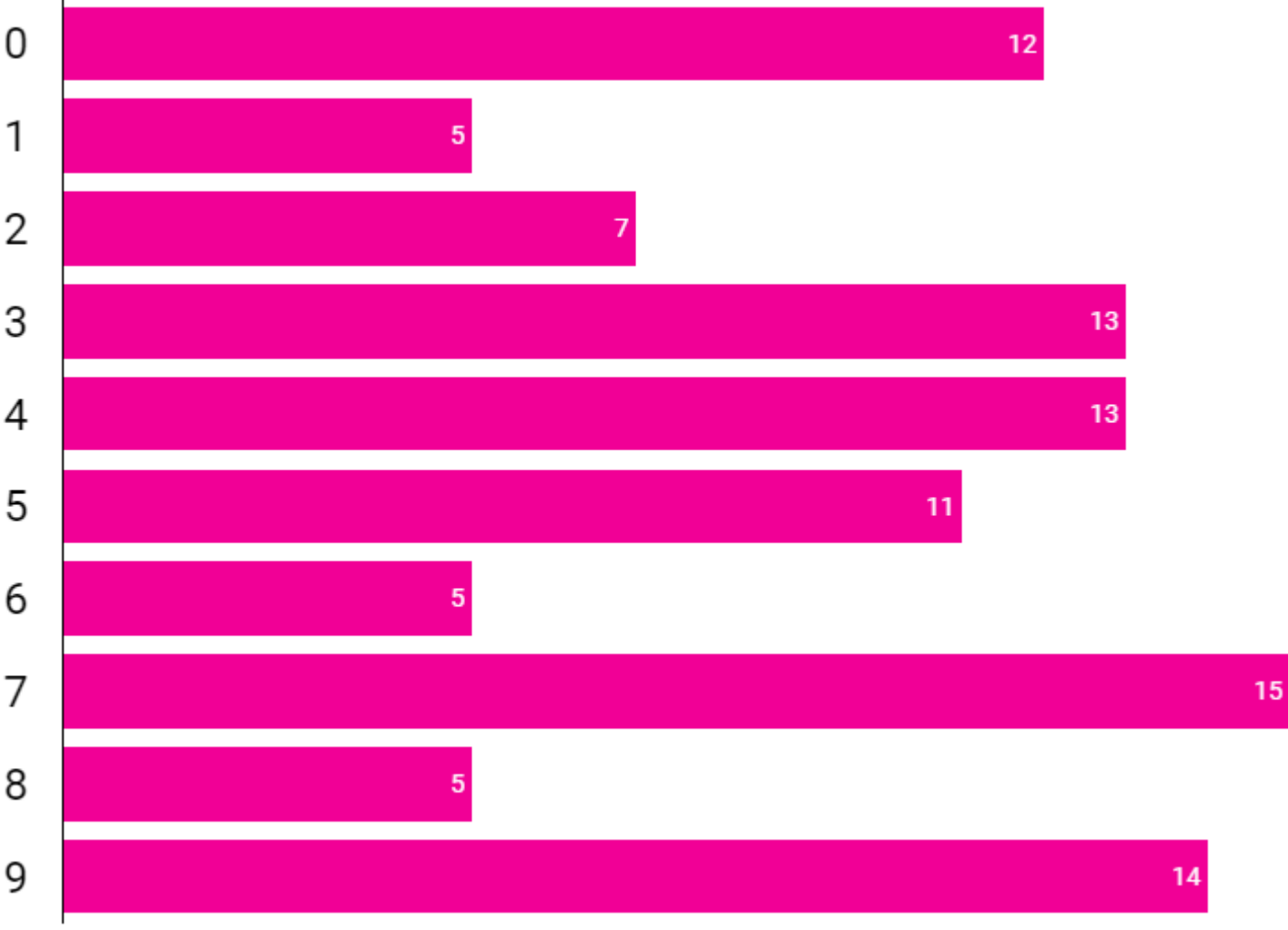
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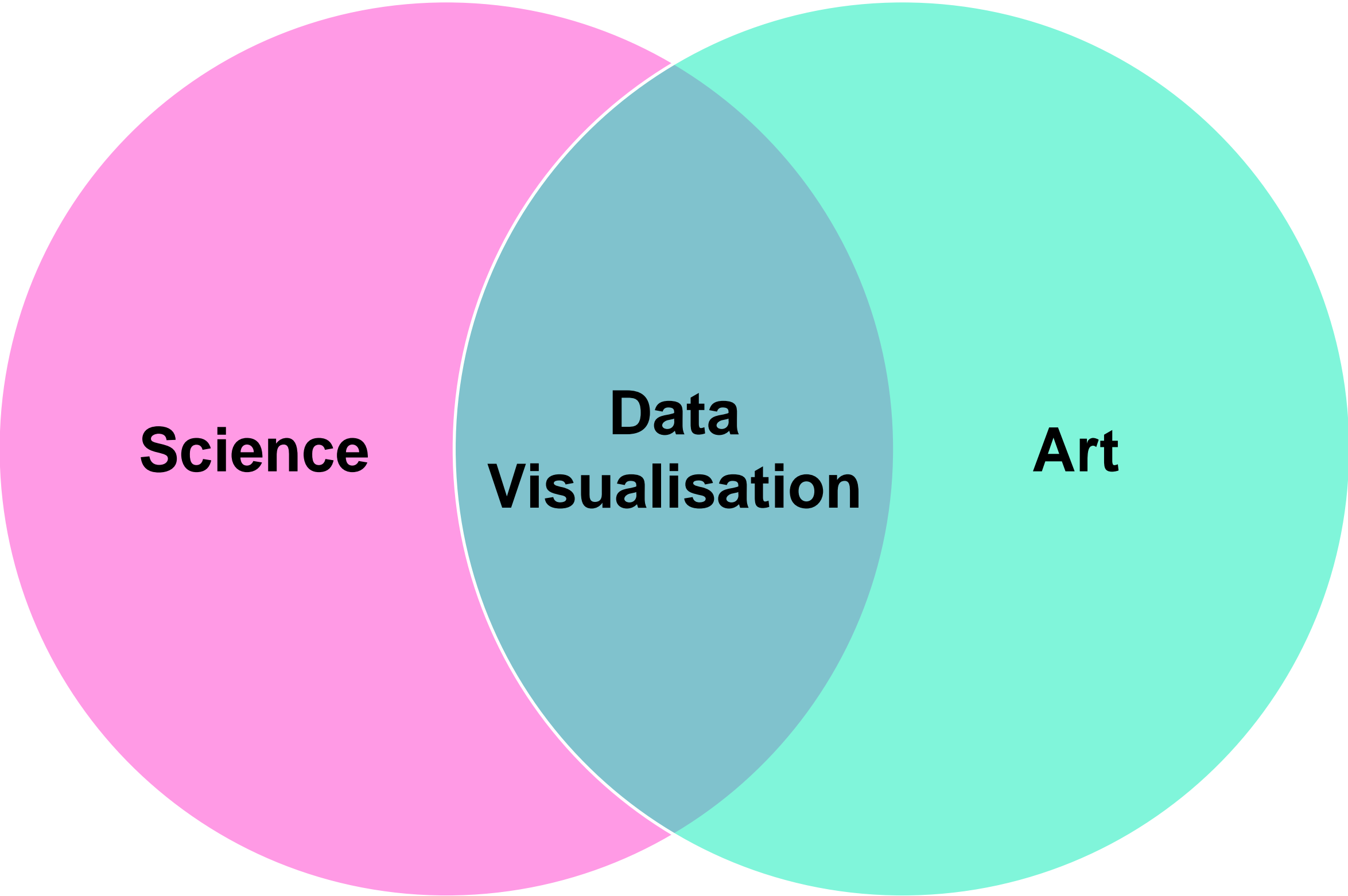
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9	4	5	0	9	5	0	7	3	9
3	3	3	2	4	3	2	5	3	6
9	4	0	8	7	9	7	5	3	5
0	0	8	3	6	9	8	4	4	9
7	5	2	2	7	0	7	1	1	2
6	5	0	8	0	9	5	1	4	4
5	7	7	3	2	0	4	7	7	3

Colour

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

Length

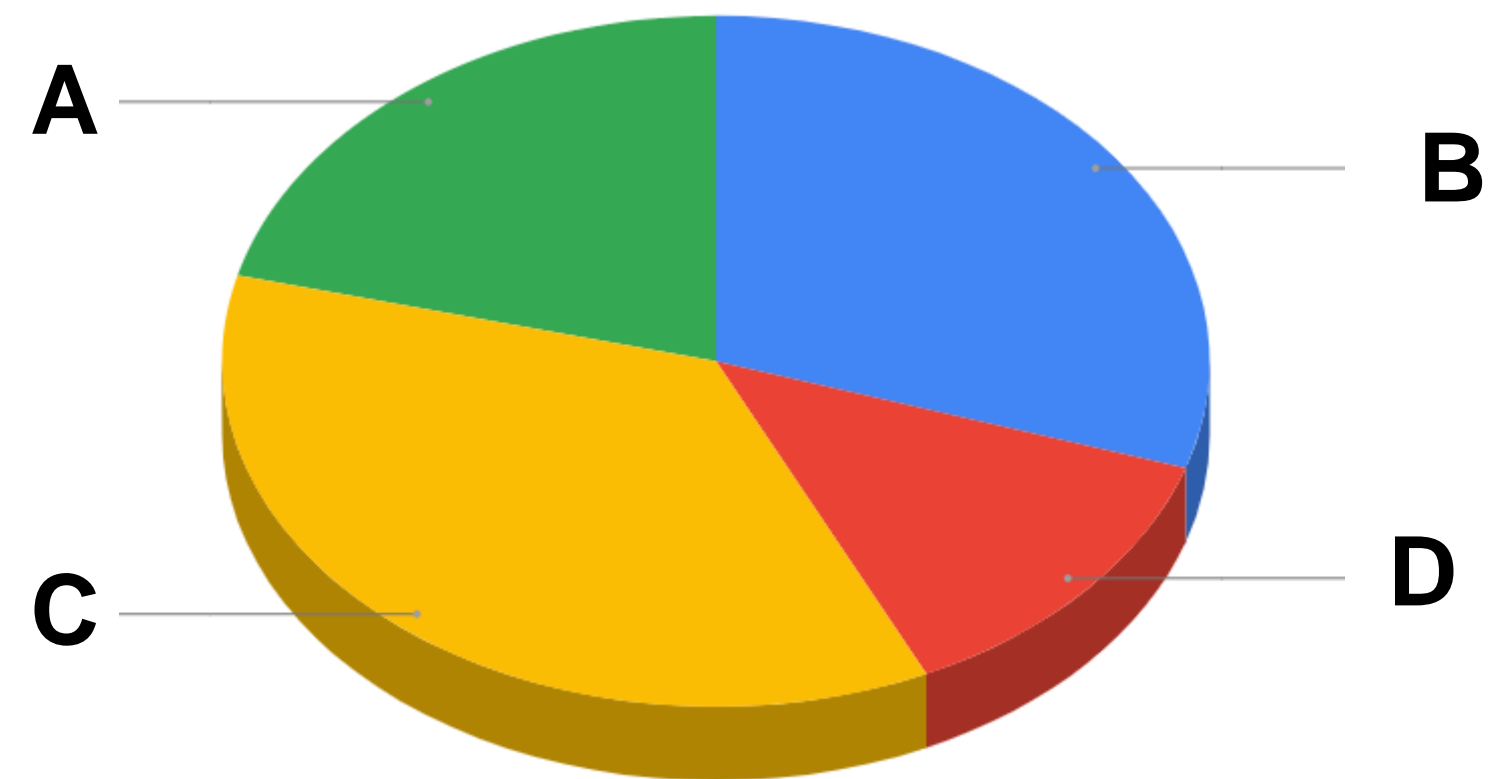




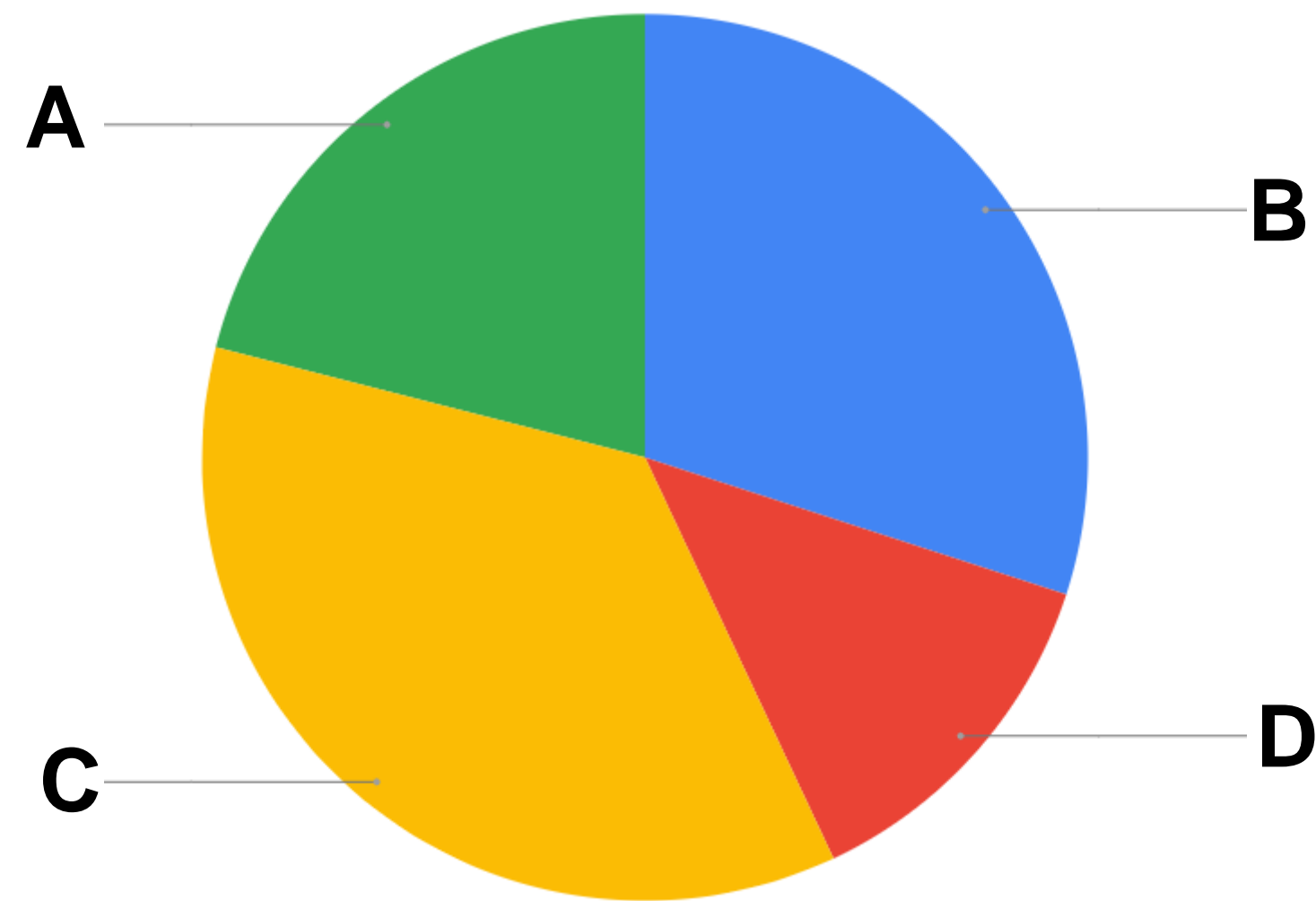
Exploratory visualisations

Month	Shop Orders Received	Shop Orders Processed
January	103	102
February	120	118
March	90	89
April	95	95
May	102	103
June	107	102
July	105	100
August	92	82
September	89	79
October	95	75
November	130	100
December	150	120

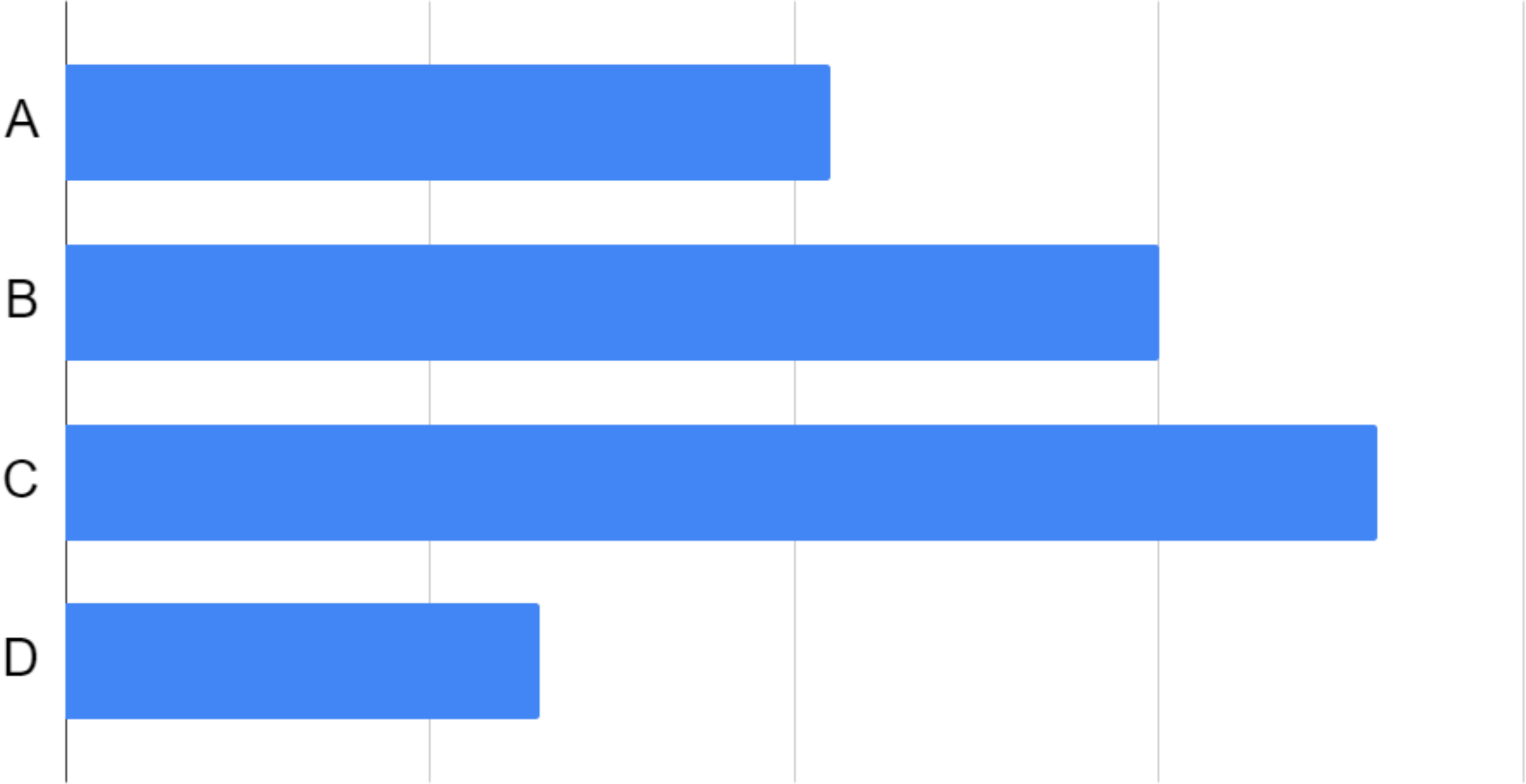
Which is bigger, B or C?



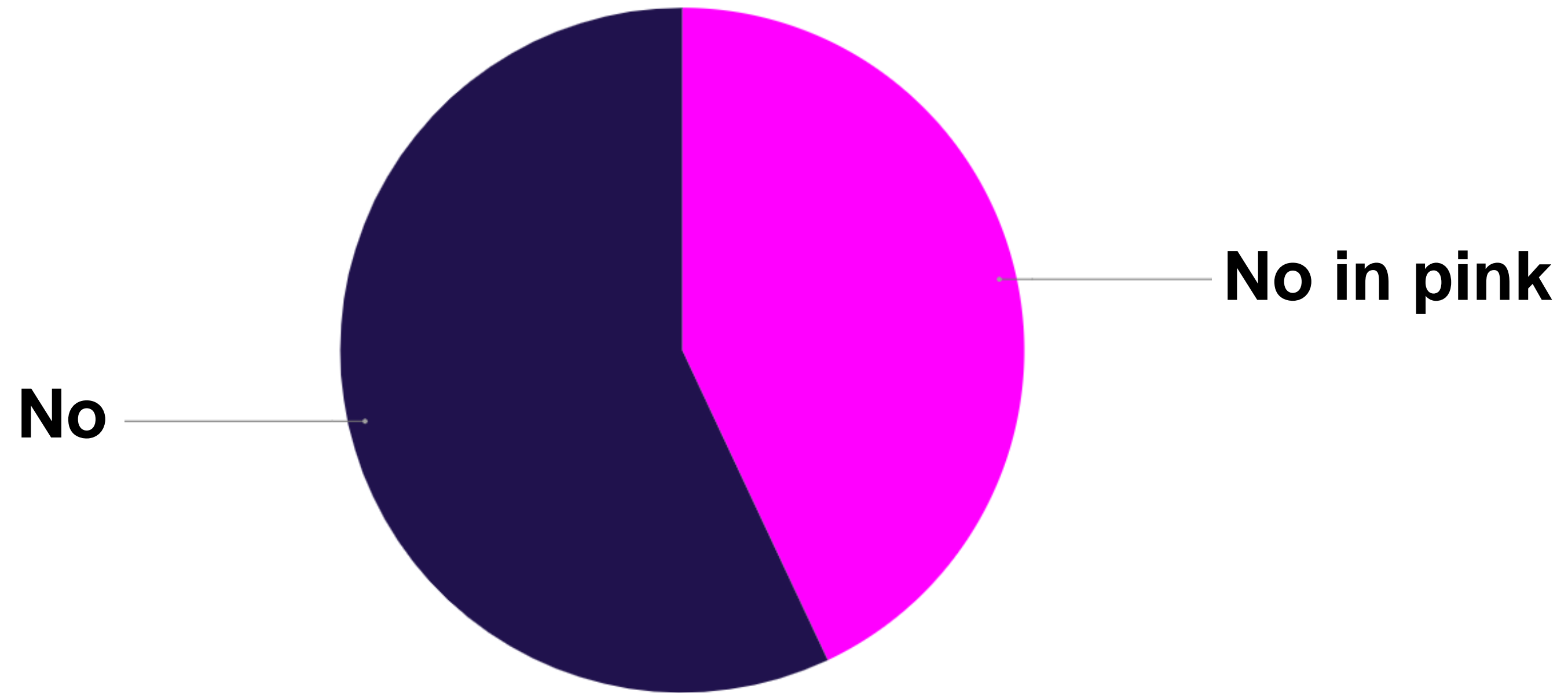
Which is bigger, B or C?



Which is bigger, B or C?

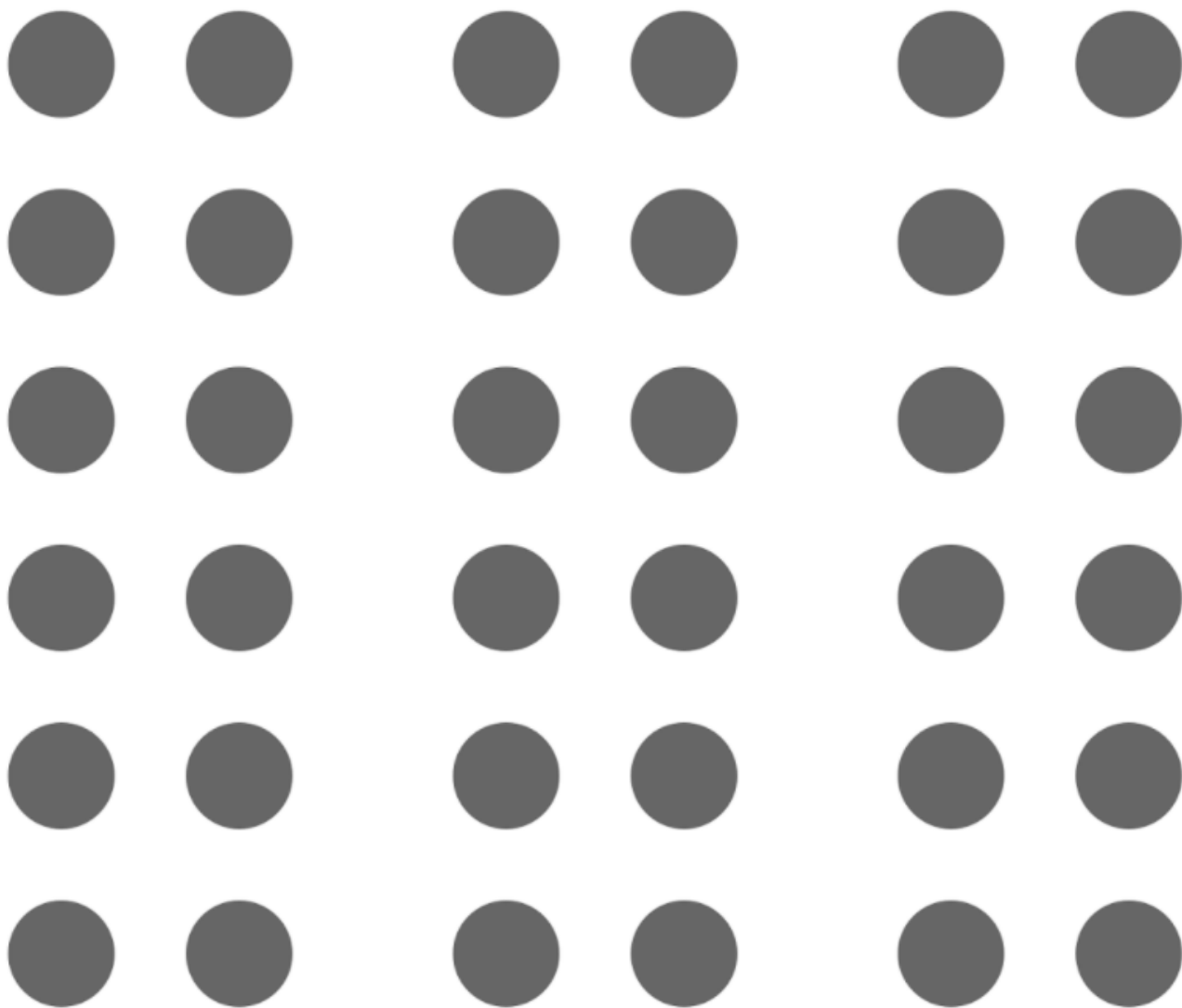
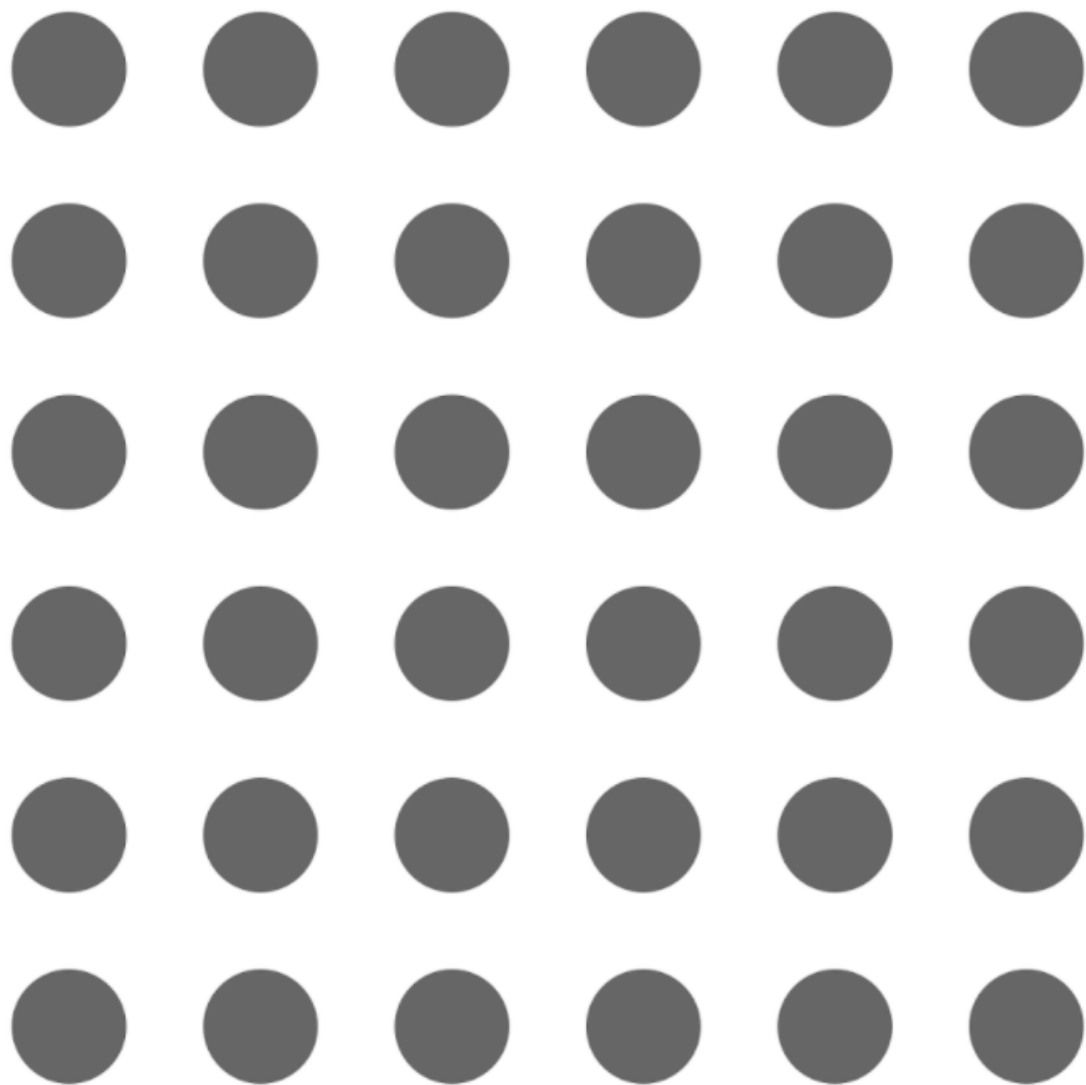


Should I use a pie chart?



Preattentive attributes

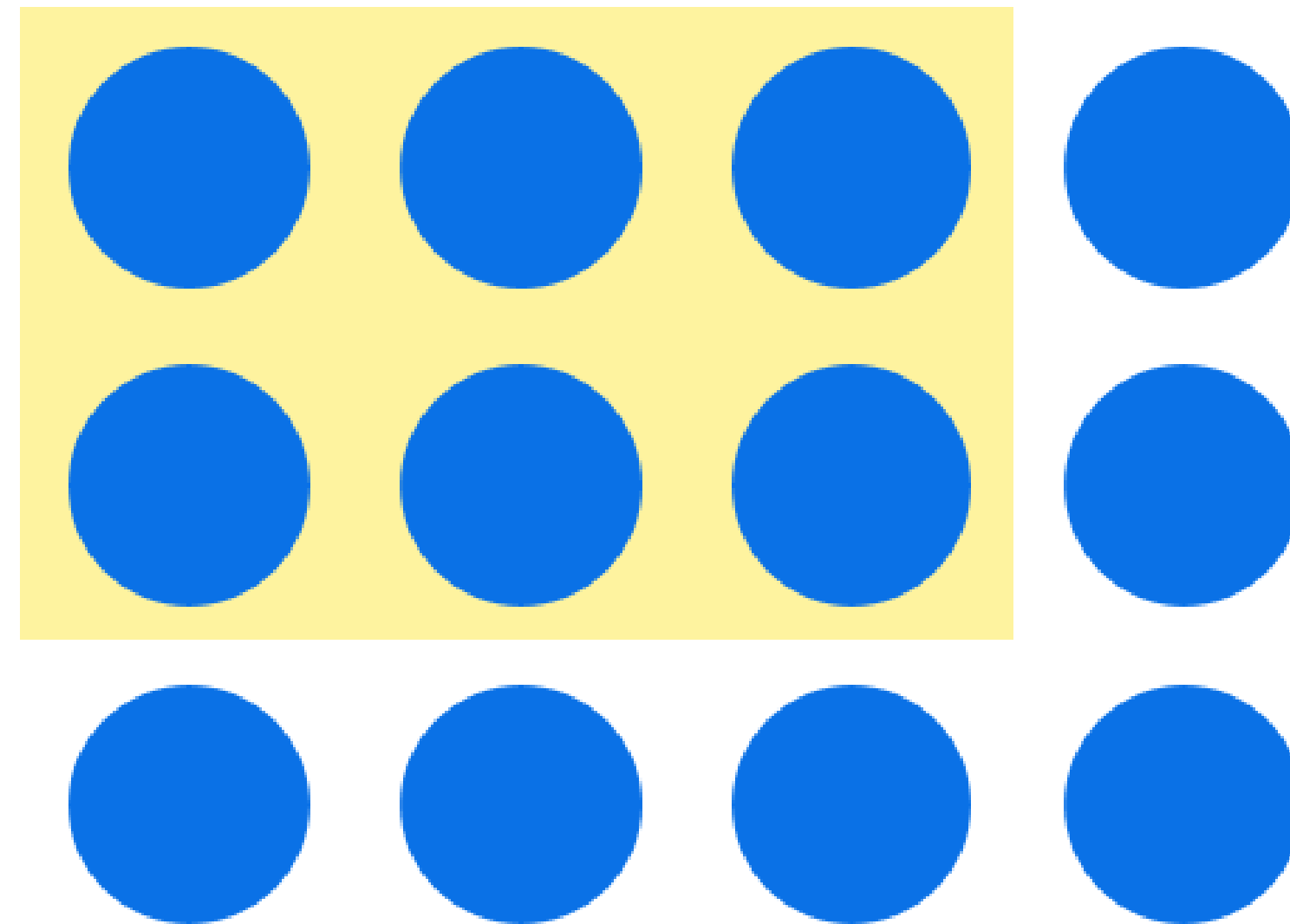
Proximity



Similarity



Enclosure



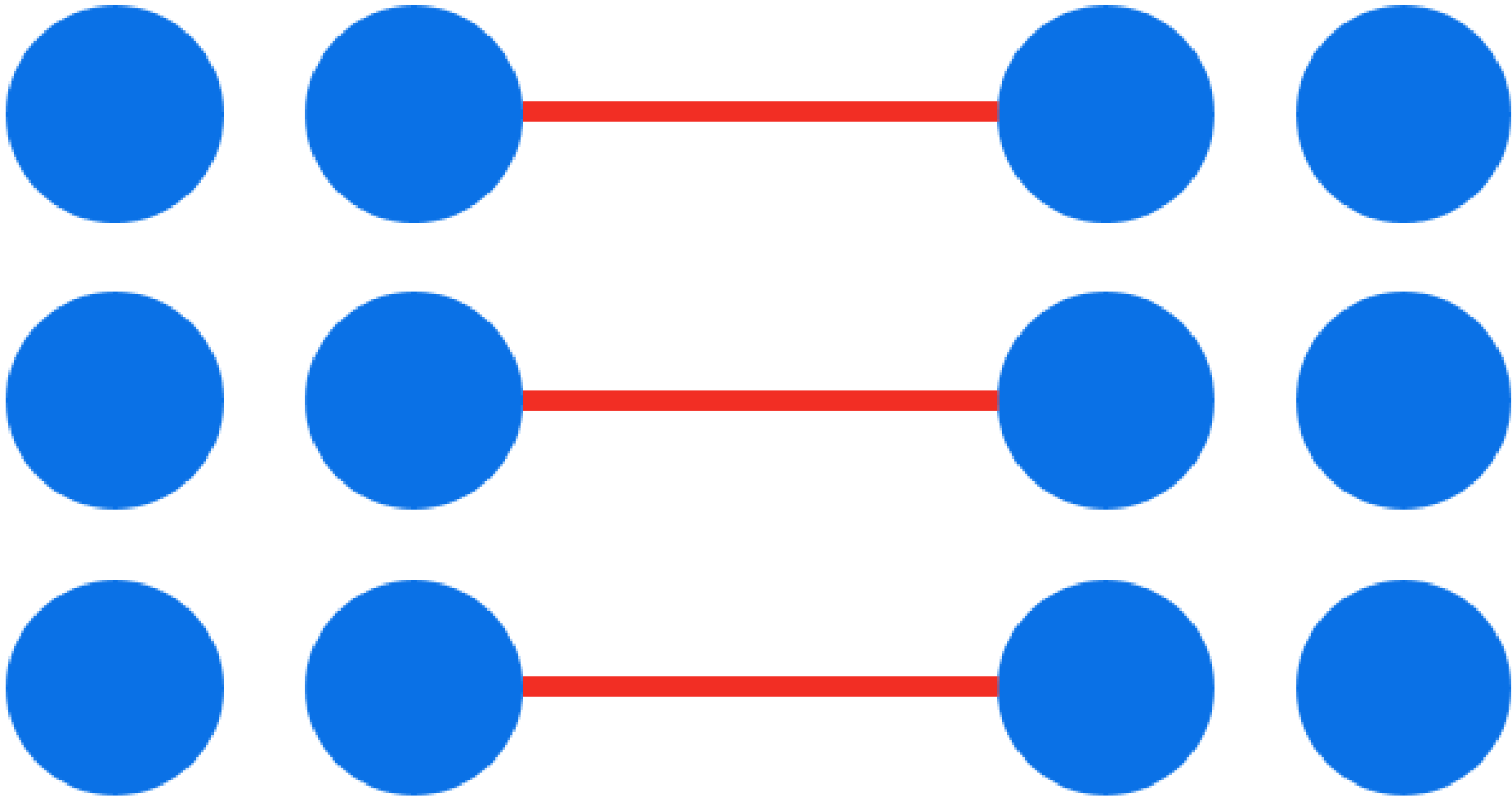
Closure



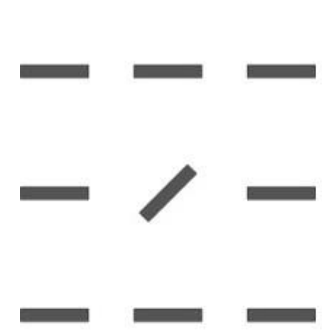
Continuity



Connection



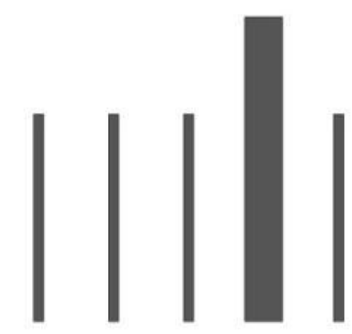
Preattentive attributes



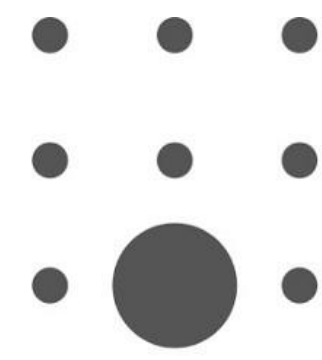
Orientation



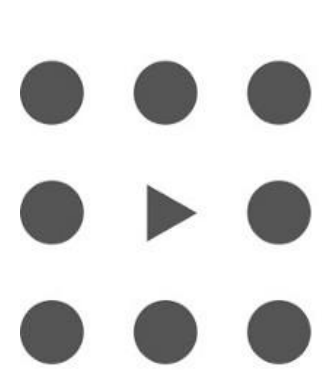
Length



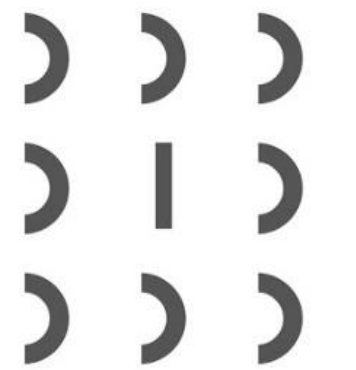
Width



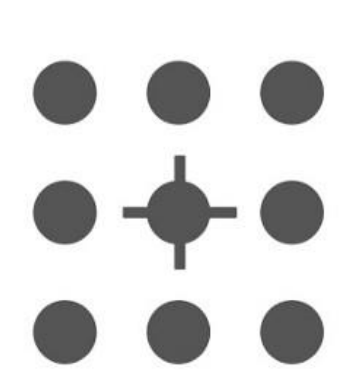
Size



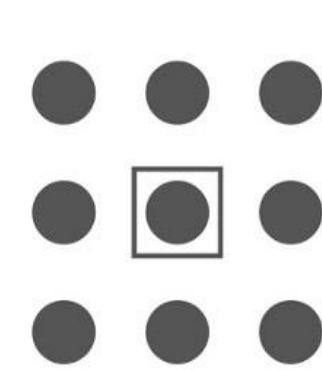
Shape



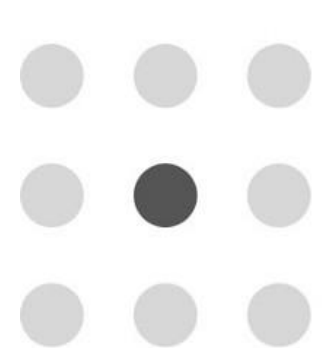
Curvature



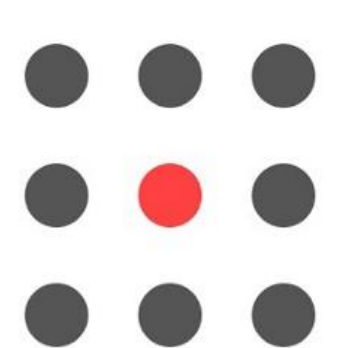
Added Marks



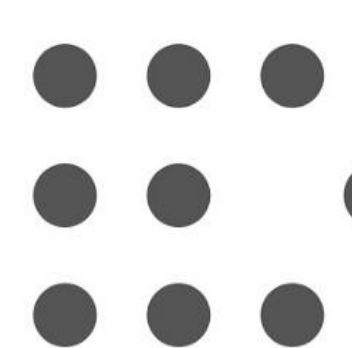
Enclosure



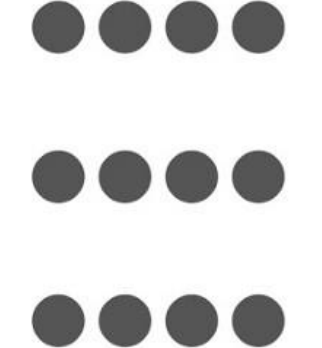
Contrast



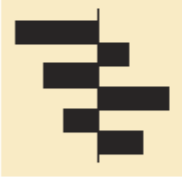
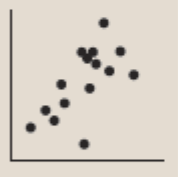


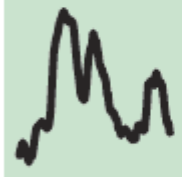





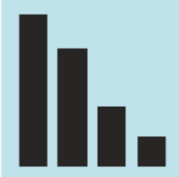
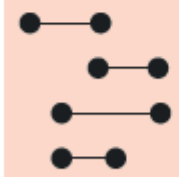



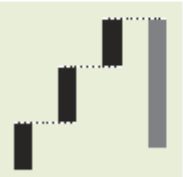








Colour



Position

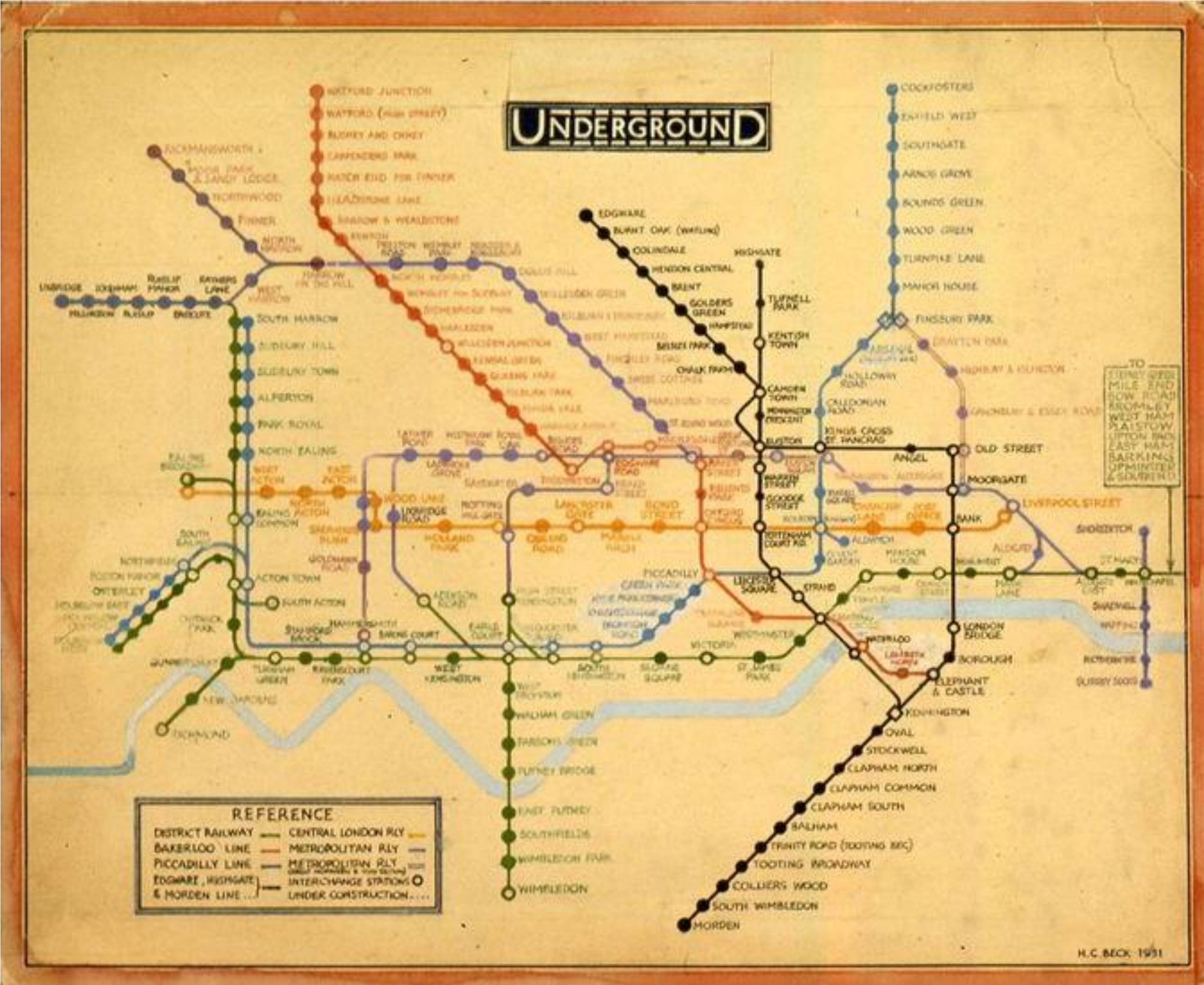


Spatial Grouping

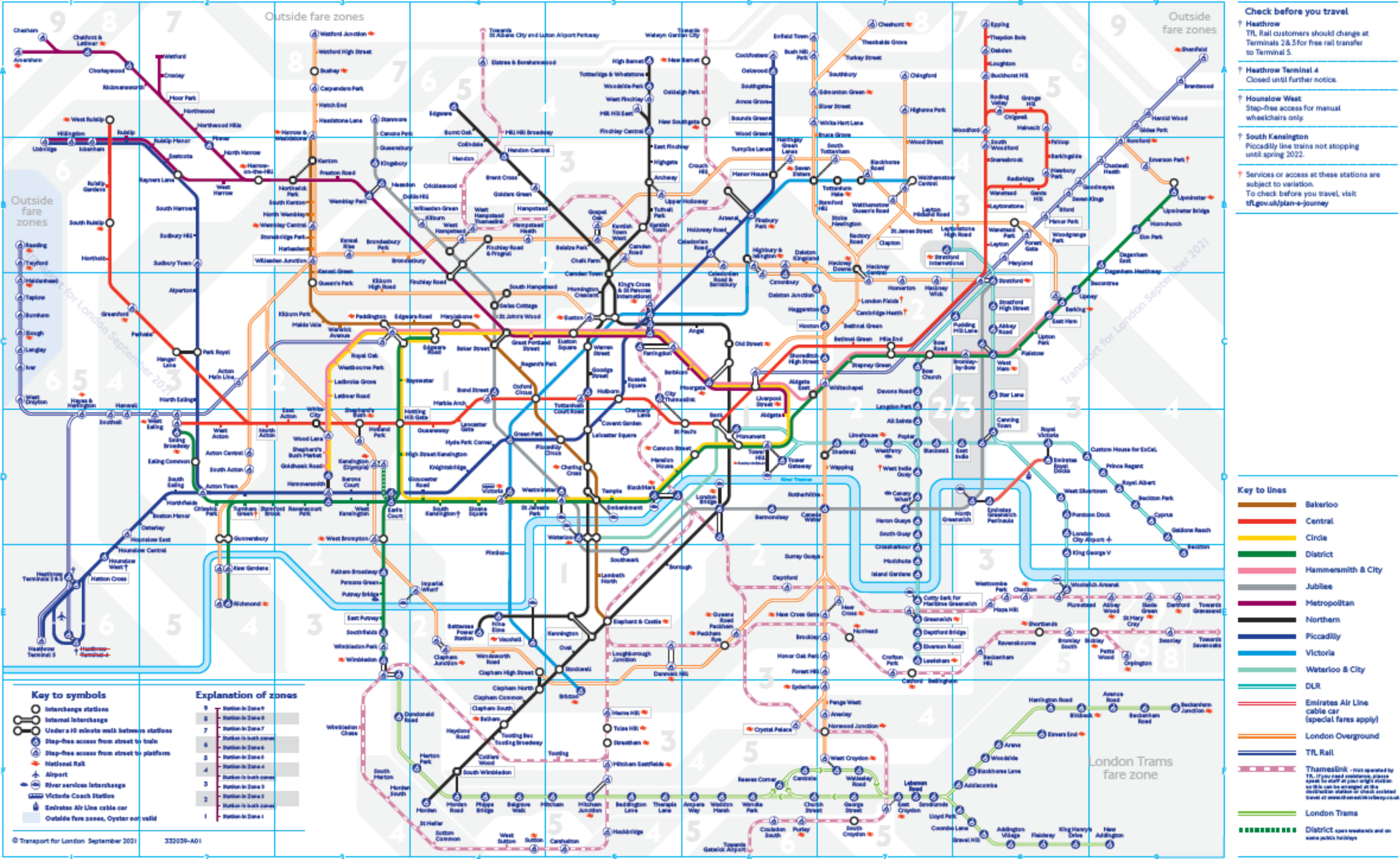
Deviation	Correlation	Ranking	Distribution	Change over Time	Magnitude	Spatial	Flow
<p>Emphasise variations (+/-) from a fixed reference point. Typically the reference point is zero but it can also be a target or a long-term average. Can also be used to show sentiment (positive/neutral/negative).</p> <p>Example FT uses Trade surplus/deficit, climate change</p>	<p>Show the relationship between two or more variables. Be mindful that, unless you tell them otherwise, many readers will assume the relationships you show them to be causal (i.e. one causes the other).</p> <p>Example FT uses Inflation and unemployment, income and life expectancy</p>	<p>Use where an item's position in an ordered list is more important than its absolute or relative value. Don't be afraid to highlight the points of interest.</p> <p>Example FT uses Wealth, deprivation, league tables, constituency election results</p>	<p>Show values in a dataset and how often they occur. The shape (or 'skew') of a distribution can be a memorable way of highlighting the lack of uniformity or equality in the data.</p> <p>Example FT uses Income distribution, population (age/sex) distribution, revealing inequality</p>	<p>Give emphasis to changing trends. These can be short (intra-day) movements or extended series traversing decades or centuries: Choosing the correct time period is important to provide suitable context for the reader.</p> <p>Example FT uses Share price movements, economic time series, sectoral changes in a market</p>	<p>Show size comparisons. These can be relative (just being able to see larger/bigger) or absolute (need to see fine differences). Usually these show a 'counted' number (for example, barrels, dollars or people) rather than a calculated rate or per cent.</p> <p>Example FT uses Commodity production, market capitalisation, volumes in general</p>	<p>Aside from locator maps only used when precise locations or geographical patterns in data are more important to the reader than anything else.</p> <p>Example FT uses Population density, natural resource locations, natural disaster risk/impact, catchment areas, variation in election results</p>	<p>Show the reader volumes or intensity of movement between two or more states or conditions. These might be logical sequences or geographical locations.</p> <p>Example FT uses Movement of funds, trade, migrants, lawsuits, information; relationship graphs.</p>
<p>Diverging bar</p>  <p>A simple standard bar chart that can handle both negative and positive magnitude values.</p>	<p>Scatterplot</p>  <p>The standard way to show the relationship between two continuous variables, each of which has its own axis.</p>	<p>Ordered bar</p>  <p>Standard bar charts display the ranks of values much more easily when sorted into order.</p>	<p>Histogram</p>  <p>The standard way to show a statistical distribution - keep the gaps between columns small to highlight the 'shape' of the data.</p>	<p>Line</p>  <p>The standard way to show a changing time series. If data are irregular, consider markers to represent data points.</p>	<p>Column</p>  <p>The standard way to compare the size of things. Must always start at 0 on the axis.</p>	<p>Basic choropleth (rate/ratio)</p>  <p>The standard approach for putting data on a map - should always be rates rather than totals and use a sensible base geography.</p>	<p>Sankey</p>  <p>Shows changes in flows from one condition to at least one other; good for tracing the eventual outcome of a complex process.</p>
<p>Diverging stacked bar</p>  <p>Perfect for presenting survey results which involve sentiment (eg disagree/neutral/agree).</p>	<p>Column + line timeline</p>  <p>A good way of showing the relationship between an amount (columns) and a rate (line).</p>	<p>Ordered column</p>  <p>See above.</p>	<p>Dot plot</p>  <p>A simple way of showing the change or range (min/max) of data across multiple categories.</p>	<p>Column</p>  <p>Columns work well for showing change over time - but usually best with only one series of data at a time.</p>	<p>Bar</p>  <p>See above. Good when the data are not time series and labels have long category names.</p>	<p>Proportional symbol (count/magnitude)</p>  <p>Use for totals rather than rates - be wary that small differences in data will be hard to see.</p>	<p>Waterfall</p>  <p>Designed to show the sequencing of data through a flow process, typically budgets. Can include +/- components.</p>
<p>Spline</p>  <p>Splits a single value into two contrasting components (eg male/female).</p>	<p>Connected scatterplot</p>  <p>Usually used to show how the relationship between 2 variables has changed over time.</p>	<p>Ordered proportional symbol</p>  <p>Use when there are big variations between values and/or seeing fine differences between data is not so important.</p>	<p>Dot strip plot</p>  <p>Good for showing individual values in a distribution, can be a problem when too many dots have the same value.</p>	<p>Column + line timeline</p>  <p>A good way of showing the relationship over time between an amount (columns) and a rate (line).</p>	<p>Paired column</p>  <p>As per standard column but allows for multiple series. Can become tricky to read with more than 2 series.</p>	<p>Flow map</p>  <p>For showing unambiguous movement across a map.</p>	<p>Chord</p>  <p>A complex but powerful diagram which can illustrate 2-way flows (and net winner) in a matrix.</p>

Time for a short break 
3 minutes

Explanatory visualisations



Tube map



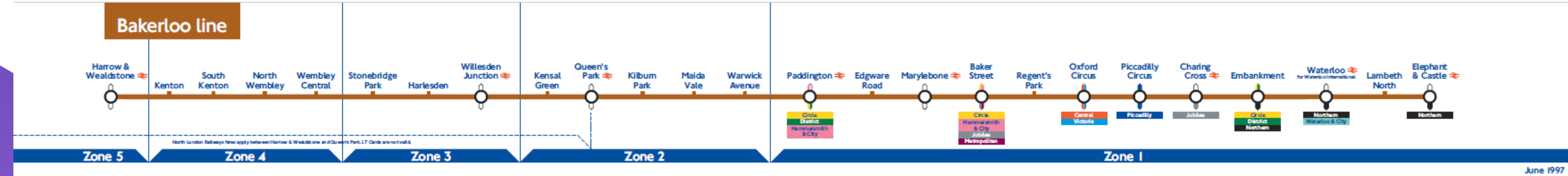
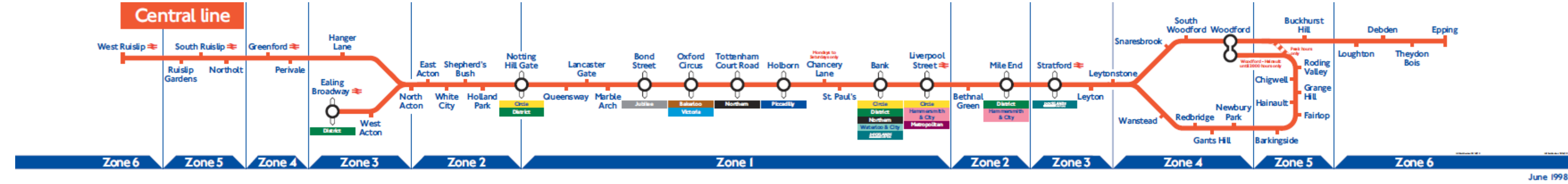
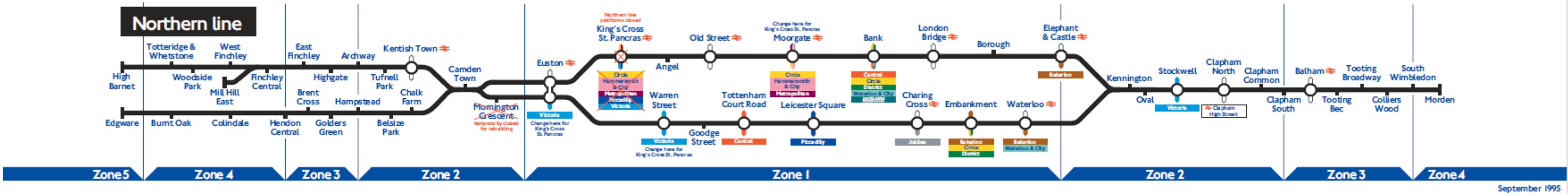


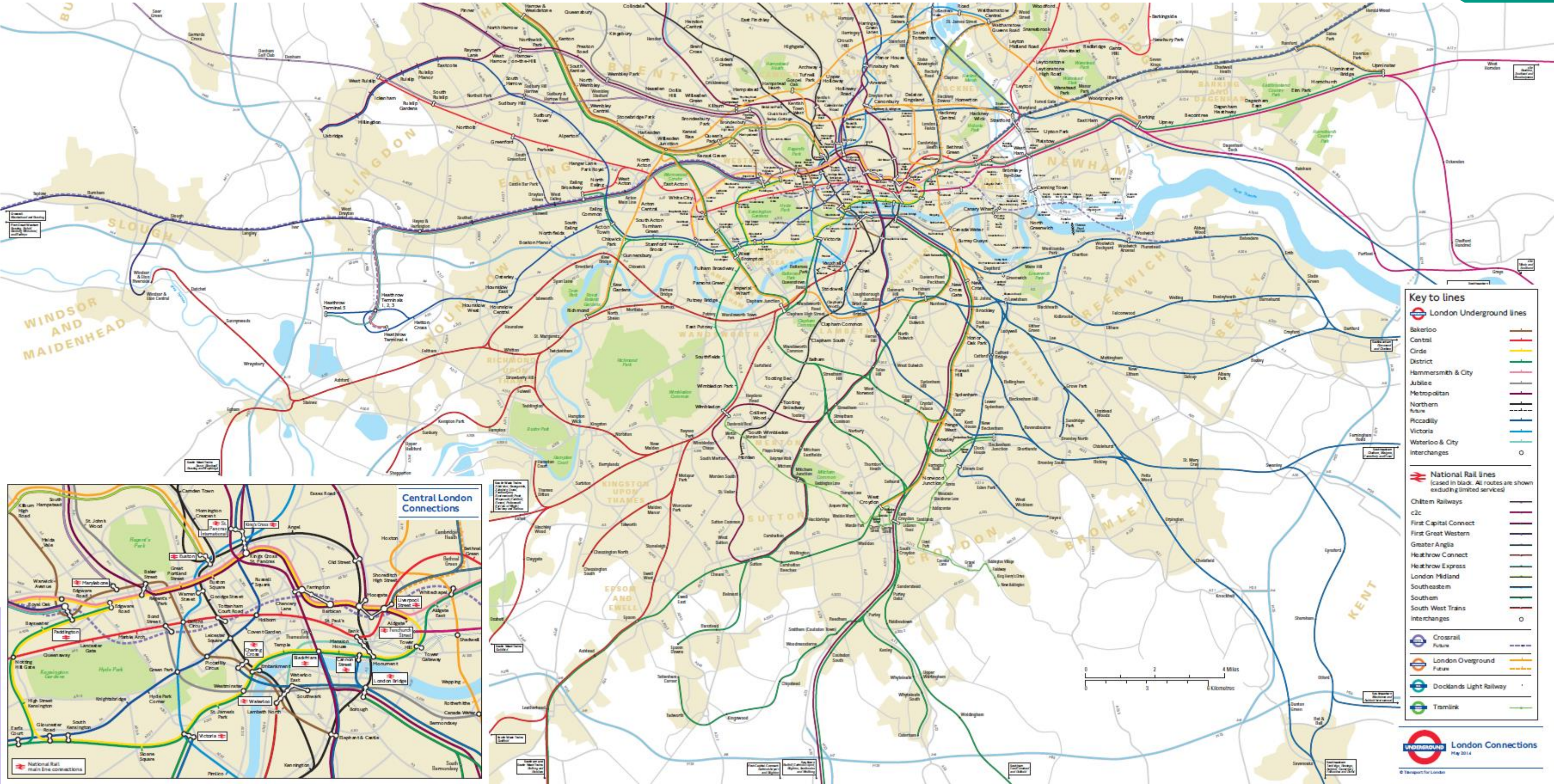
Elizabeth line
 ← Eastbound platform A



Elizabeth line
 Westbound platform B →

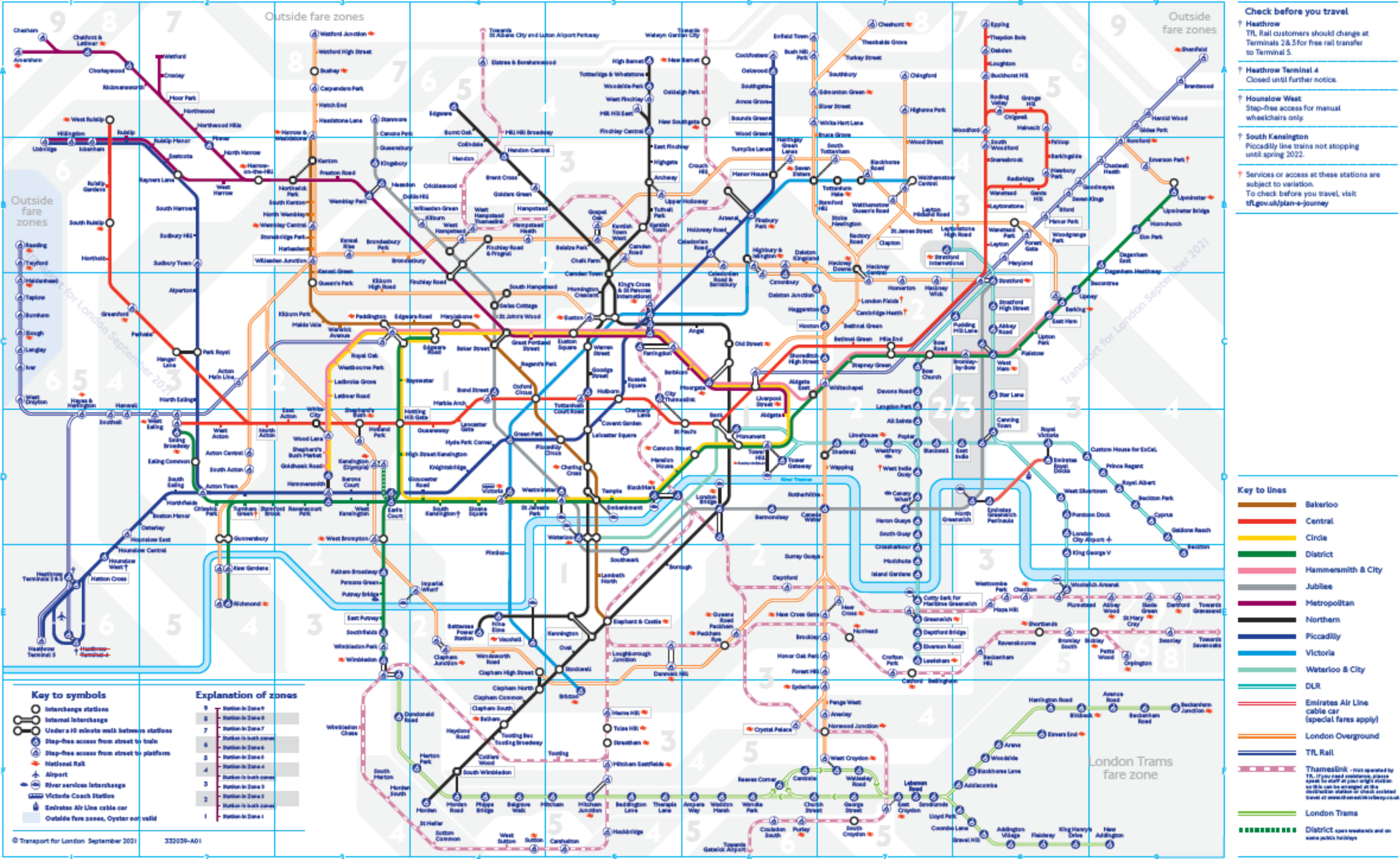








Tube map

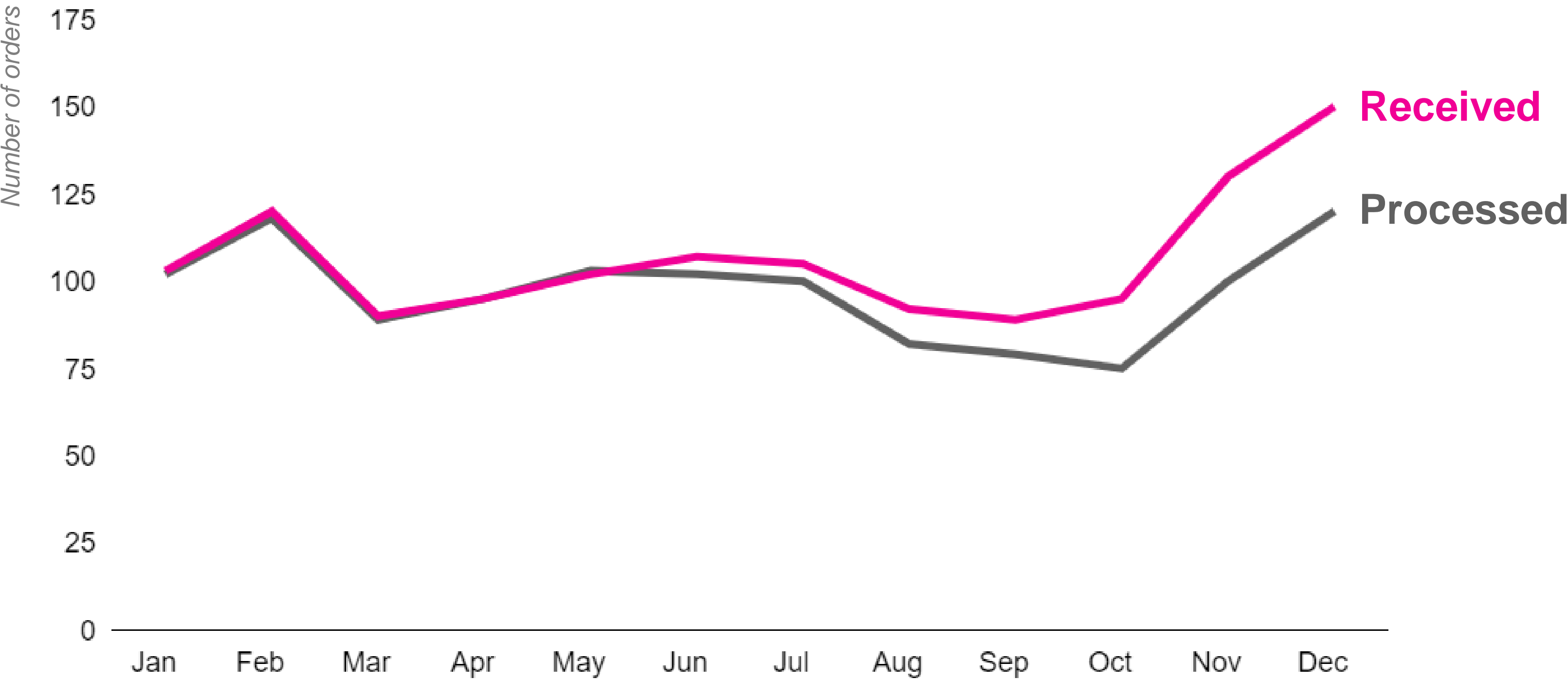




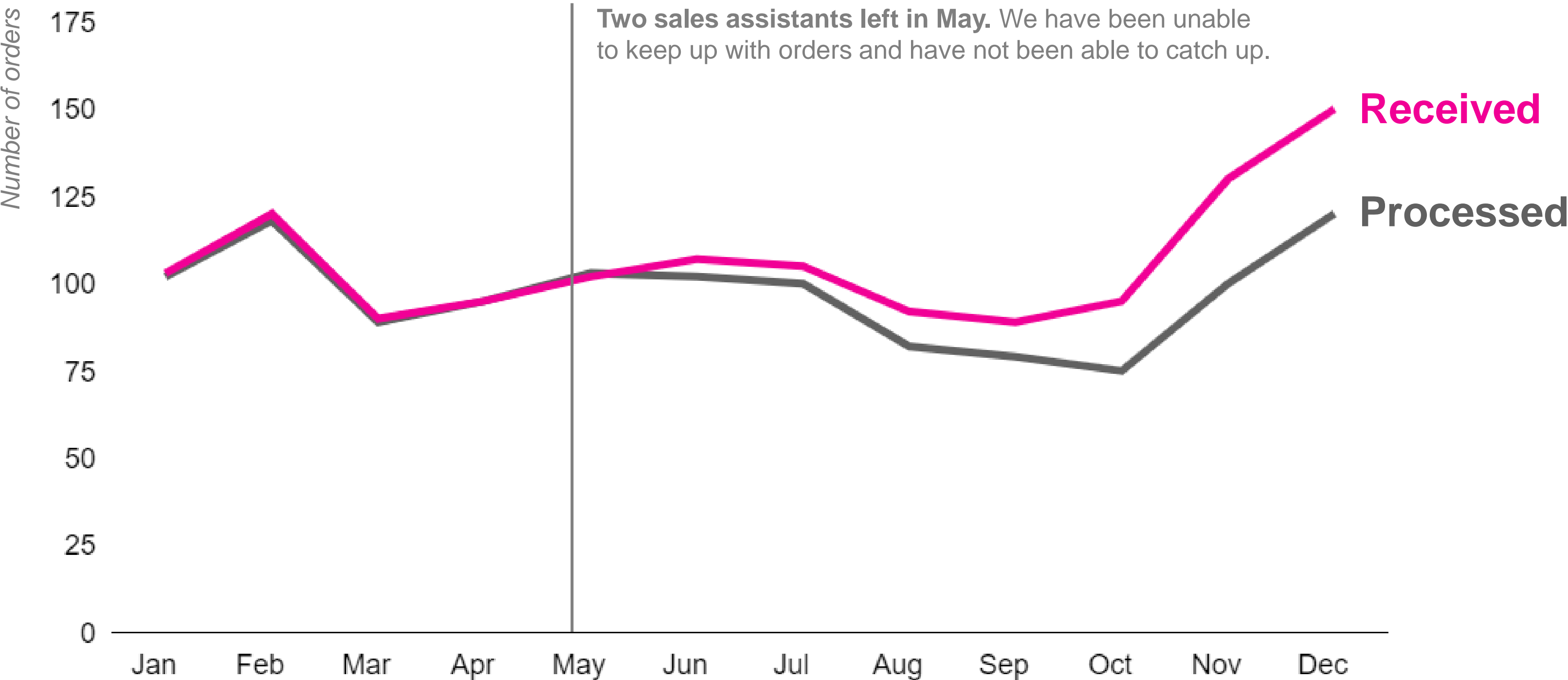
The life of an ~~artist~~. analyst.

Month	Shop Orders Received	Shop Orders Processed
January	103	102
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May	102	103
June	107	102
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Shop sales over time



Shop sales over time

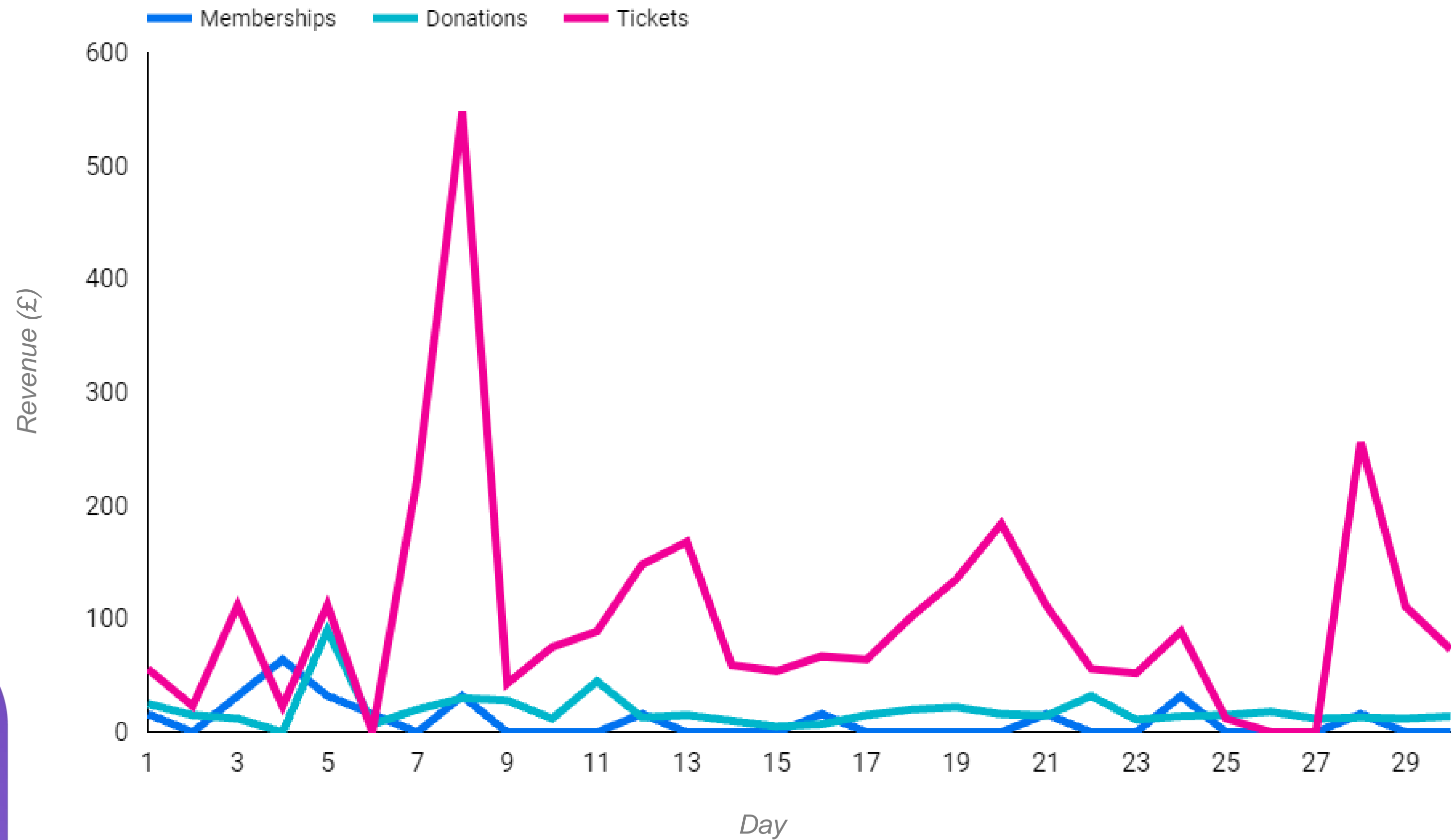


Focus attention

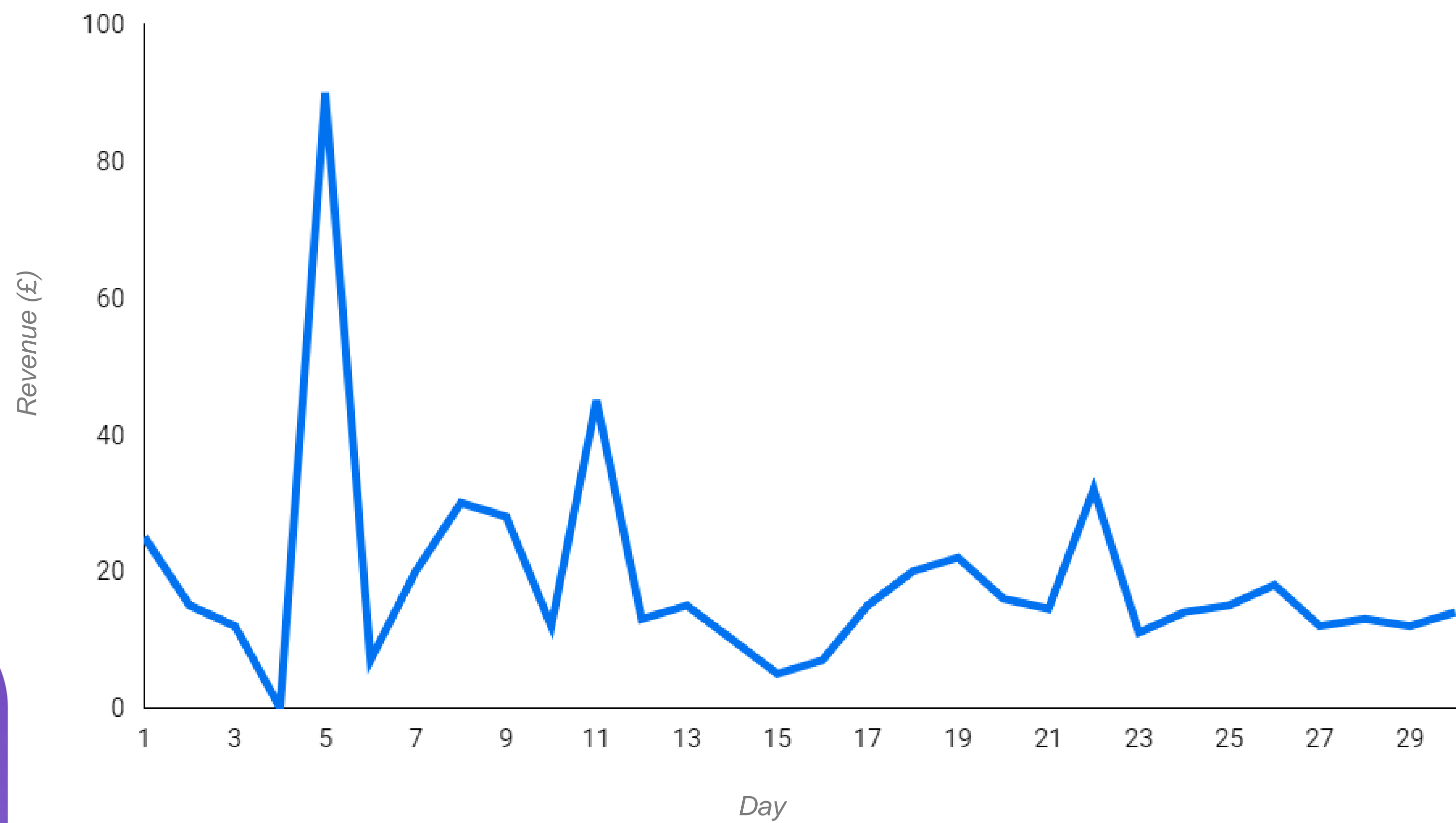
Highlight the important stuff

- **Bold**, *italics* and underlining
- CASE and typeface
- Colour
- Inversing elements
- Size

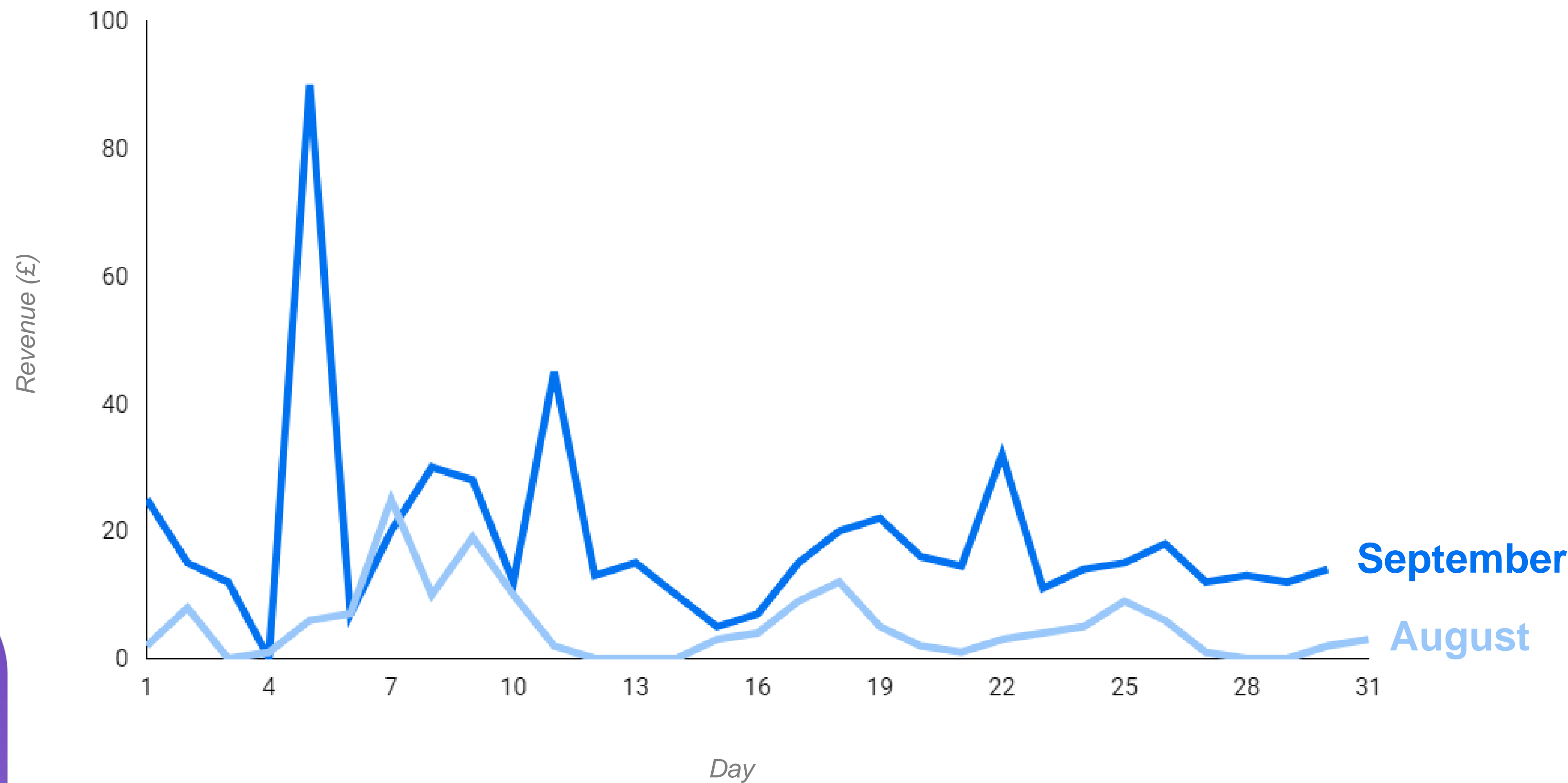
September revenue



September donation revenue



September vs August donation revenue



Donations significantly increased in September compared to August

On 8 September we changed the placement and wording of donation prompts on the website

Donations

£562.50

↑ 253.8%

Memberships

£288.00

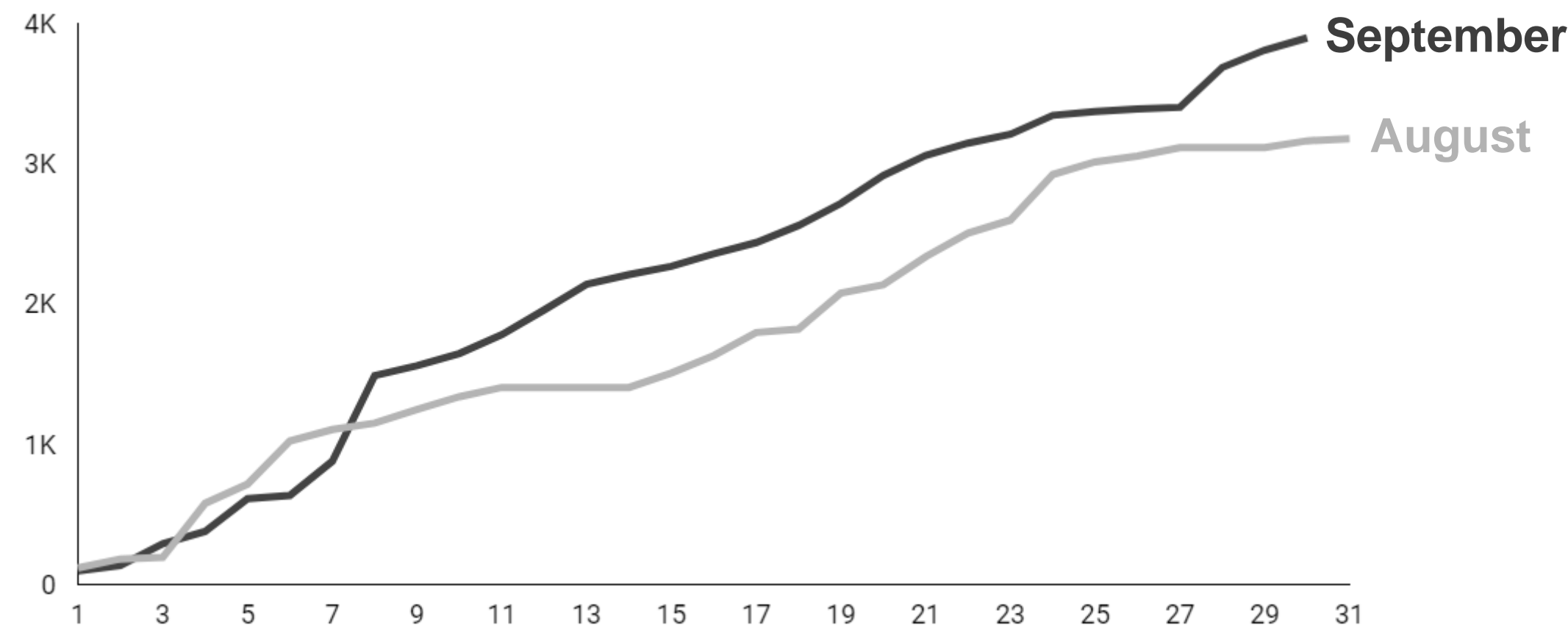
↑ 12.5%

Tickets

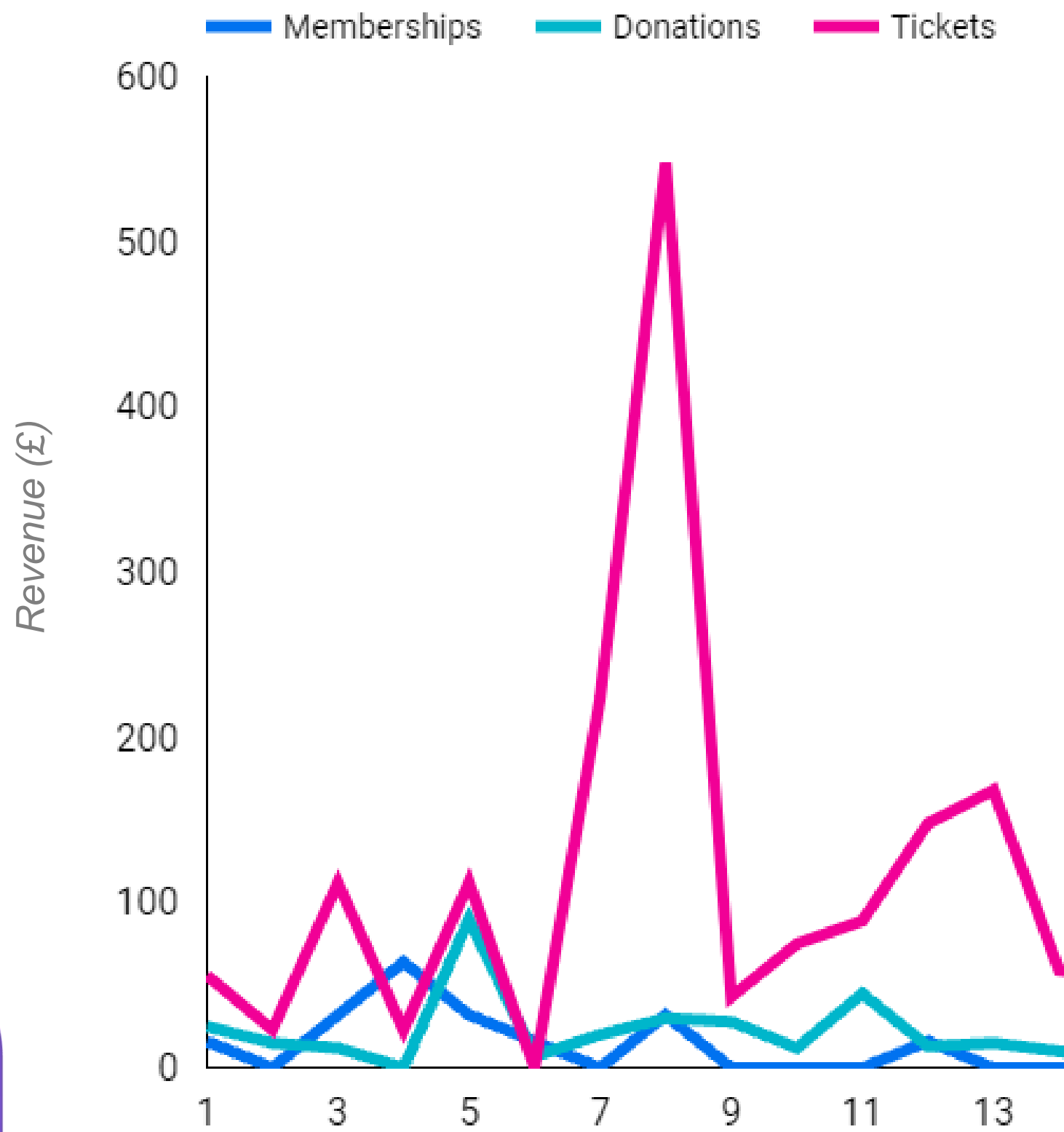
£3,047.00

↑ 10.2%

Total revenue



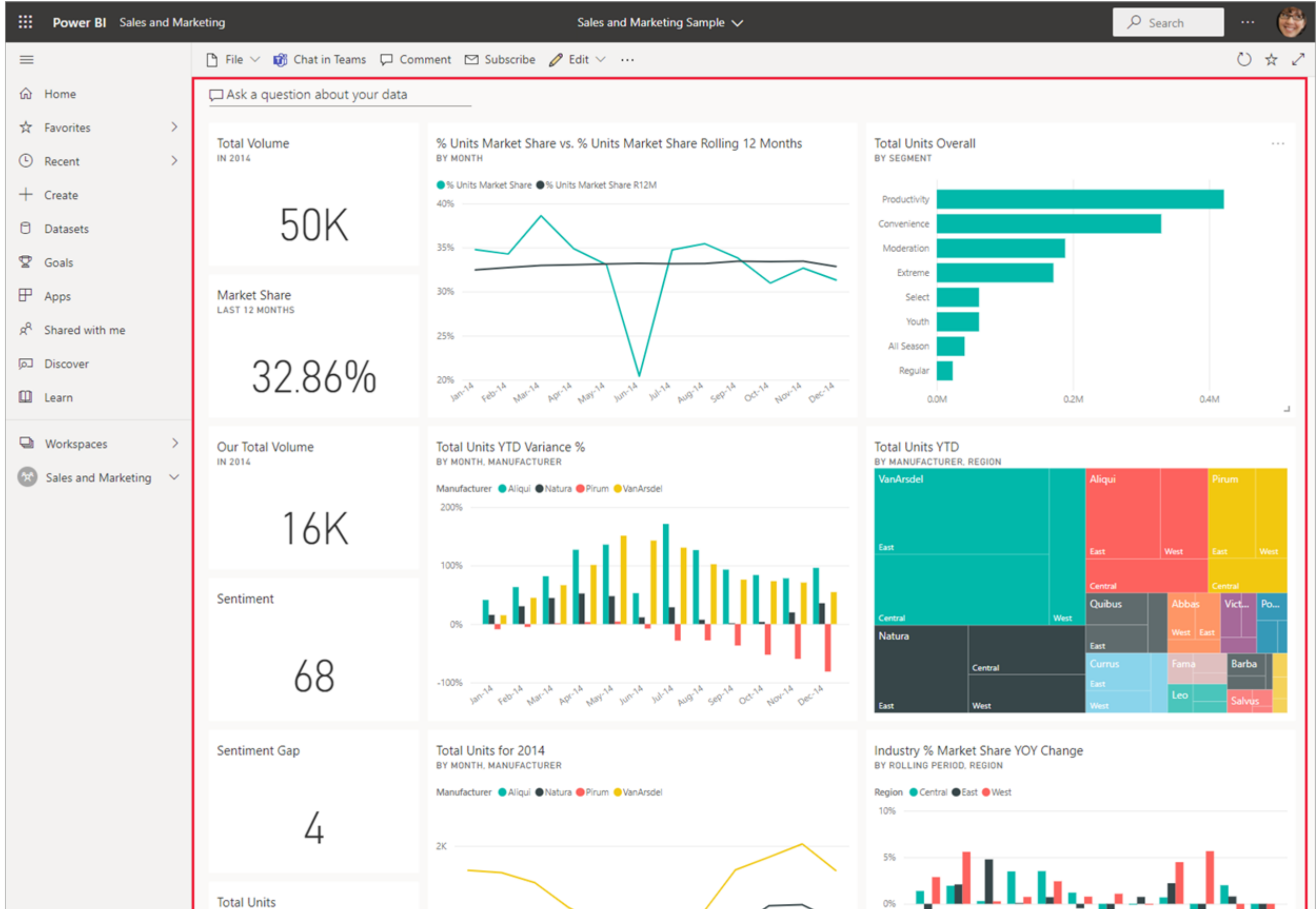
September revenue

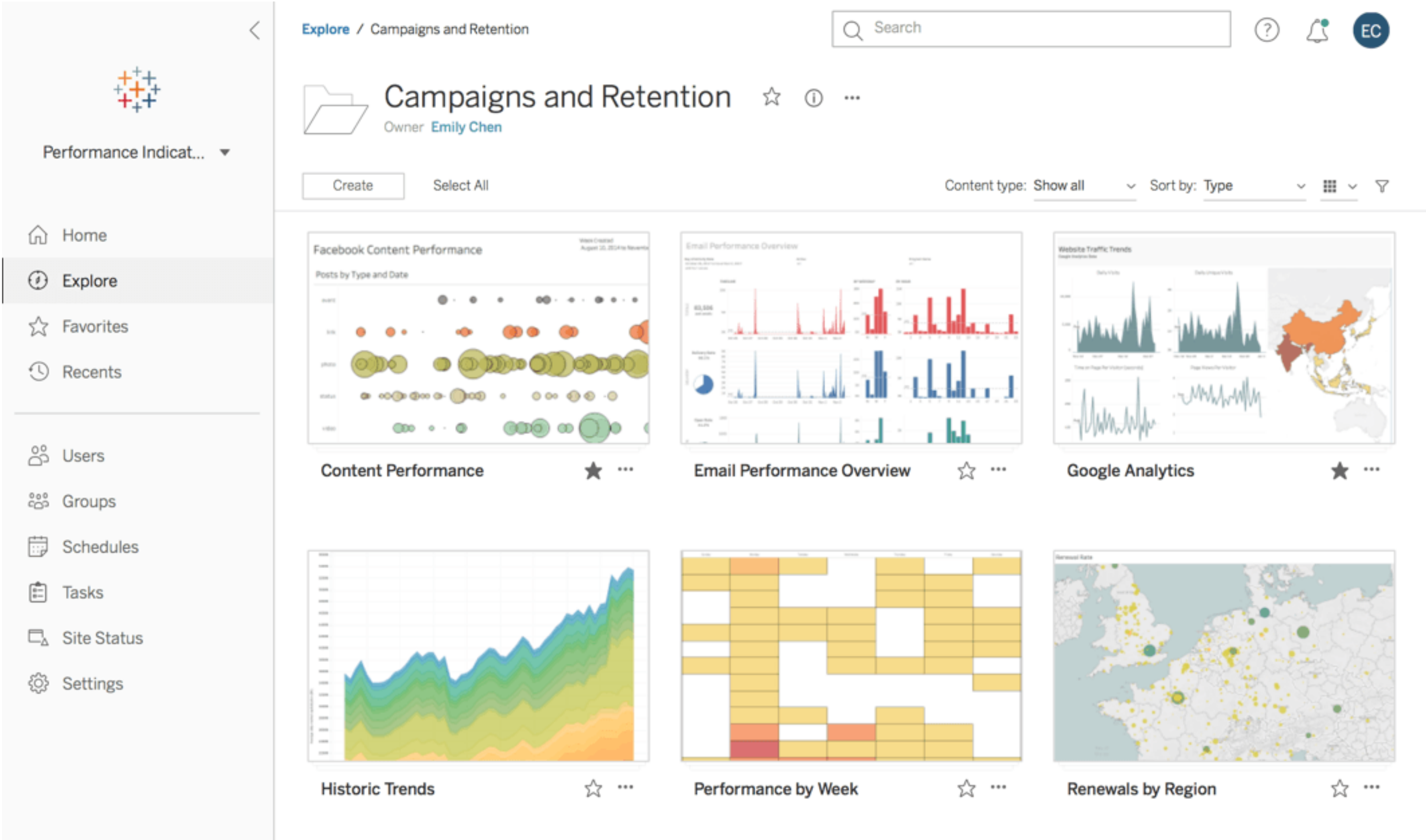


Date	Donations	Memberships	Tickets	Total
01/08/2021	£2.00	£16.00	£100.00	£118.00
02/08/2021	£8.00	£0.00	£56.00	£64.00
03/08/2021	£0.00	£0.00	£12.00	£12.00
04/08/2021	£1.00	£64.00	£320.00	£385.00
05/08/2021	£6.00	£16.00	£115.00	£137.00
06/08/2021	£7.00	£0.00	£300.00	£307.00
07/08/2021	£25.00	£32.00	£25.00	£82.00
08/08/2021	£10.00	£0.00	£36.00	£46.00
09/08/2021	£19.00	£0.00	£78.00	£97.00
10/08/2021	£10.00	£16.00	£65.00	£91.00
11/08/2021	£2.00	£32.00	£32.00	£66.00
12/08/2021	£0.00	£0.00	£0.00	£0.00
13/08/2021	£0.00	£0.00	£0.00	£0.00
14/08/2021	£0.00	£0.00	£0.00	£0.00
15/08/2021	£3.00	£0.00	£100.00	£103.00
16/08/2021	£4.00	£0.00	£120.00	£124.00
17/08/2021	£9.00	£16.00	£140.00	£165.00
18/08/2021	£12.00	£0.00	£13.00	£25.00
19/08/2021	£5.00	£0.00	£250.00	£255.00
20/08/2021	£2.00	£0.00	£58.00	£60.00
21/08/2021	£1.00	£0.00	£200.00	£201.00
22/08/2021	£3.00	£32.00	£133.00	£168.00
23/08/2021	£4.00	£0.00	£89.00	£93.00
24/08/2021	£5.00	£0.00	£320.00	£325.00
25/08/2021	£0.00	£16.00	£65.00	£81.00

Tools and further reading

Power BI

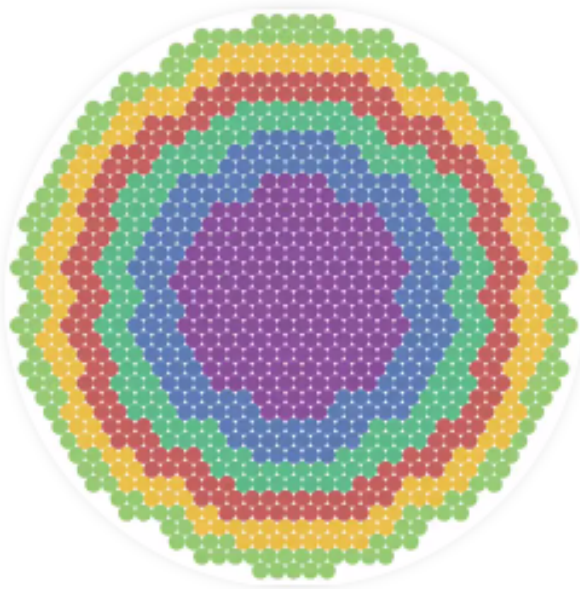






Data Studio





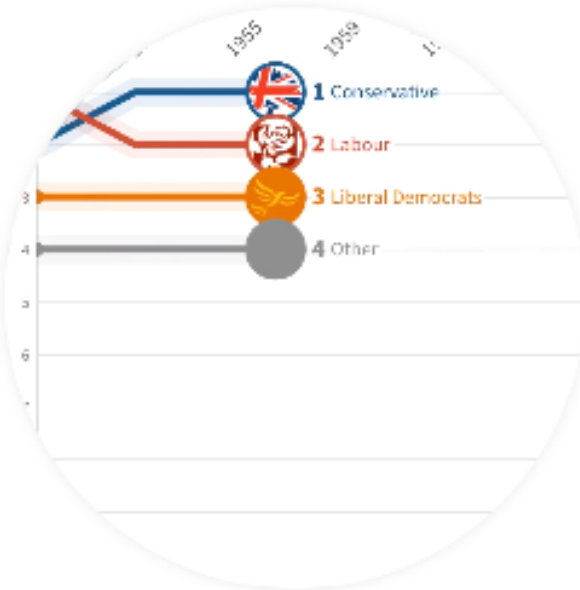
Engage your audience

Create agency-quality data graphics and animated stories that bring your data to life.



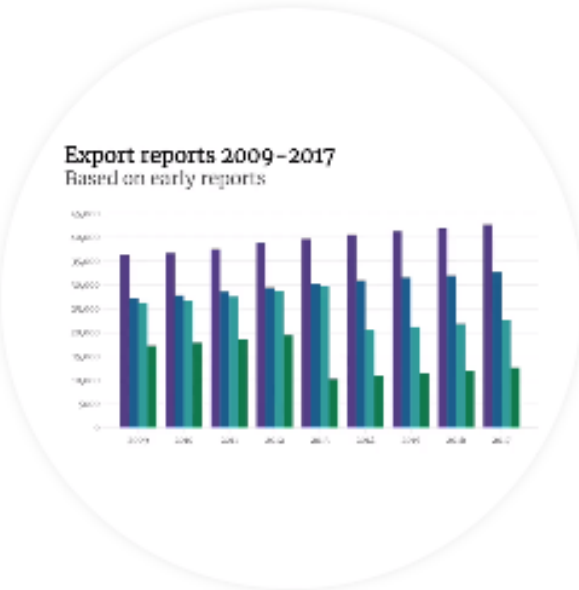
Empower the whole team

Flourish is easy enough for anyone to use. Start with a template and drop in data.



Embed, share, present

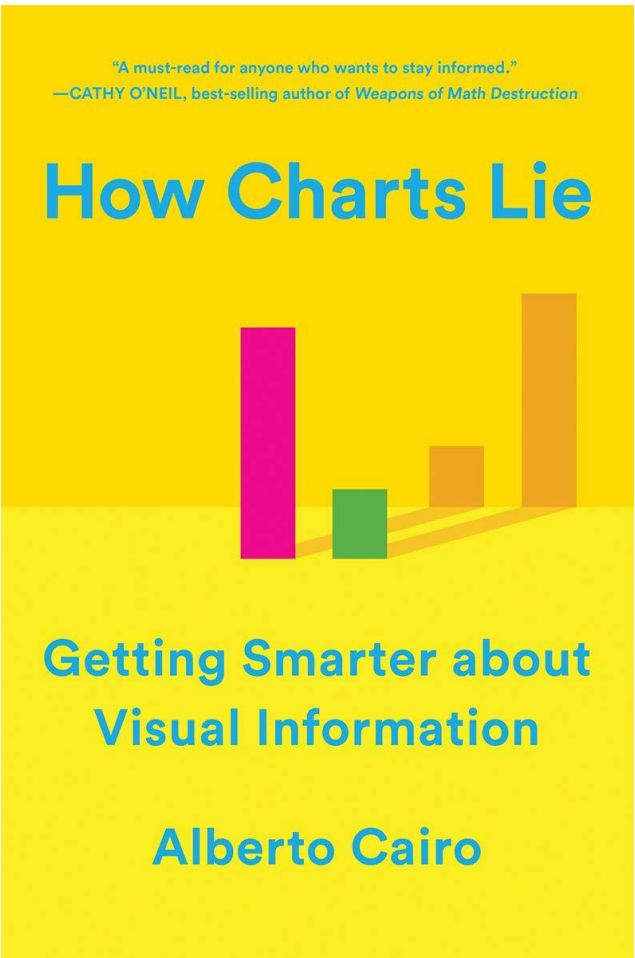
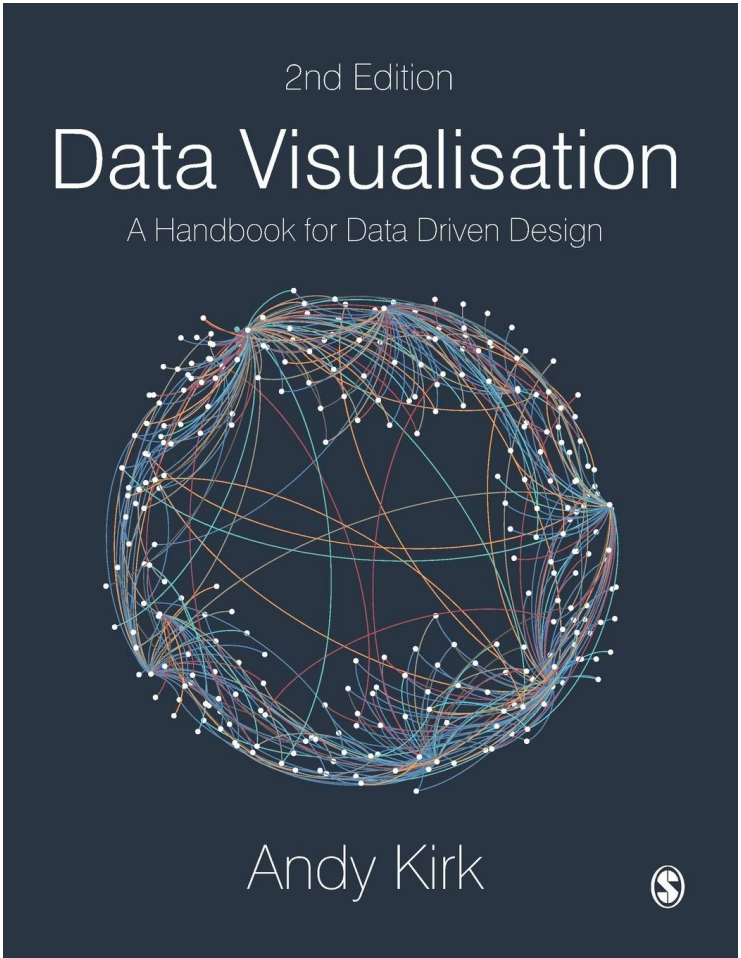
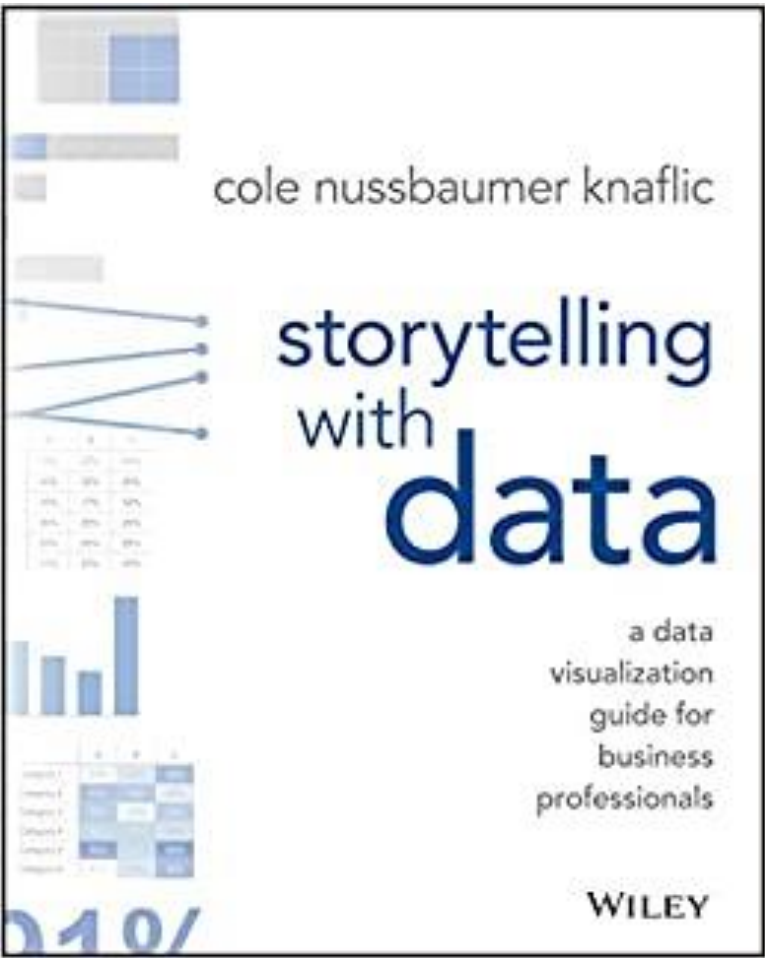
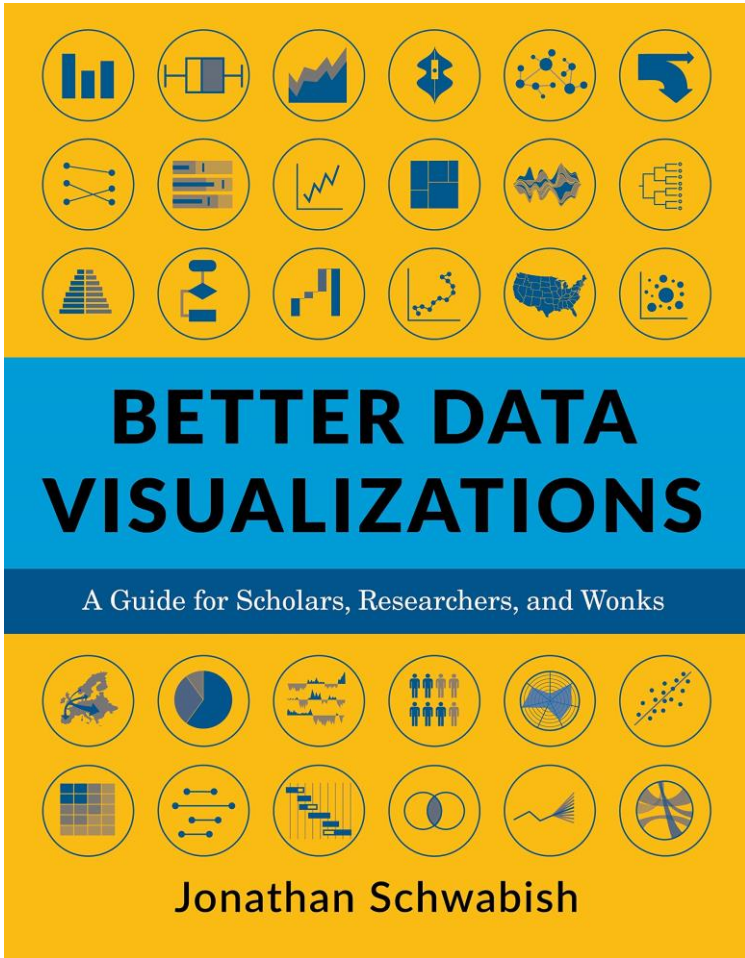
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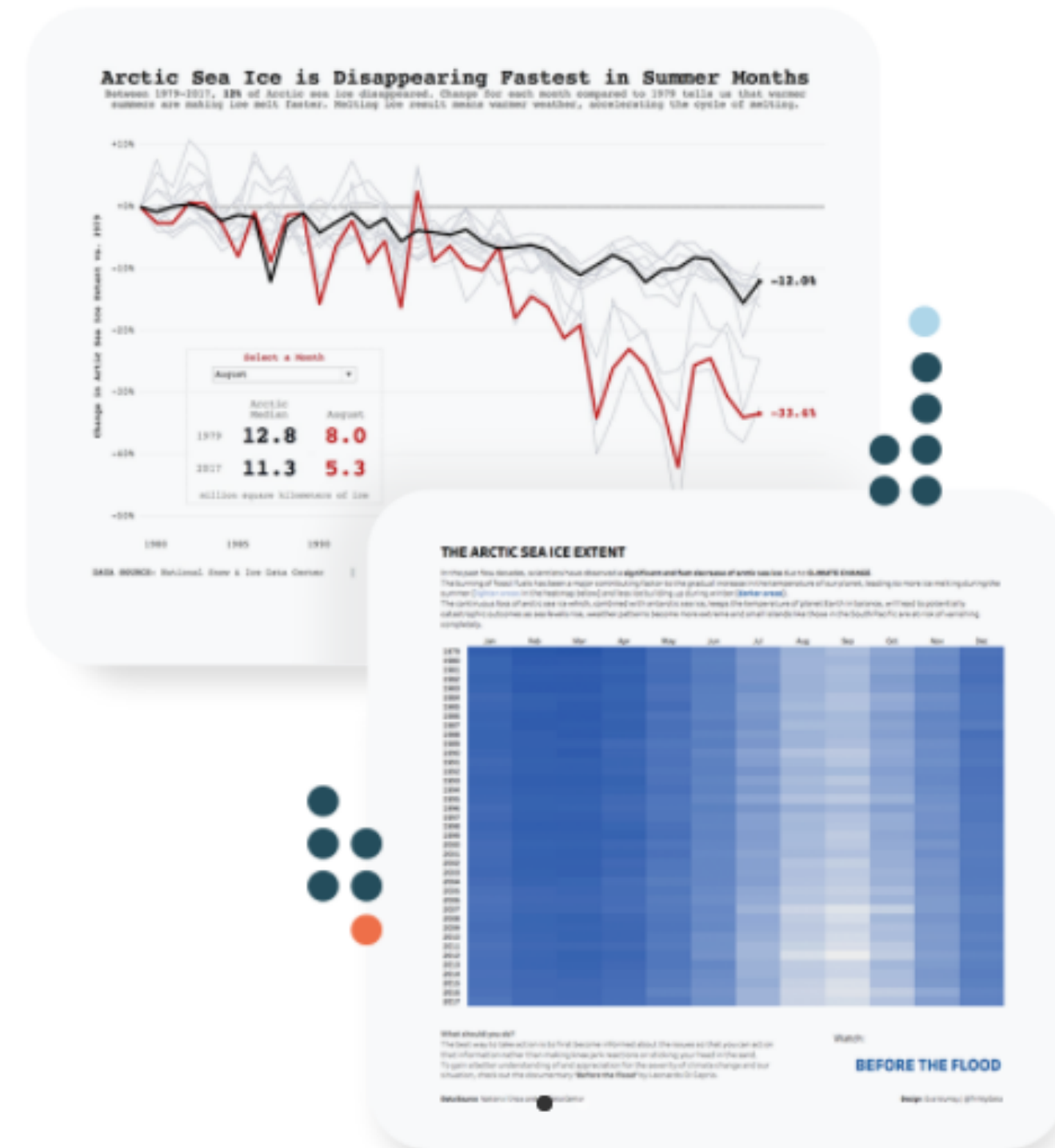
#MakeoverMonday

Welcome to Makeover Monday!

Makeover Monday is your weekly learning and development appointment with yourself and hundreds of passionate data people. For free!

Join us every Monday to work with a given data set and create better, more effective visualizations and help us make information more accessible.

The Makeover Monday community comes together every week from around the globe and we would love for YOU to become part of it, too.

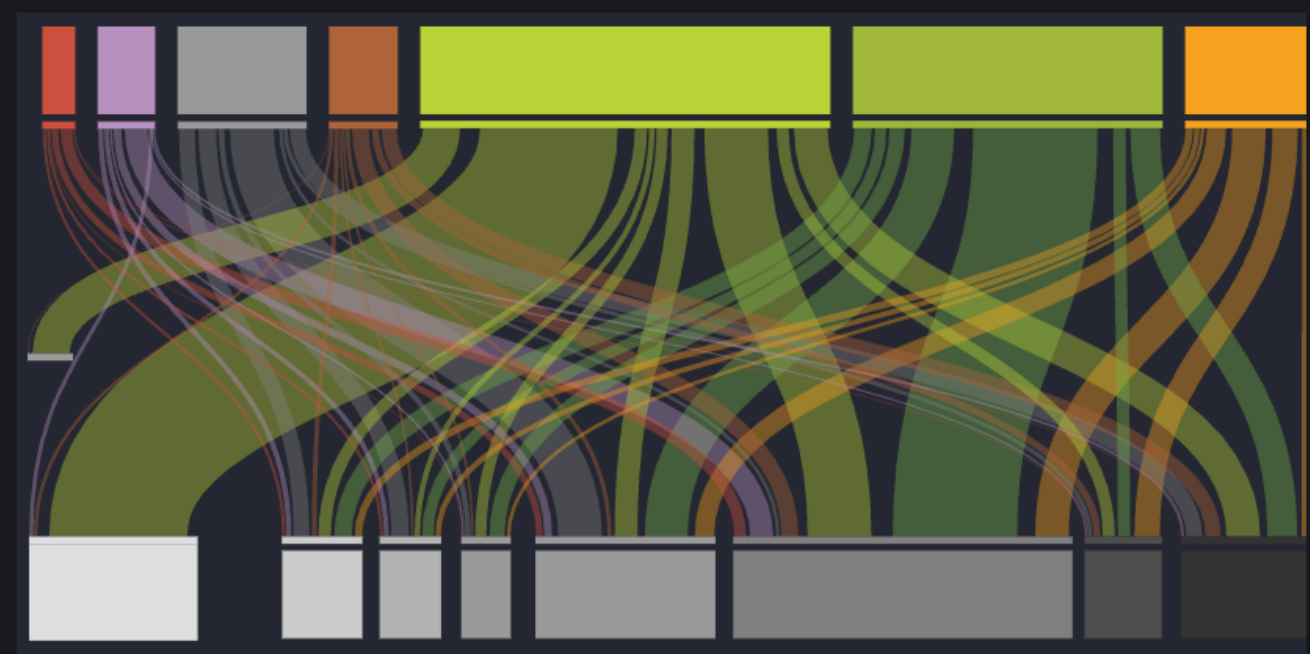


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- science & health
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- ideas & perception
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- arts & culture



Beautiful News, The Book, by David McCandless

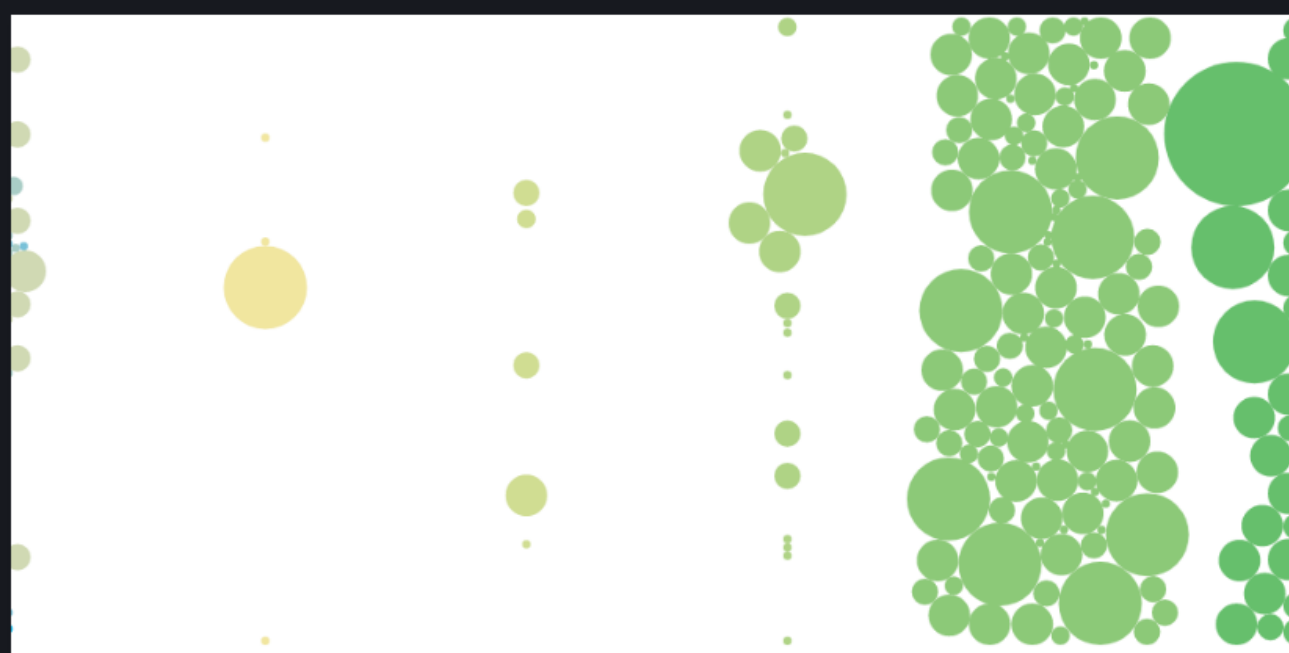
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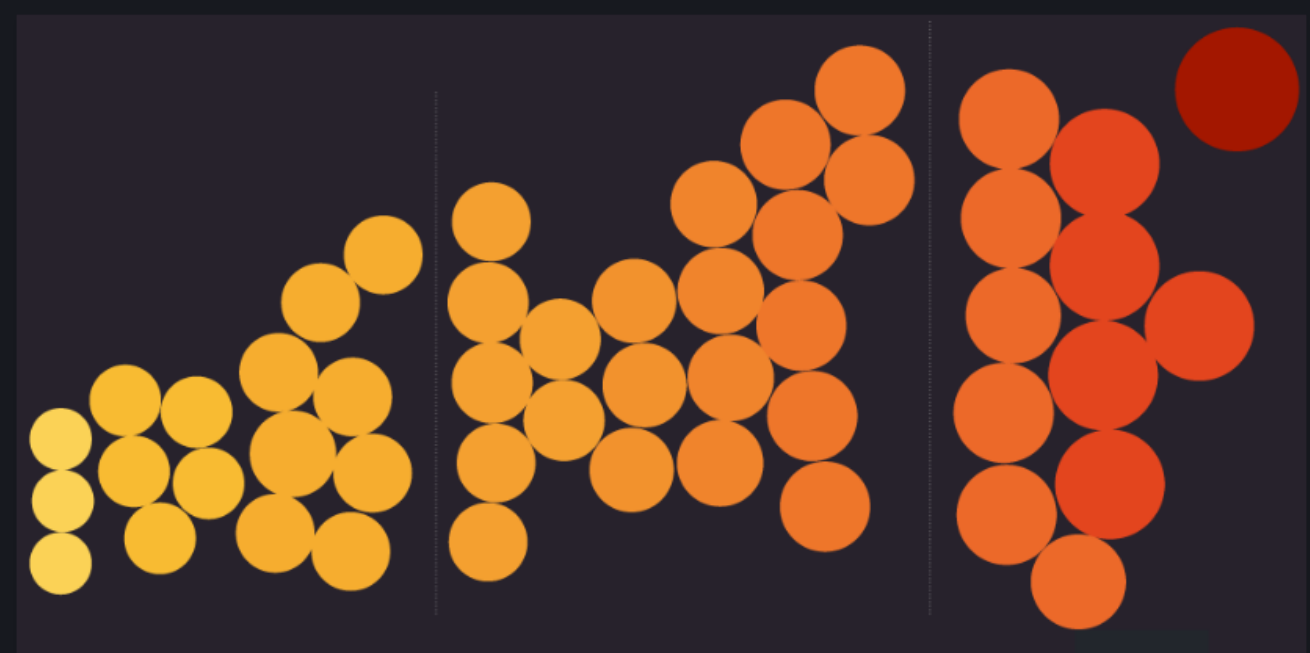
Global Food Supply – Where Does All The World’s Food Go?



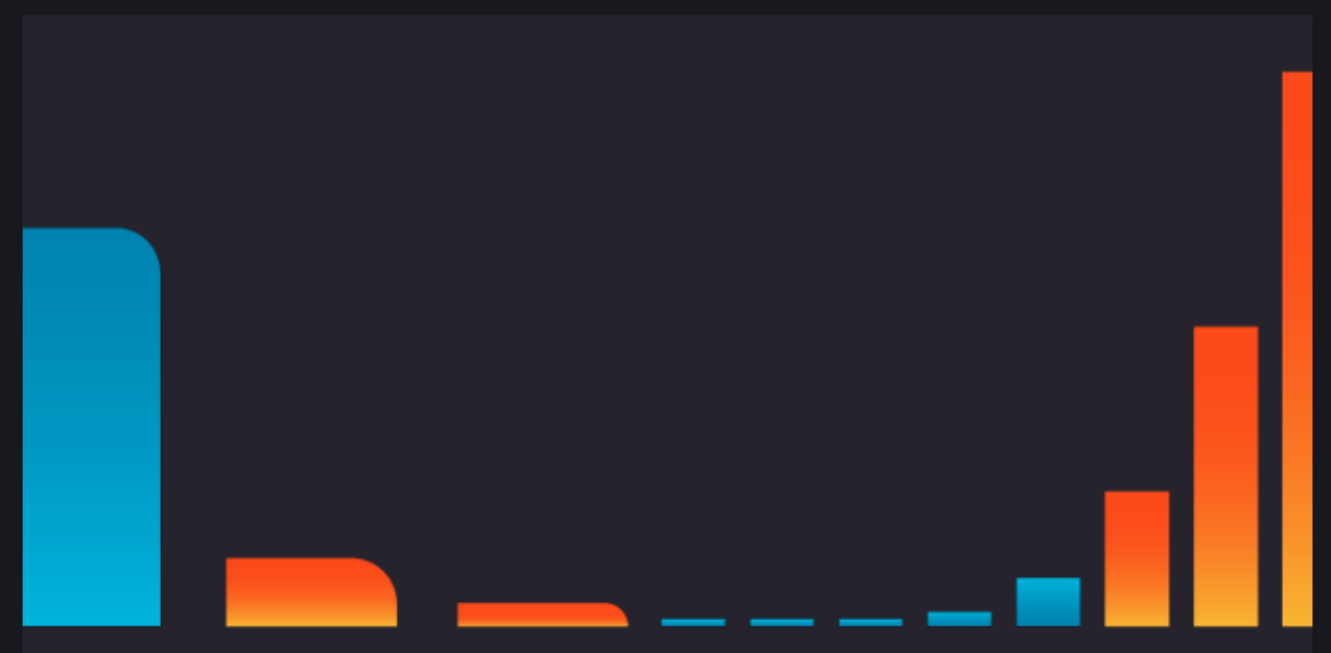
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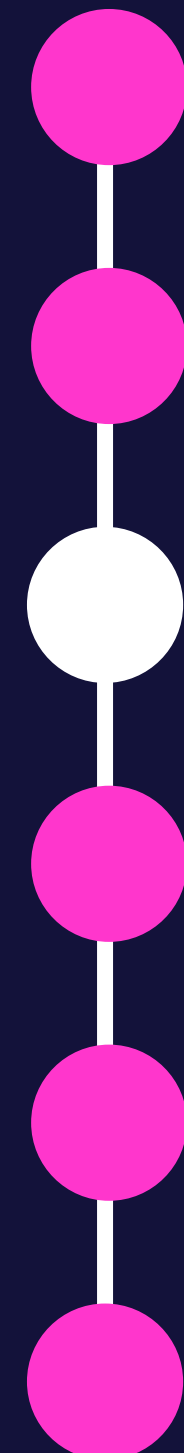
Ransomware Attacks



Coronavirus Riskiest Activities



COVID-19 #CoronaVirus Infographic

- 
- Exploratory visualisations
 - Preattentive attributes
 - [Short break]
 - Explanatory visualisations
 - Tools and further reading
 - Q&A

Q&A




Digital Culture
Network



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digitalculturenetwork.org.uk



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Welcome to your Digital Culture Network

We are here to develop your organisation's digital skills. Working across the arts and culture sector, the Network is led by nine specialist Tech Champions. We want you to be a part of it.

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Knowledge Hub



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Podcasting and how to get started

This resource provides information and advice on making podcasts. As well as considerations for generating content, it contains guidance on hardware, software, and distribution methods.

 Marc Burns · 2 months ago



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Engaging Audiences with Social Media

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 Haydn Corrodus · 2 months ago



Beginner Read
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