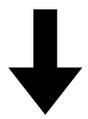
Visualising data

by Sina Rüeger

Notes & Material



https://github.com/sinarueeger/teaching/tree/master/visualising_data

Aim of this video

Spot good data visualisations by learning about

- the purpose of data visualisation
- tools to display data
- common pitfalls

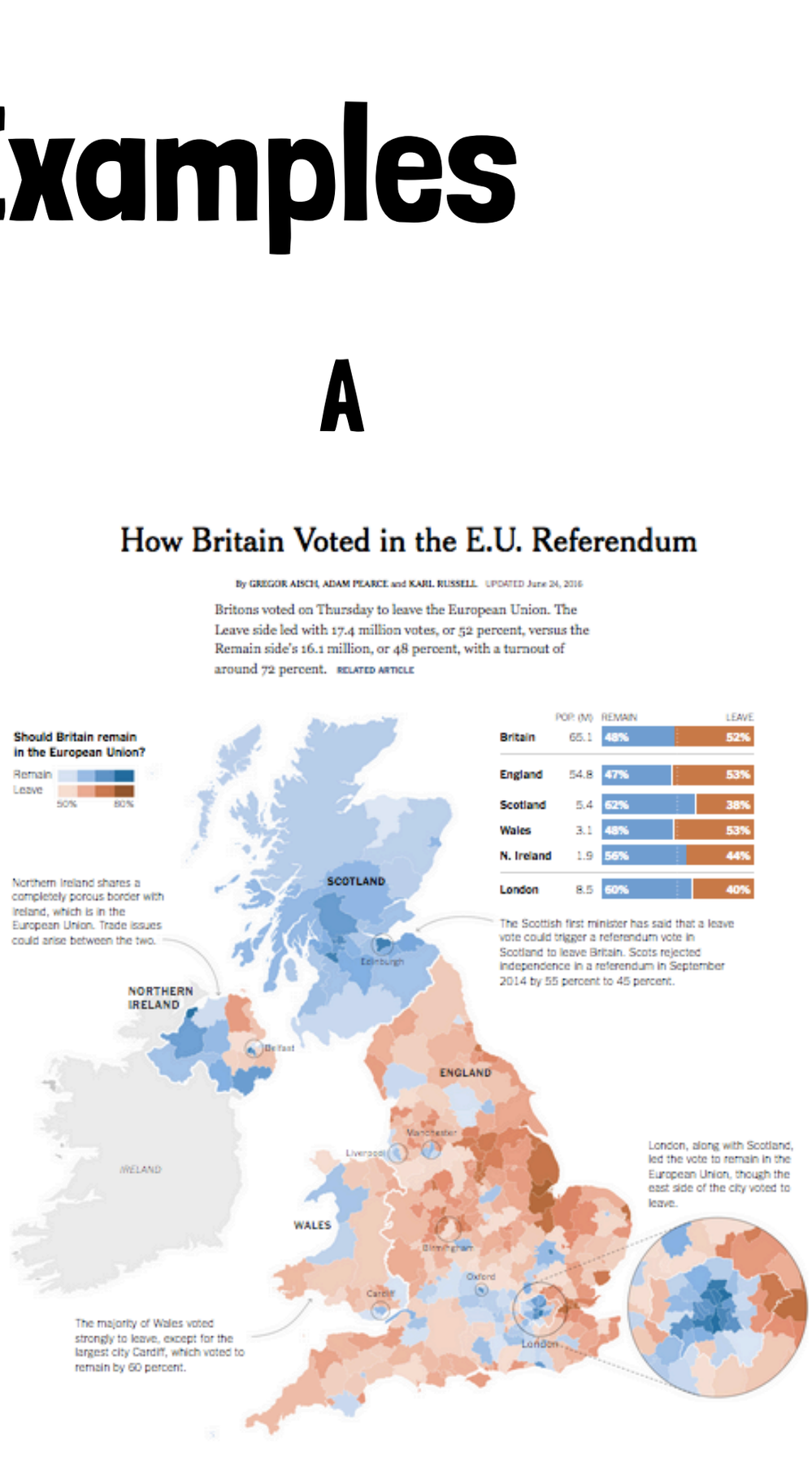
Examples

A

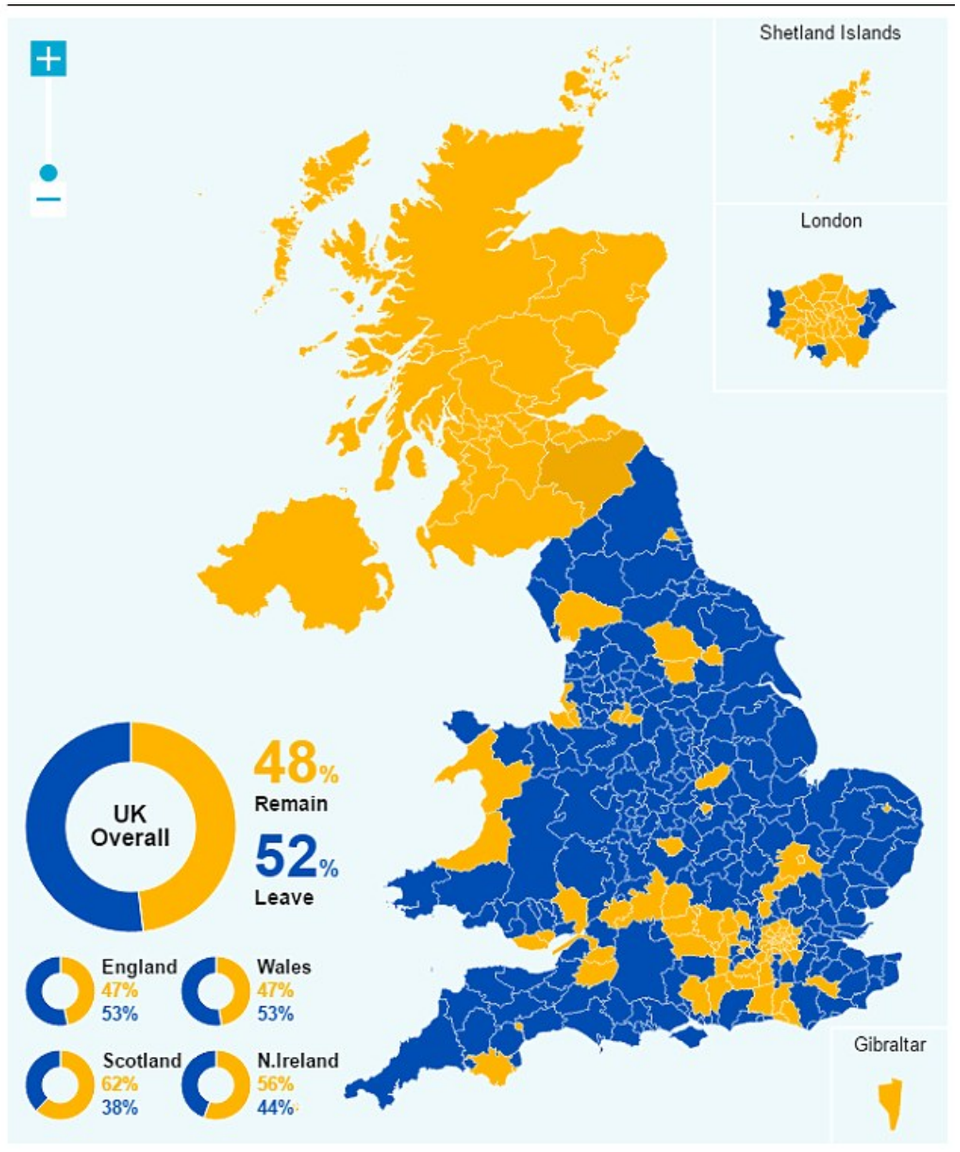
How Britain Voted in the E.U. Referendum

By GREGOR AISCH, ADAM PEARCE and KARL RUSSELL. UPDATED June 24, 2016

Britons voted on Thursday to leave the European Union. The Leave side led with 17.4 million votes, or 52 percent, versus the Remain side's 16.1 million, or 48 percent, with a turnout of around 72 percent. RELATED ARTICLE



B



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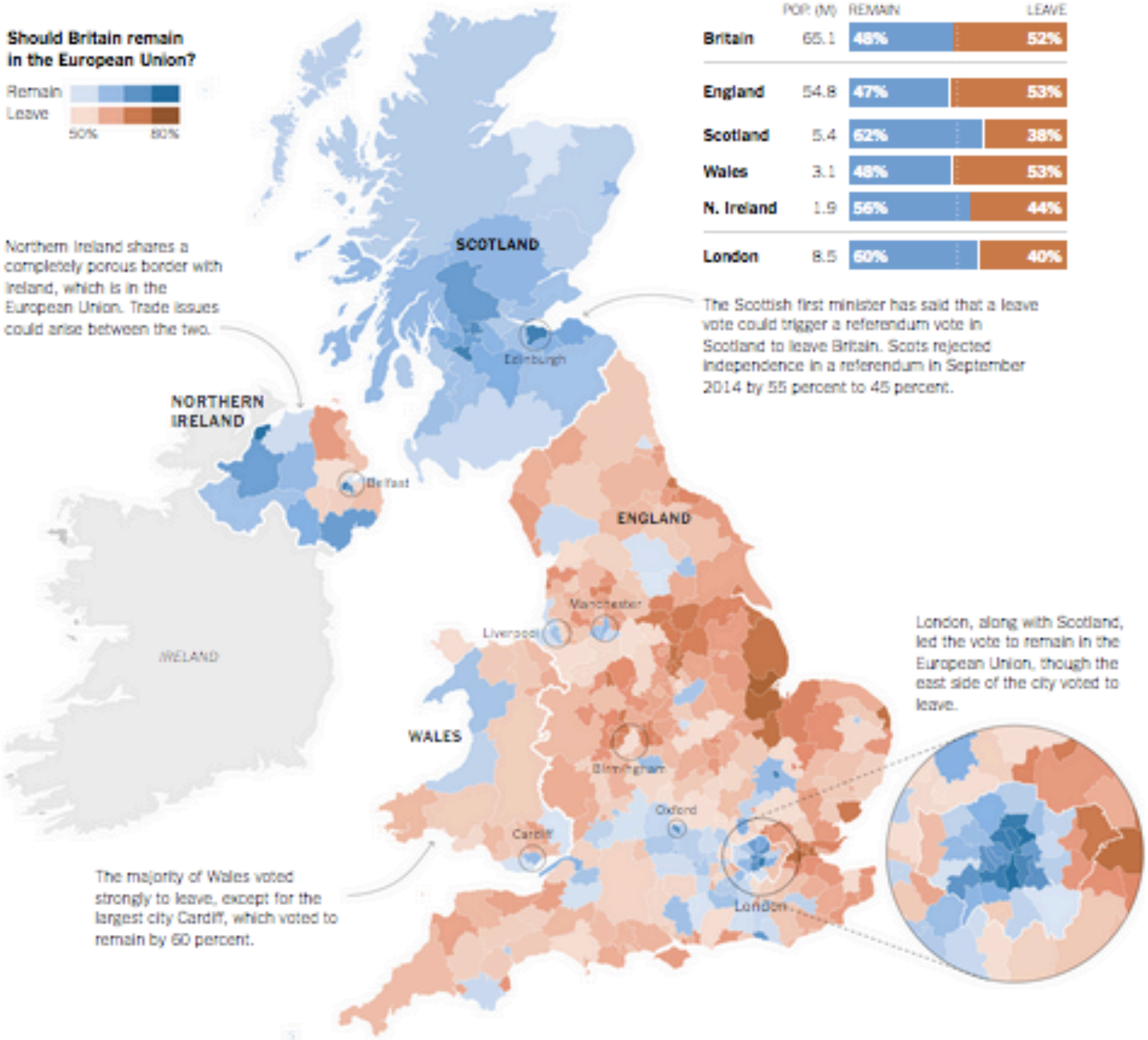
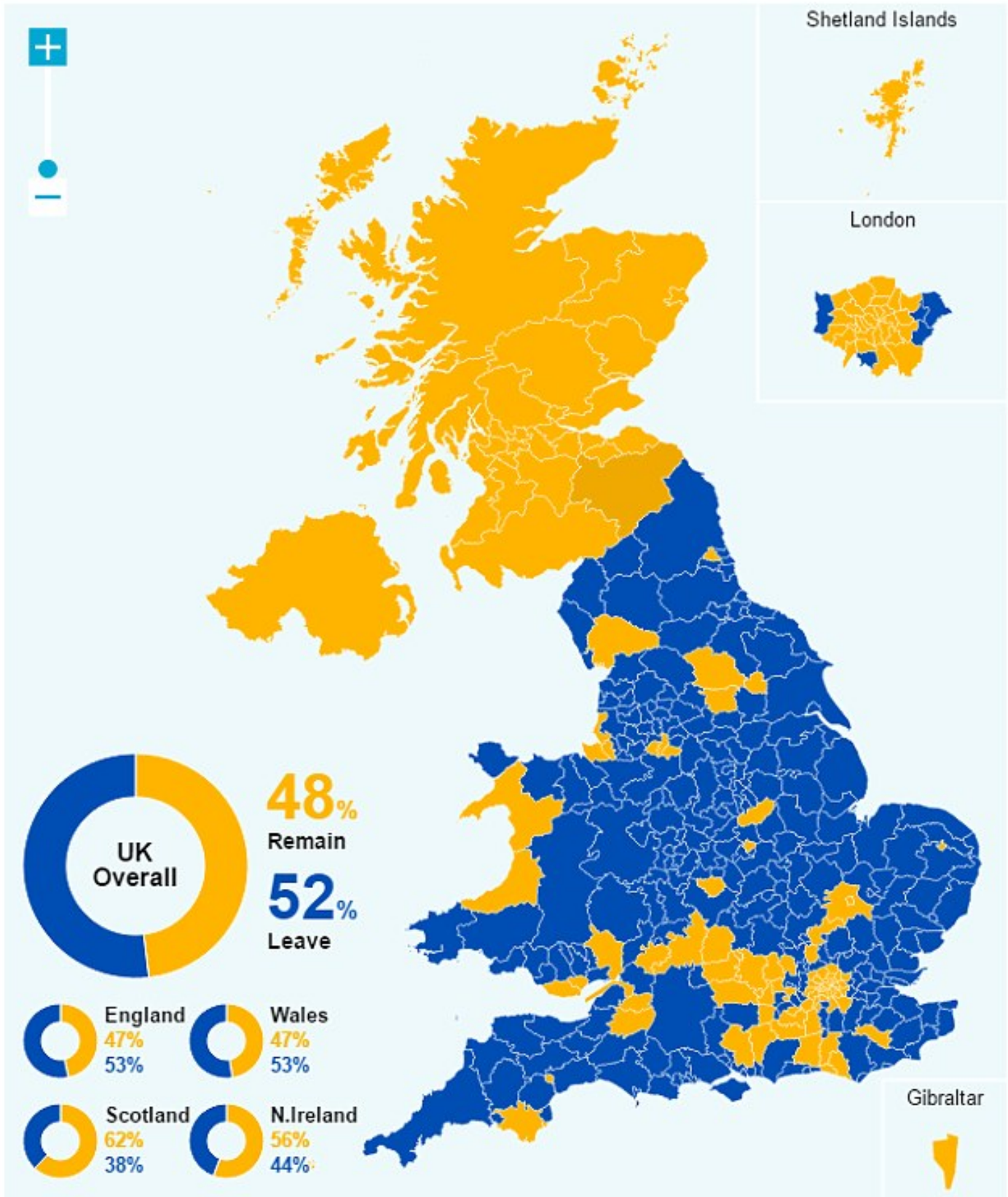


https://www.nytimes.com/interactive/2016/06/24/world/europe/how-britain-voted-brexit-referendum.html

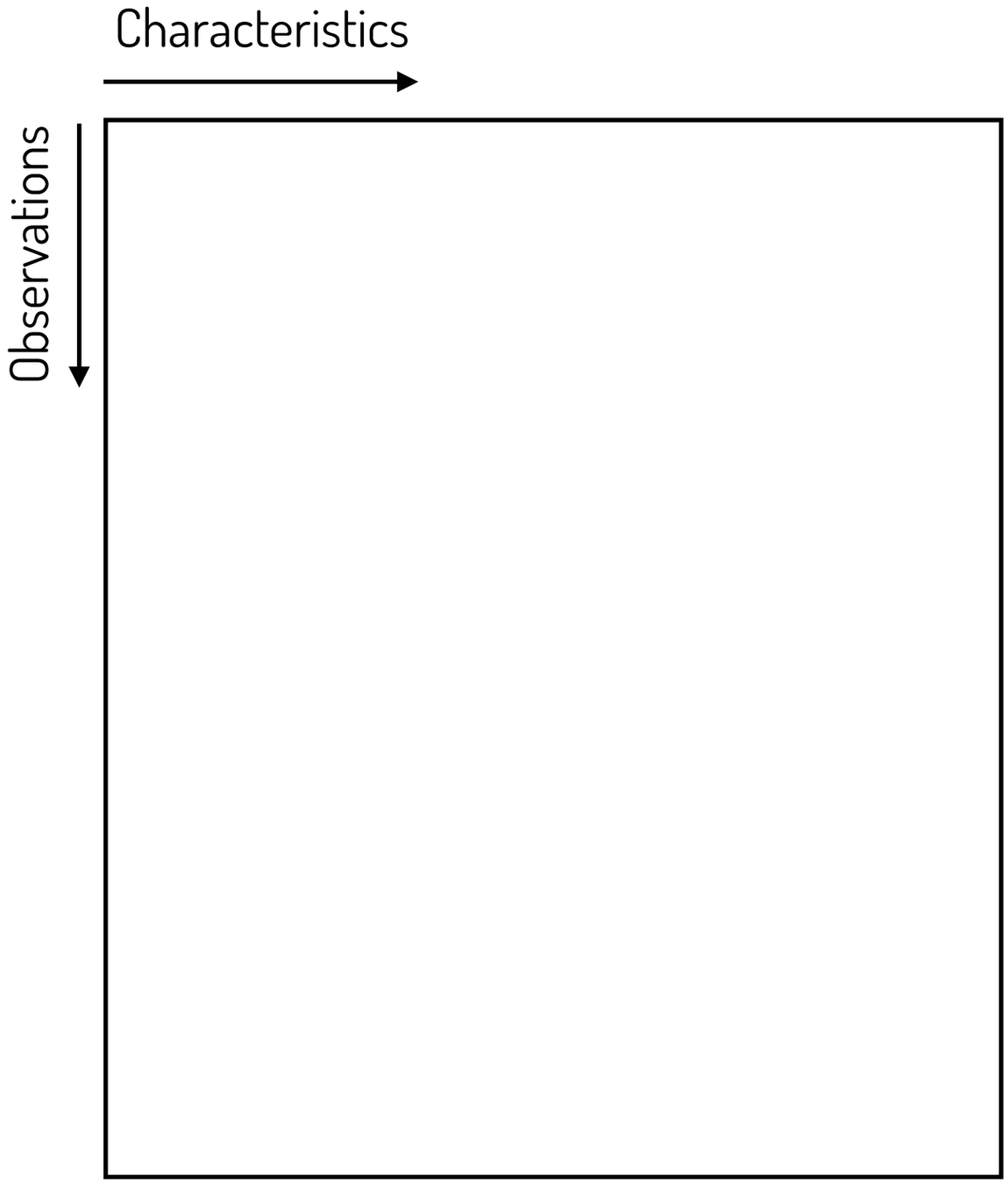
All 32 local authorities in Scotland delivered a vote for Remain - Nicola Sturgeon this shows that her country was being pulled out against its will.



http://www.dailymail.co.uk/news/article-3659769/Anti-Brexit-protests-break-London-streets-petition-SECOND-EU-referendum-hits-1-5million-names-day.html

Recap: data

- One observation per row
- One characteristics measured per column



Recap: data

Characteristics →

Observations ↓

	Observation	Planet name	Type of planet	Surface	Discovered
1	1	Pluto	Dwarf planet	1.779×10^7	18-Feb-1930
2	2	Uranus	Planet	8.116×10^9	13-Mar-1781
3	3	Neptune	Planet	7.618×10^9	23-Sep-1846

Information from:
https://en.wikipedia.org/wiki/Pluto
https://en.wikipedia.org/wiki/Uranus
https://en.wikipedia.org/wiki/Neptune

Recap: data

Characteristics →

Observations ↓

Data type	Categorial	Categorial	Continuous	Date
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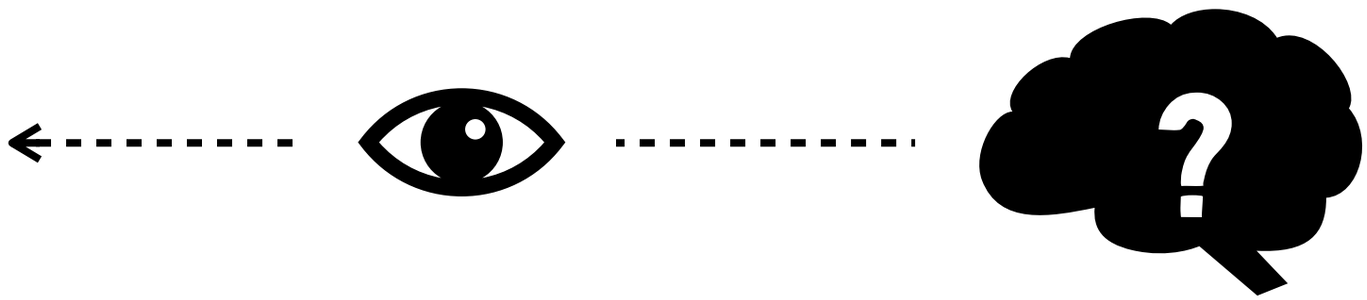
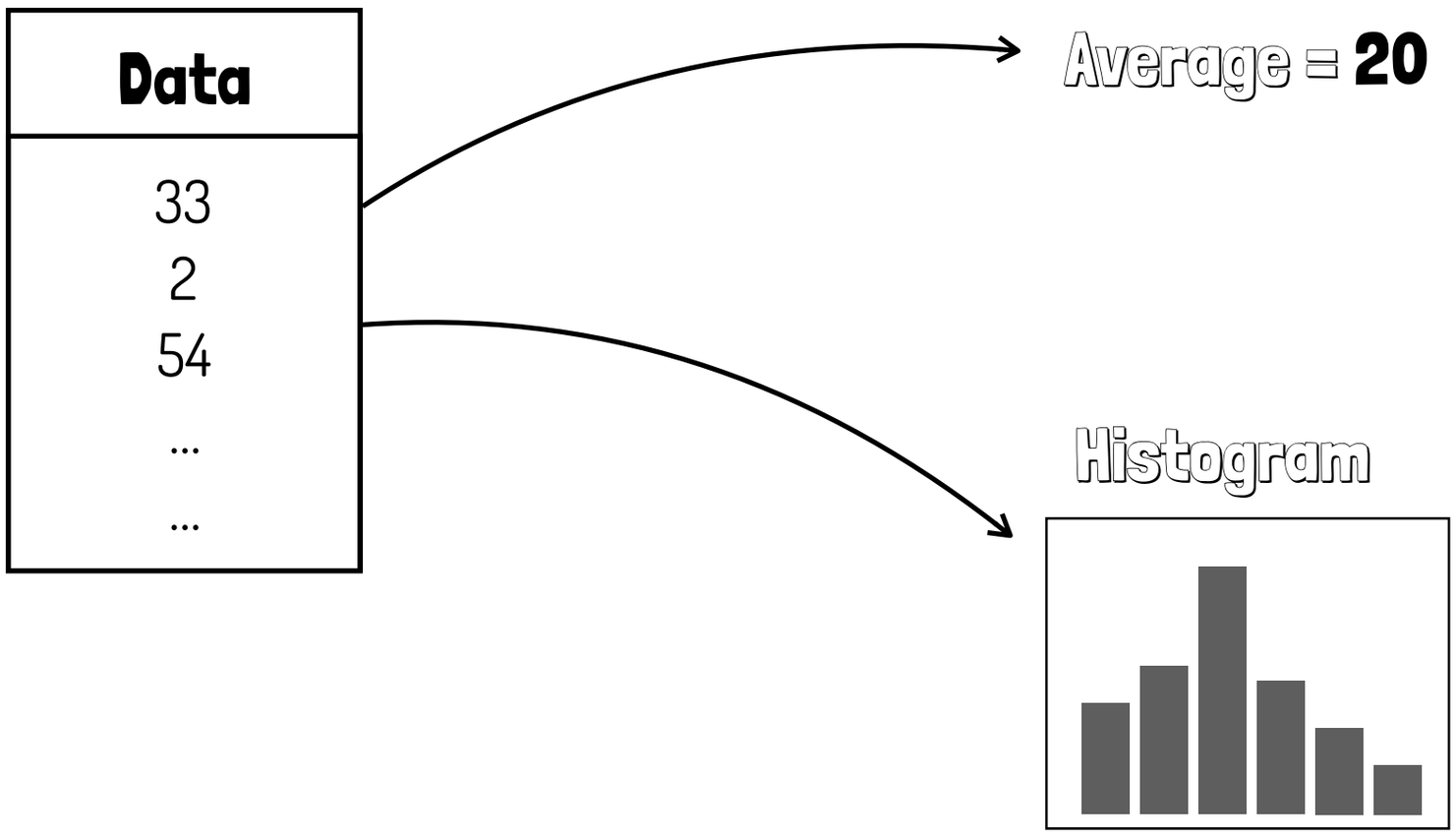
Why visualising data ?

Data
33
2
54
...
...



Why visualising data



What is a good data visualisation ?

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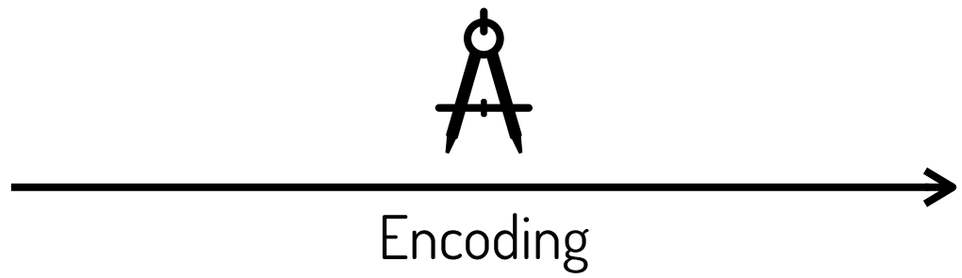
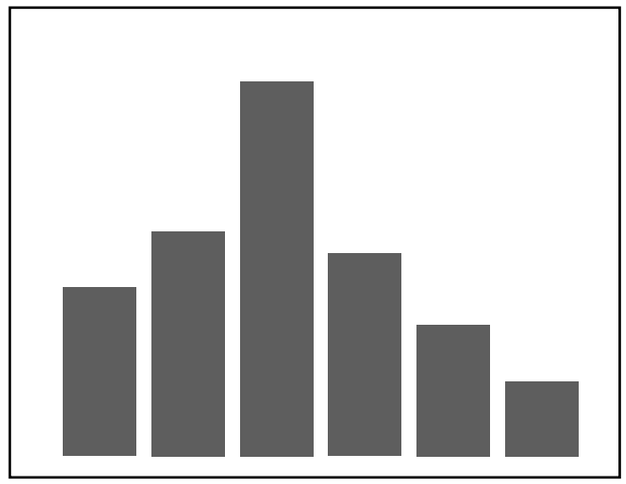
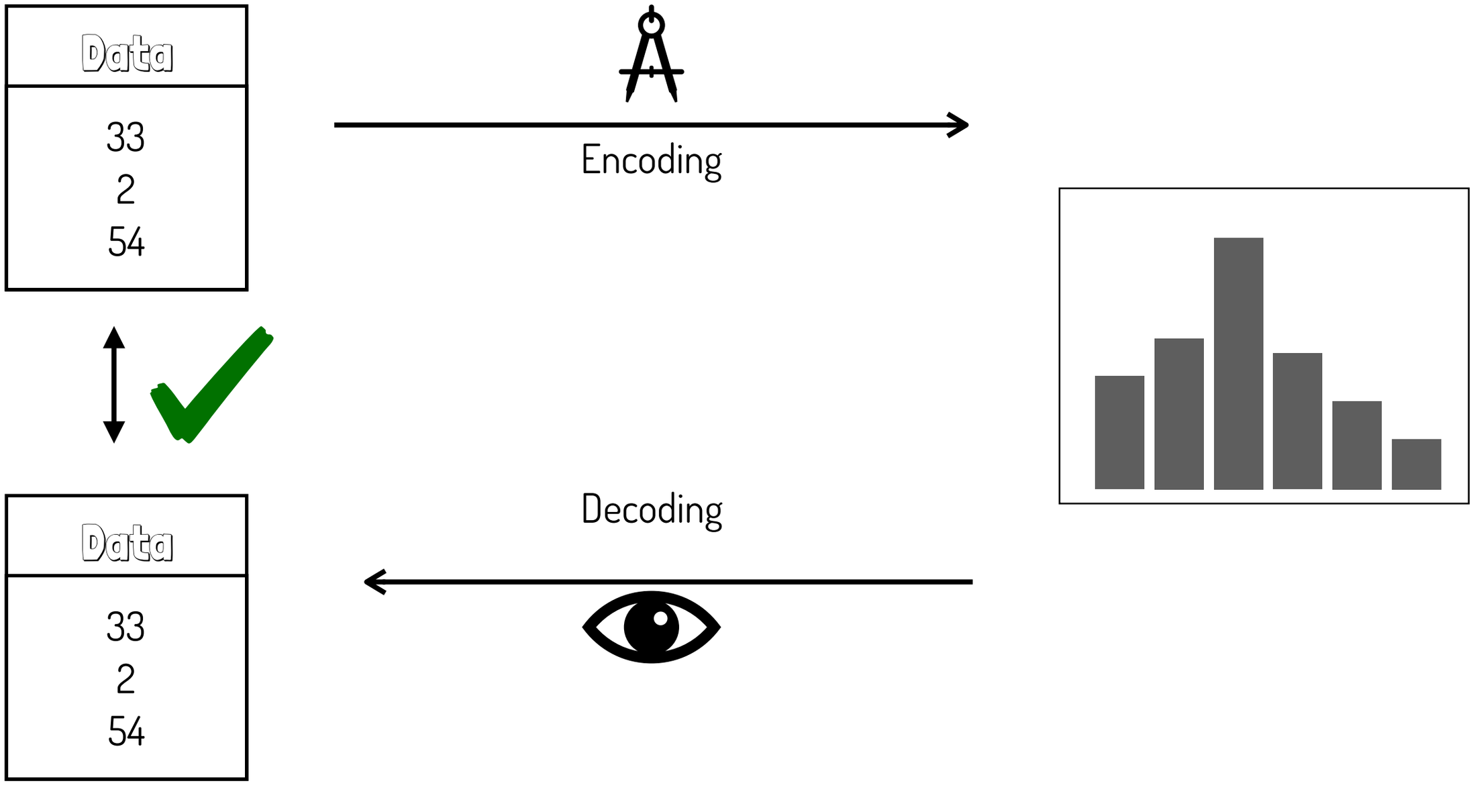




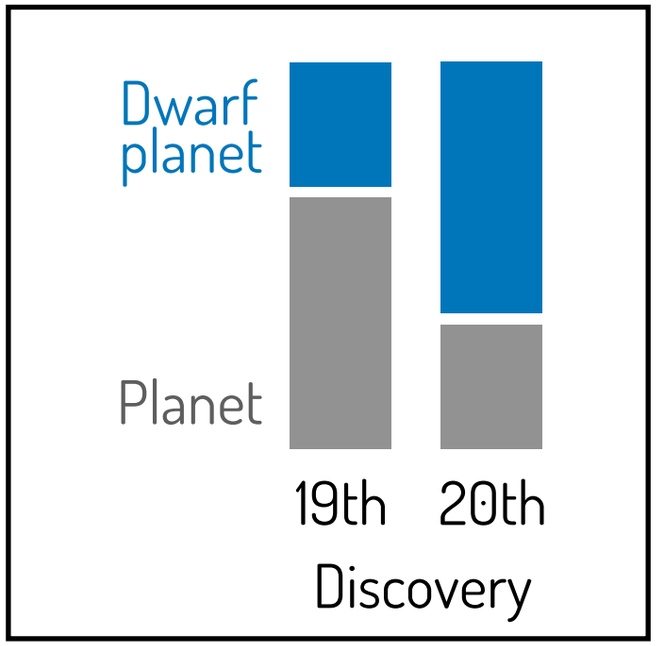
What is a good data visualisation ?



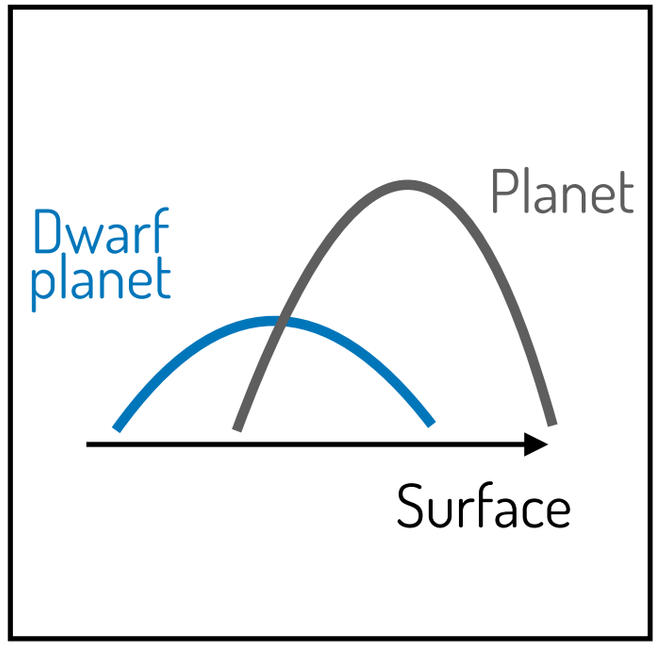
3 common visualisation tools

3 common visualisation tools

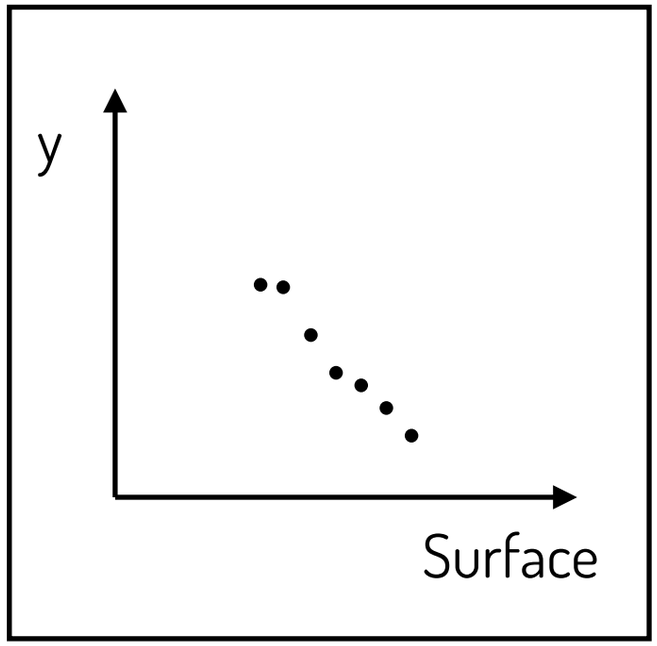
Categorial + Categorial



Categorial + Continuous



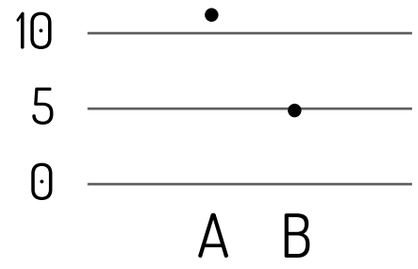
Continuous + Continuous



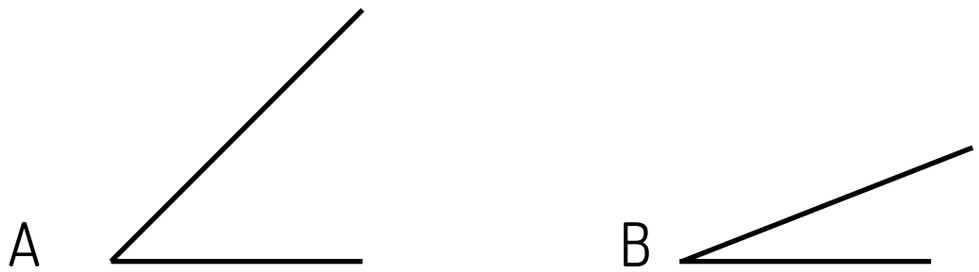
http://serialmentor.com/dataviz/visualizing-proportions.html
https://flowingdata.com/category/tutorials/
http://datavizproject.com/

Common pitfalls

Axis



Pitfall 1 **Angles**



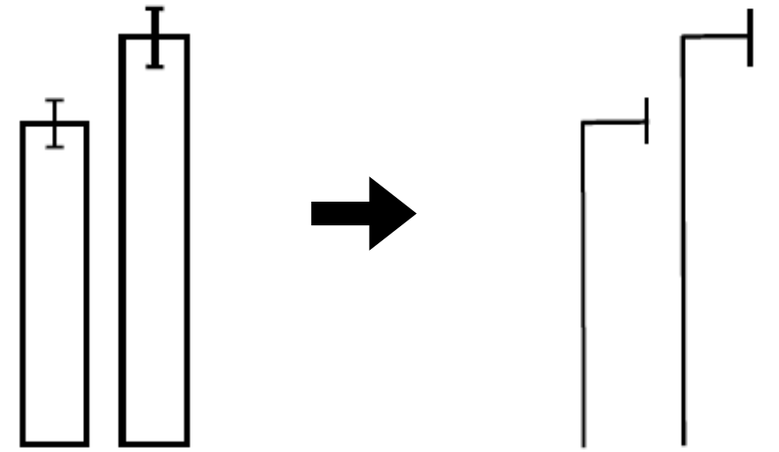
Pitfall 2 **Areas**

http://visiphilia.org/2016/08/03/CM-hierarchy
Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical Methods William S. Cleveland und Robert McGill (1984)

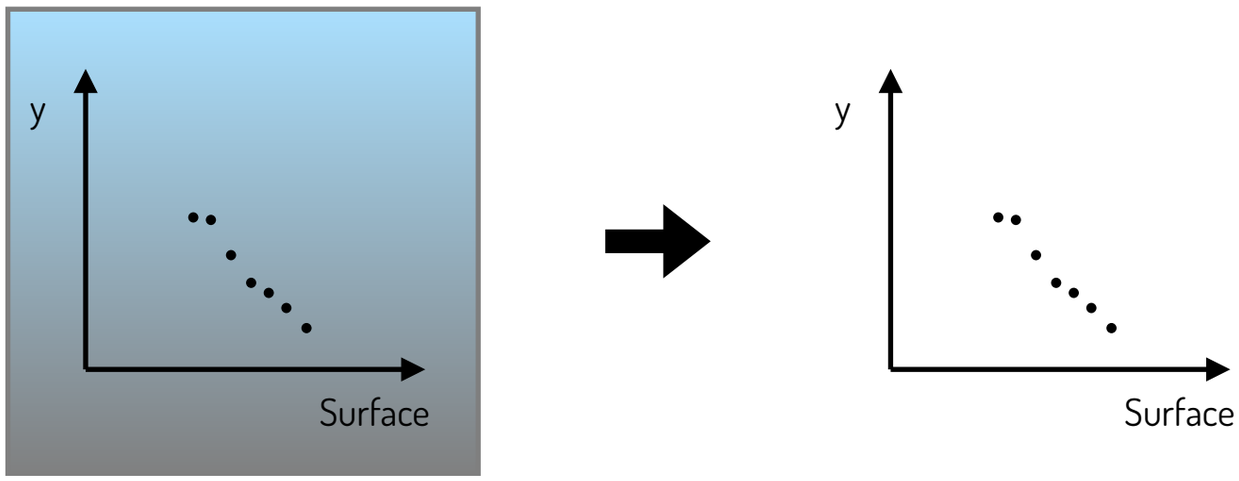
Common pitfalls

Pitfall 3 Data–ink/total–ink ratio

no redundat-data-ink



no non-data-ink



The Visual Display of Quantitative Information von Edward Tufte (1995).

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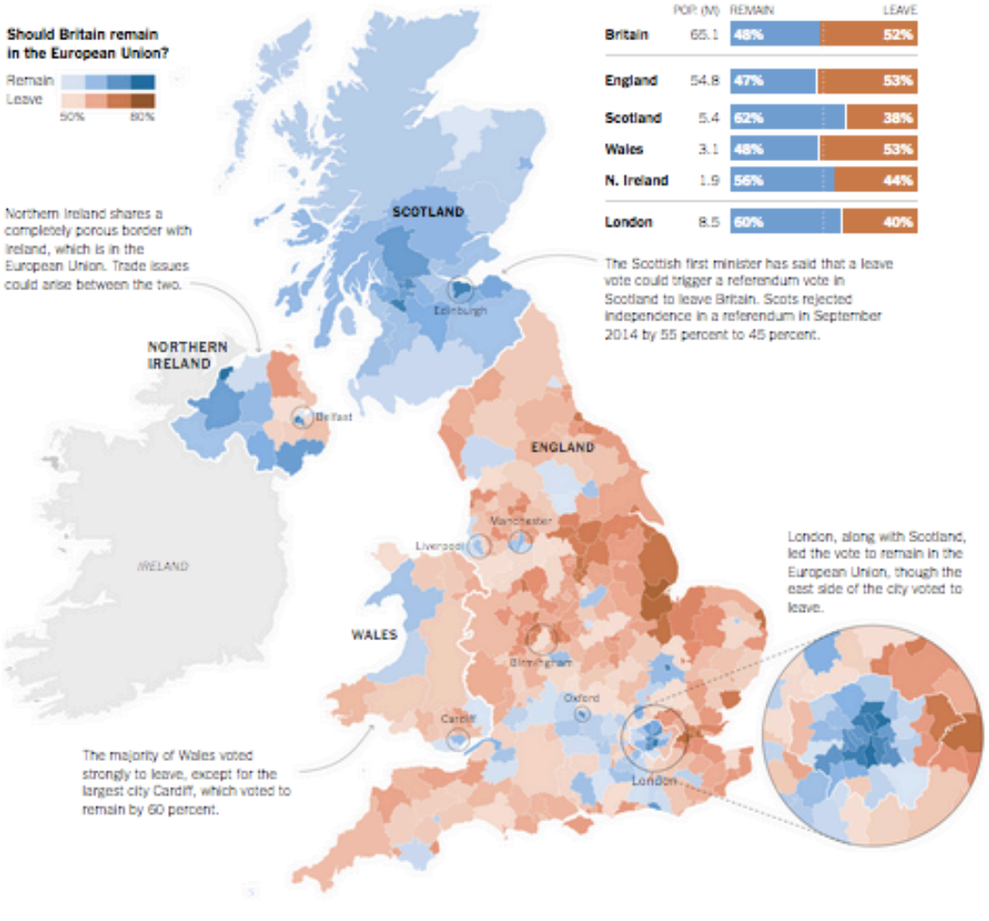

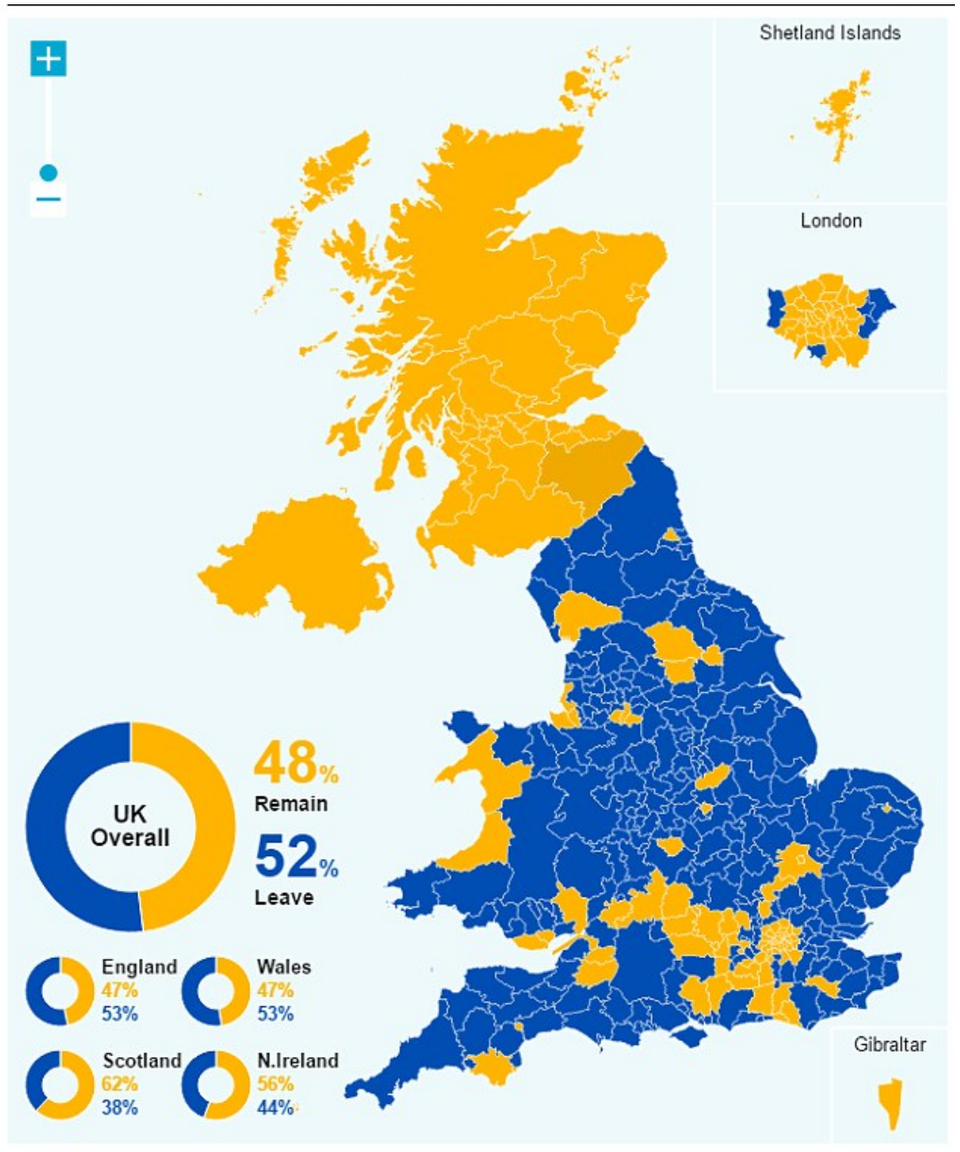

Summary

- ✔ purpose of data visualisations
- ✔ tools to display data
- ✔ pitfalls

Eager to learn more ?

- Check out graphs from New York Times

  https://twitter.com/nytgraphics?lang=de

  https://www.nytimes.com/2018/01/04/learning/whats-going-on-in-this-graph-jan-9-2018.html

- Read books by Edward Tufte

- Learn about the “Grammar of Graphics”

Links

Overview of tools for displaying data

https://flowingdata.com/category/tutorials/

http://datavizproject.com/

Choosing the right colors

http://colorbrewer2.org/

Pitfalls

http://visiphilia.org/2016/08/03/CM-hierarchy

Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical Methods William S. Cleveland und Robert McGill (1984)

http://serialmentor.com/dataviz/visualizing-proportions.html

Tables

https://medium.com/mission-log/design-better-data-tables-430a30a00d8c