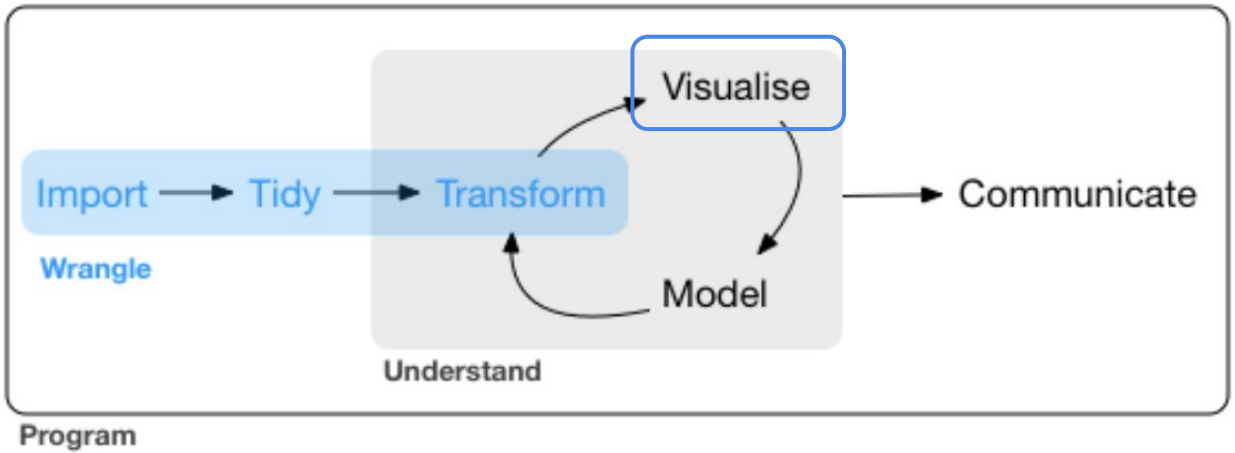
4.2 Visualization

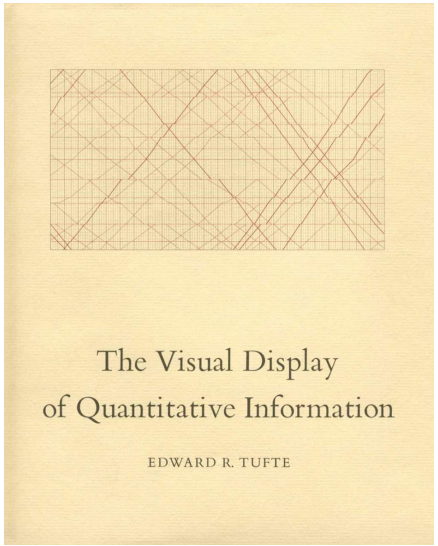
Applied Data Analysis (ADA)

Oxford DH Summer School - 2022

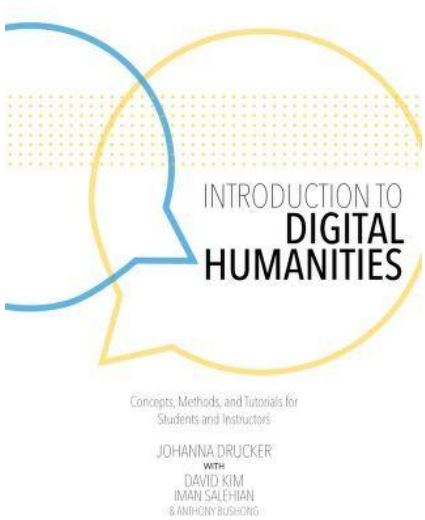


https://r4ds.had.co.nz/tidy-data.html

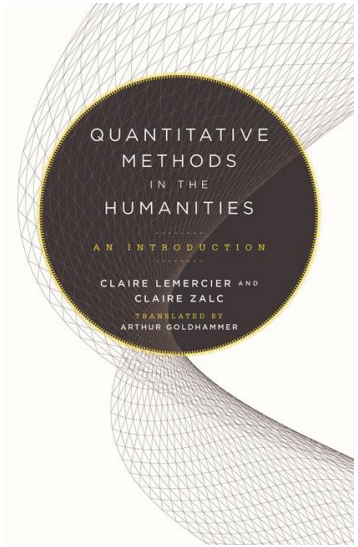
References



Tufte 1983. *The visual display of quantitative information.*



Drucker et al. 2014
Introduction to Digital Humanities
Online (PDF)



Lemercier & Zalc 2019
[chapt. 6 *Visualizing History*]

Purpose(s)

The purpose of data visualization is to make **quantitative** data **legible:**

- for oneself → data exploration (know your data!)
- for others → communication of results

Data visualizations tell (fake) stories

Implications

All parts of the process (from creation of quantified information to producing visualizations) are acts of interpretation — ***data* vs *capta*.**

Basic principles

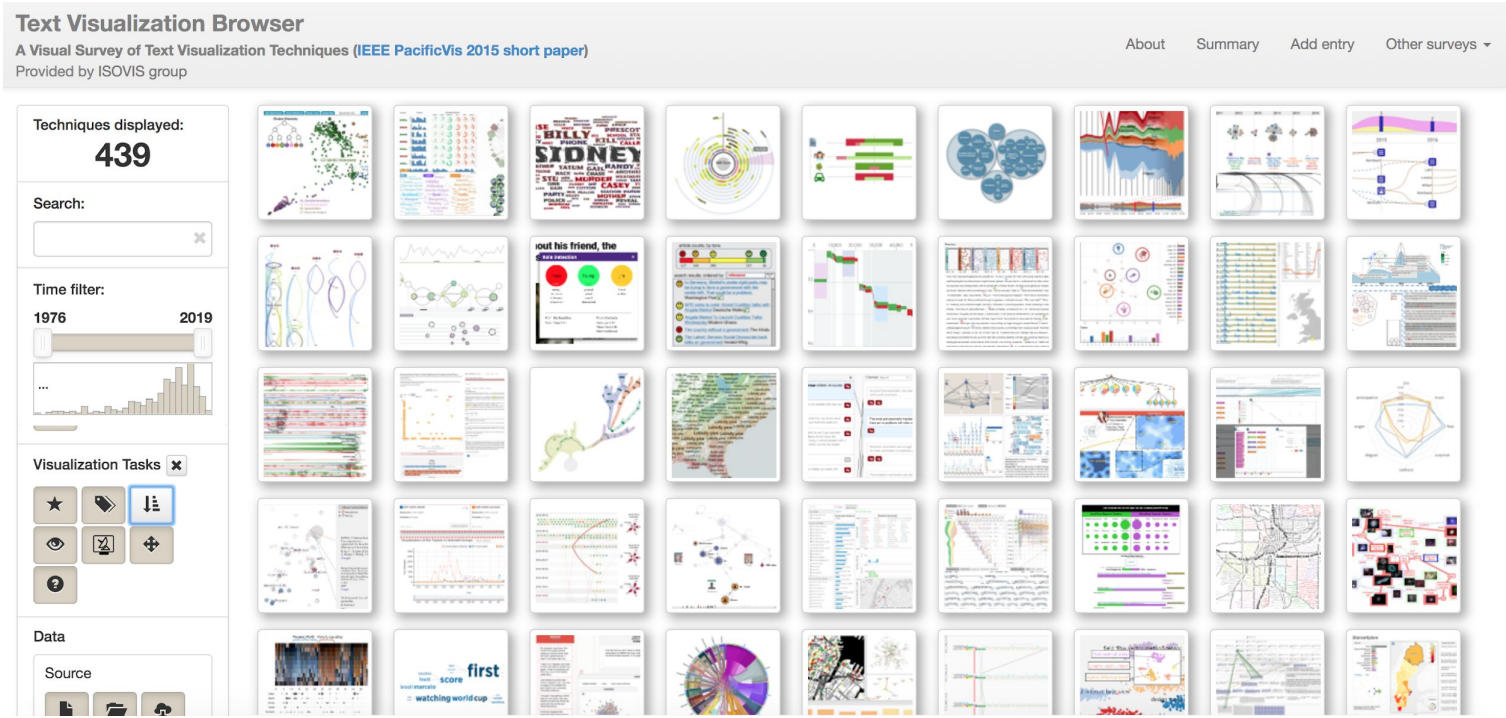
The graphic qualities of visualizations have a strong rhetorical force (different types of viz, different rhetoric).

Some visualizations are more suitable to a given dataset than others. In some cases a table works better than a diagram.

Keep it simple. Small multiples are useful when comparison matters. Complexity is broken down into small multiples.

Keep it true. Surfaces and lengths should be proportional to the quantity represented.

Breadth of text visualization types



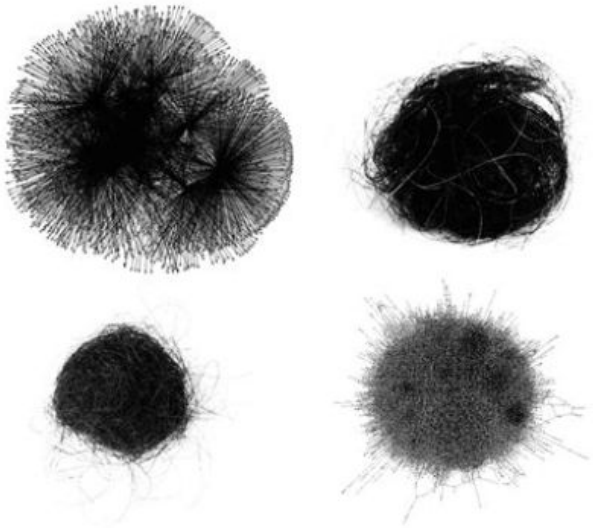
http://textvis.lnu.se/

Network data and hairballs

Graph visualization as an example of unlegible data representation/visualization

To overcome this:

- use alternative representations (adjacency matrix)
- remove data to show meaningful patterns

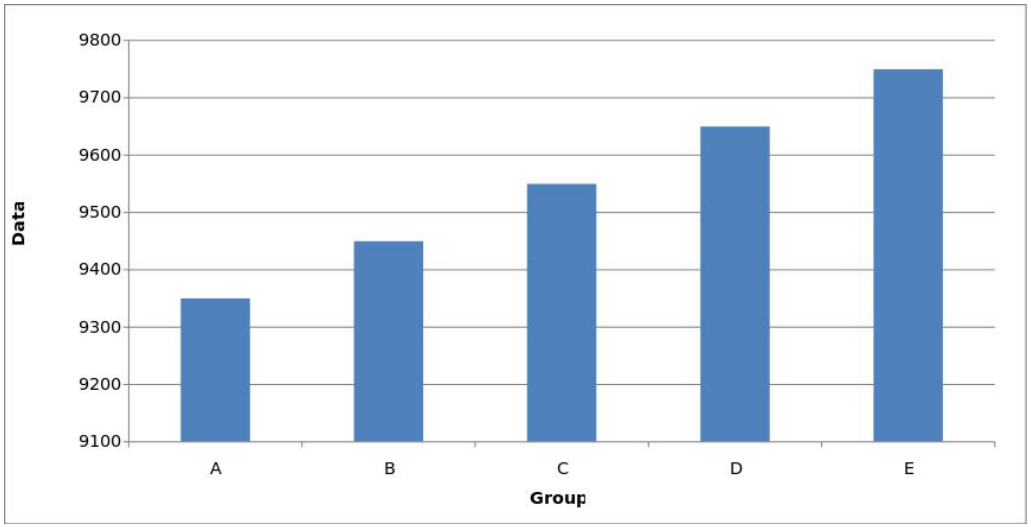


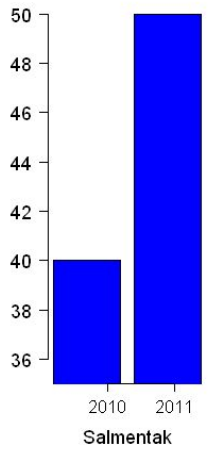
https://dh2017.adho.org/abstracts/428/428.pdf

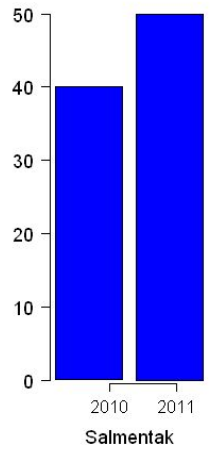
Data visualization done wrong

1. The y-axis
2. Binning
3. Unreadability
4. Missing proportionality
5. Improper scaling
6. Aberrations

Also cf. http://callingbullshit.org/tools.html

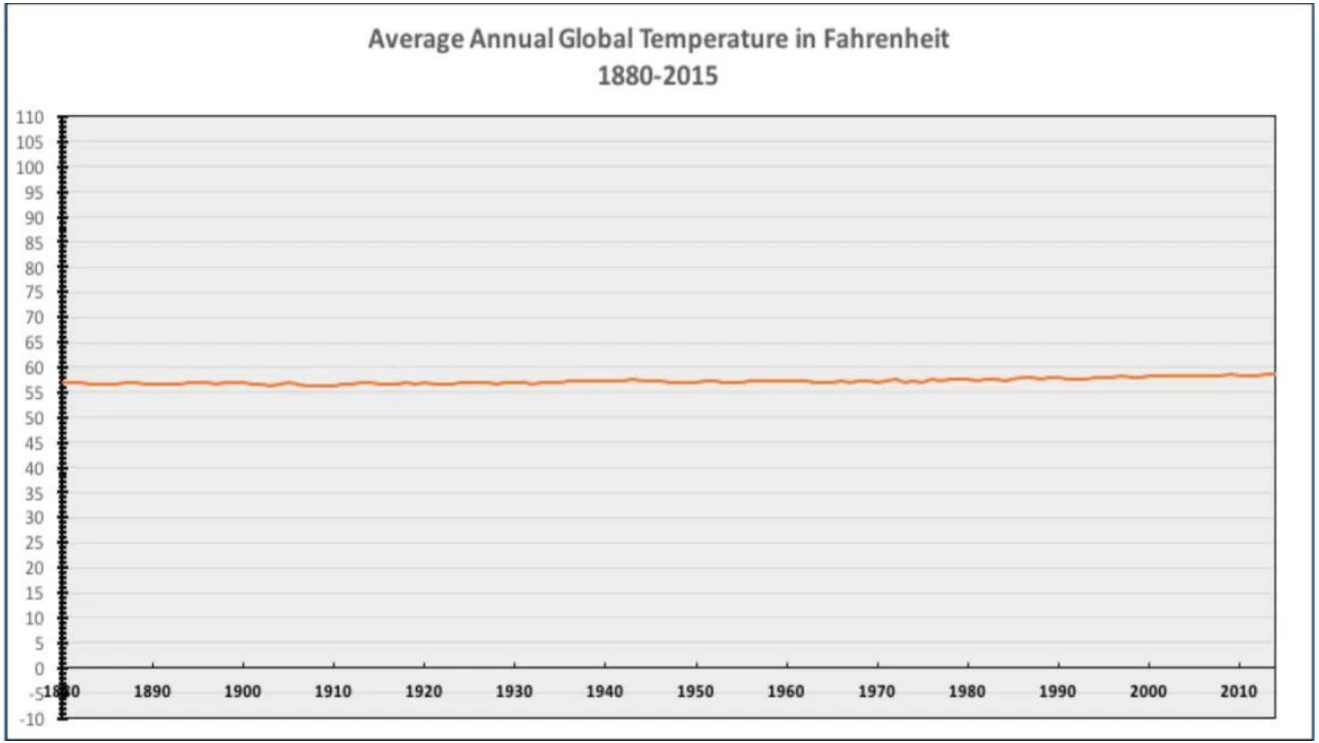






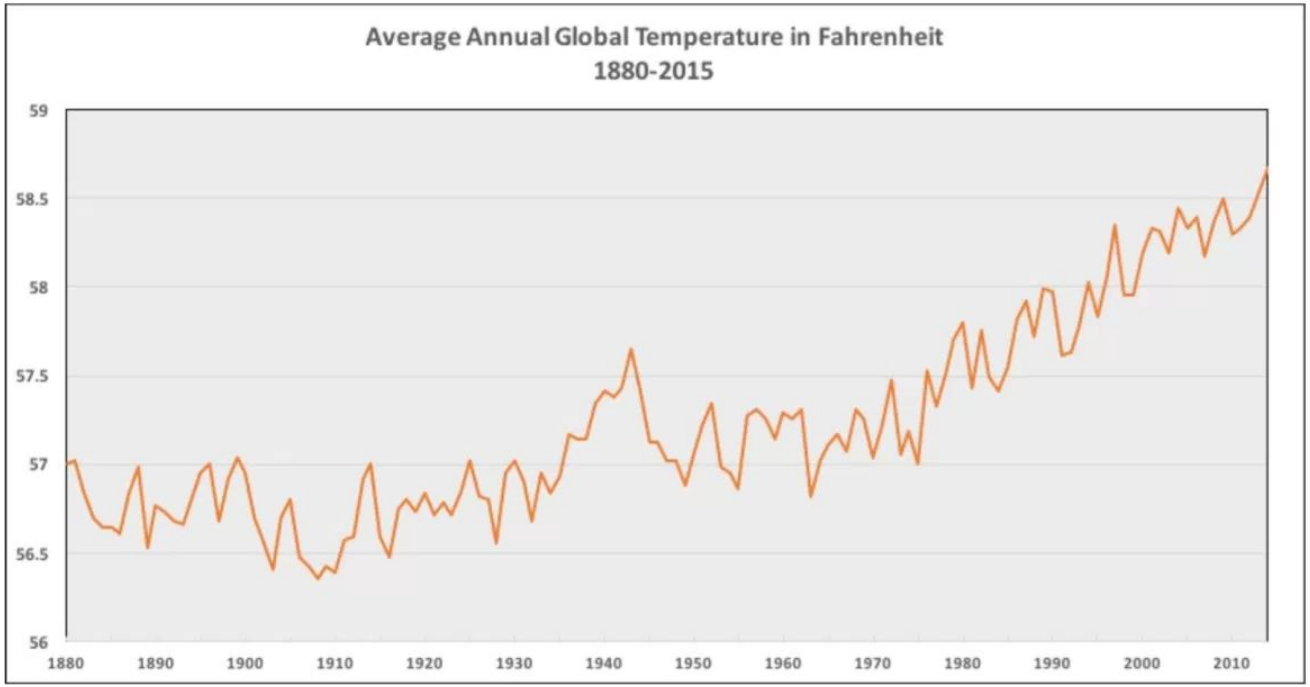
Wiki: Misleading chart
https://en.wikipedia.org/wiki/Misleading_graph

The y-axis

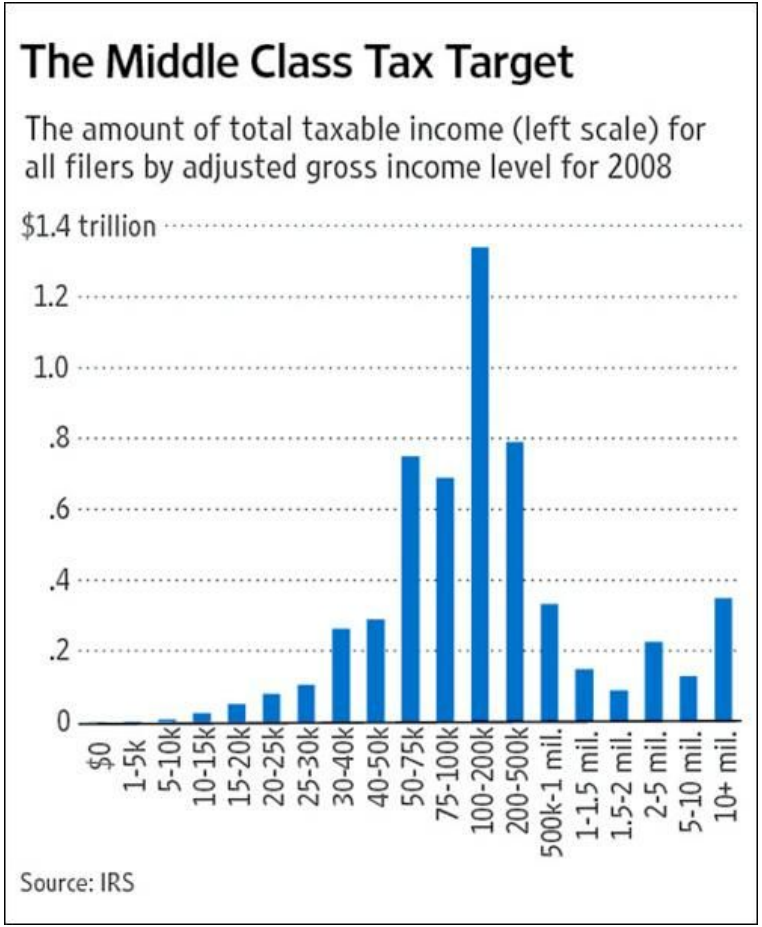


The only global warming chart you need from now on: http://www.powerlineblog.com/archives/2015/10/the-only-global-warming-chart-you-need-from-now-on.php

The y-axis

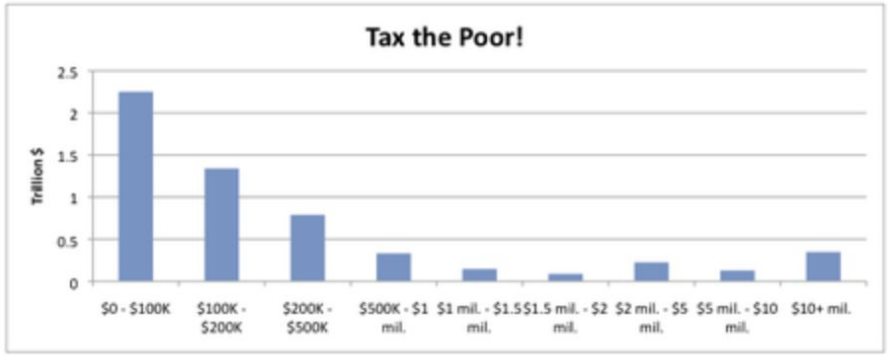


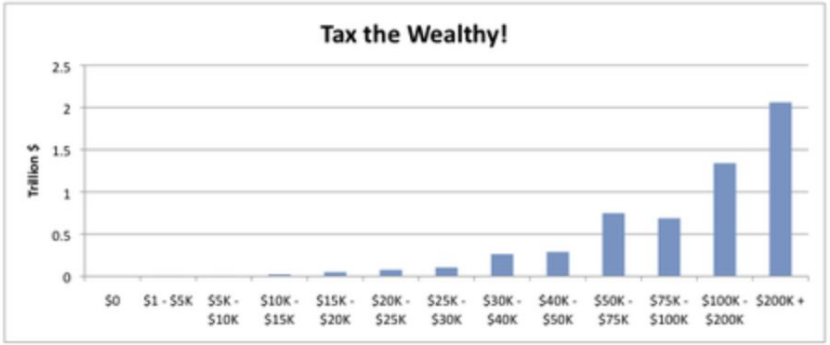
The only global warming chart you need from now on: http://www.powerlineblog.com/archives/2015/10/the-only-global-warming-chart-you-need-from-now-on.php

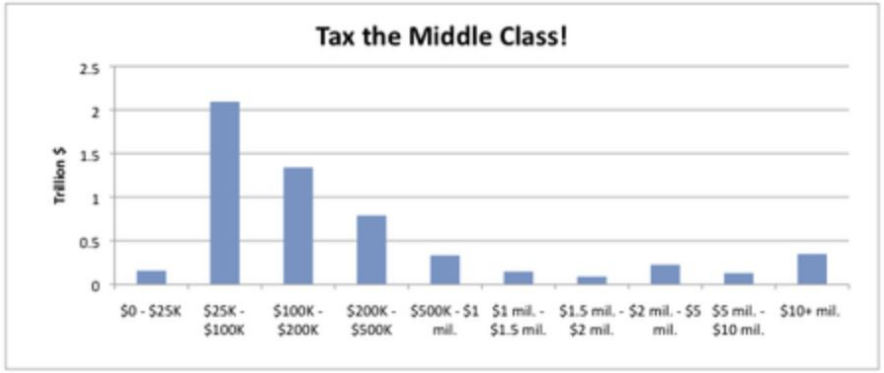


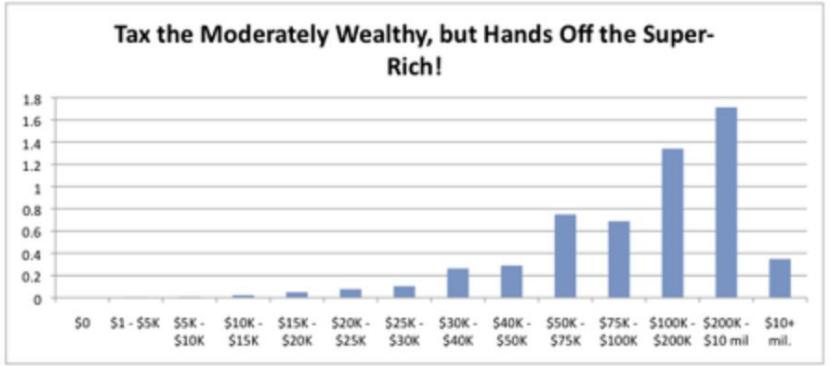
Wall Street Journal,
April 17th 2011.

Binning



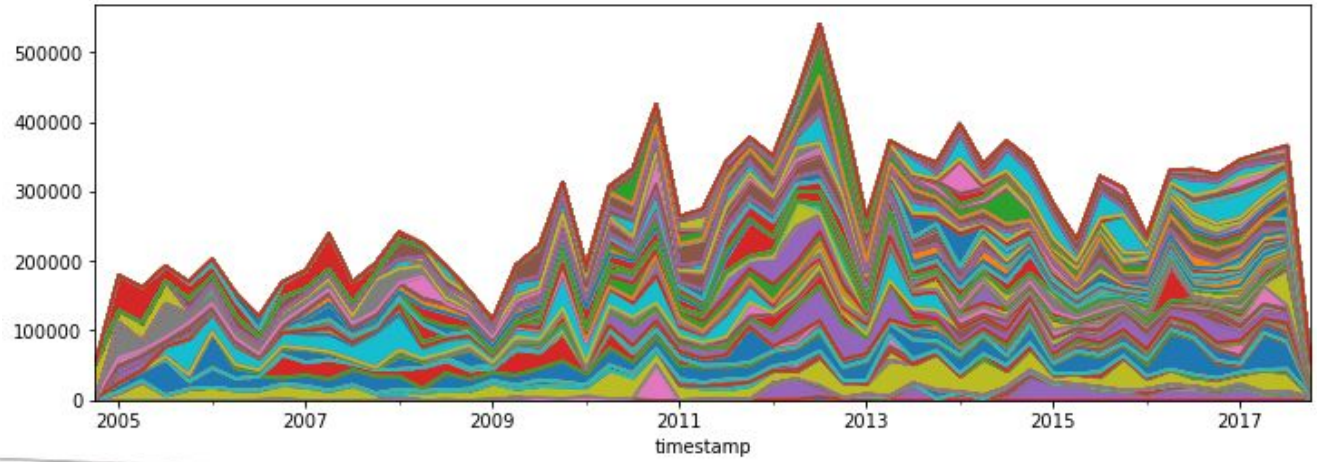


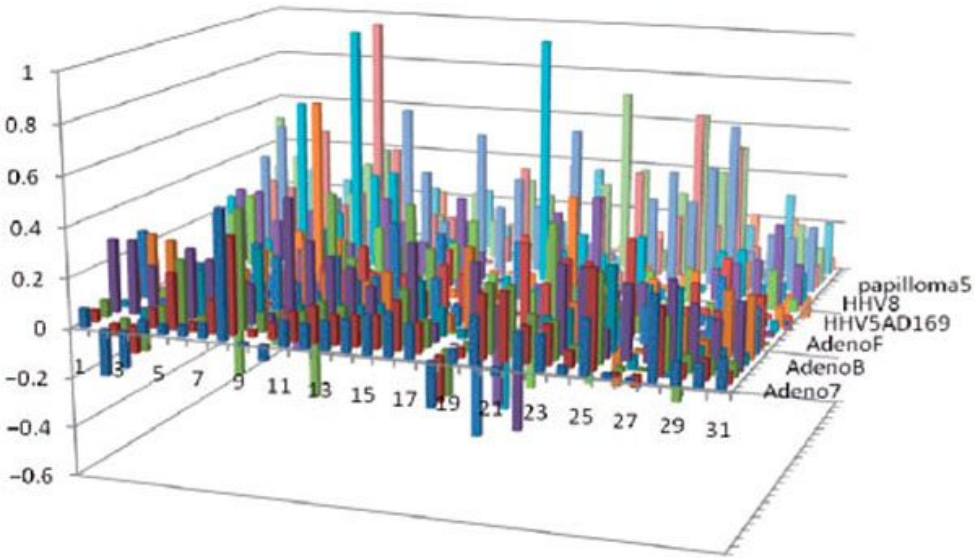




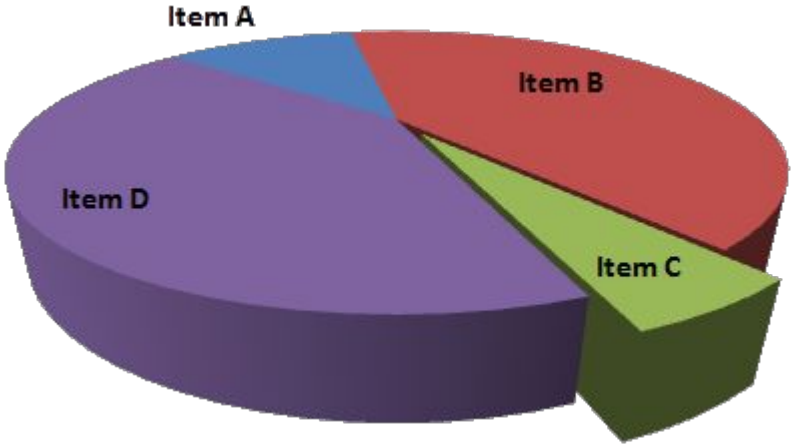
http://www.brendan-nyhan.com/blog/2011/05/the-use-and-abuse-of-bar-graphs.html

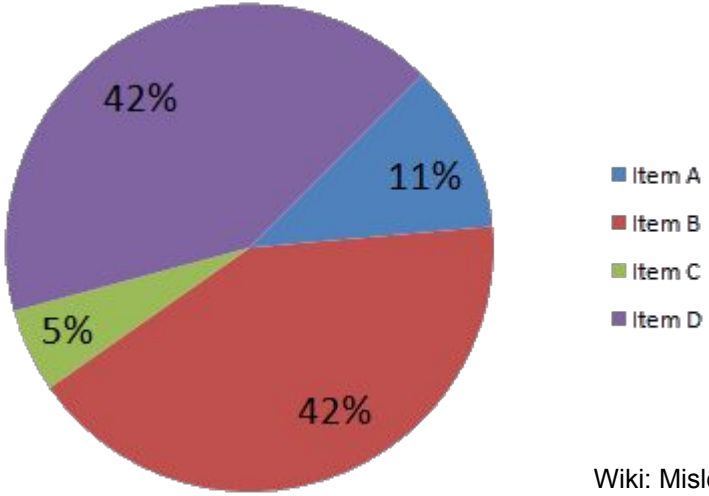
Unreadability





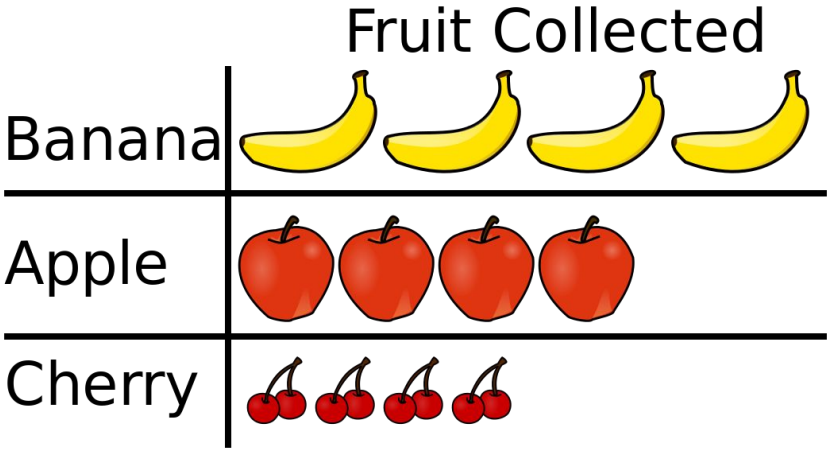
Missing proportionality

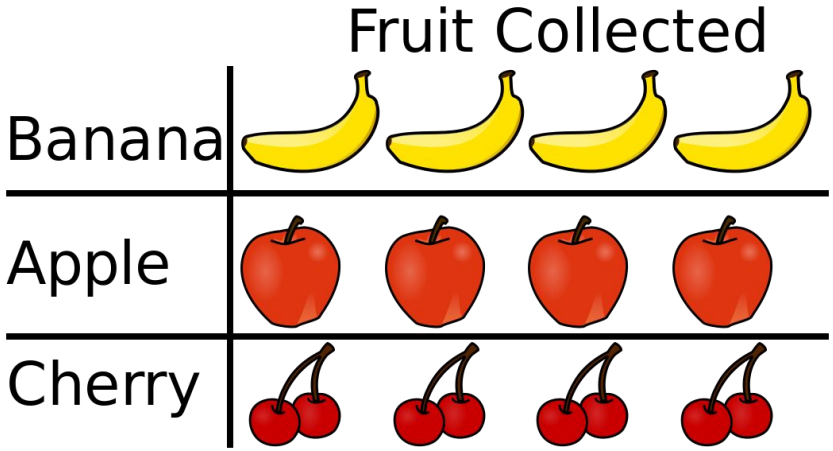




Wiki: Misleading chart https://en.wikipedia.org/wiki/Misleading_graph

Improper scaling





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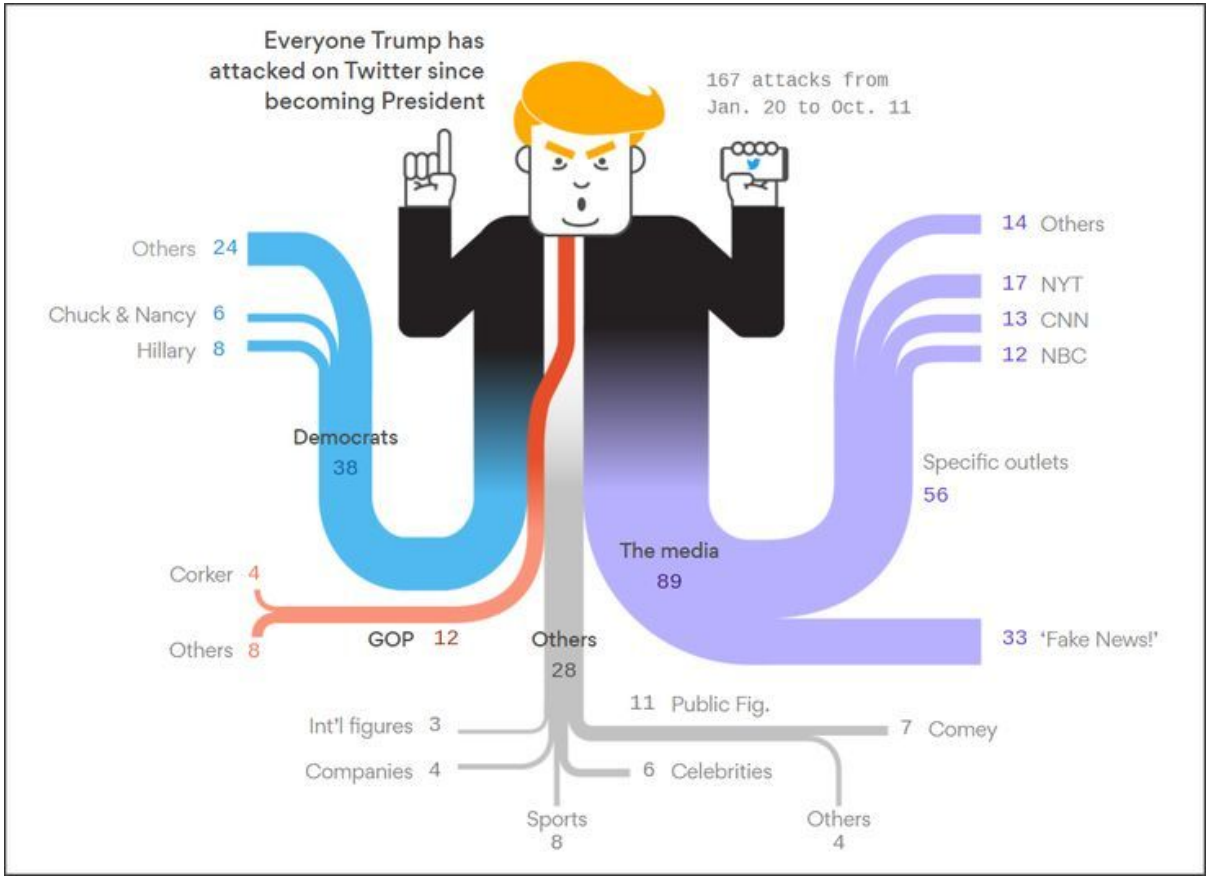
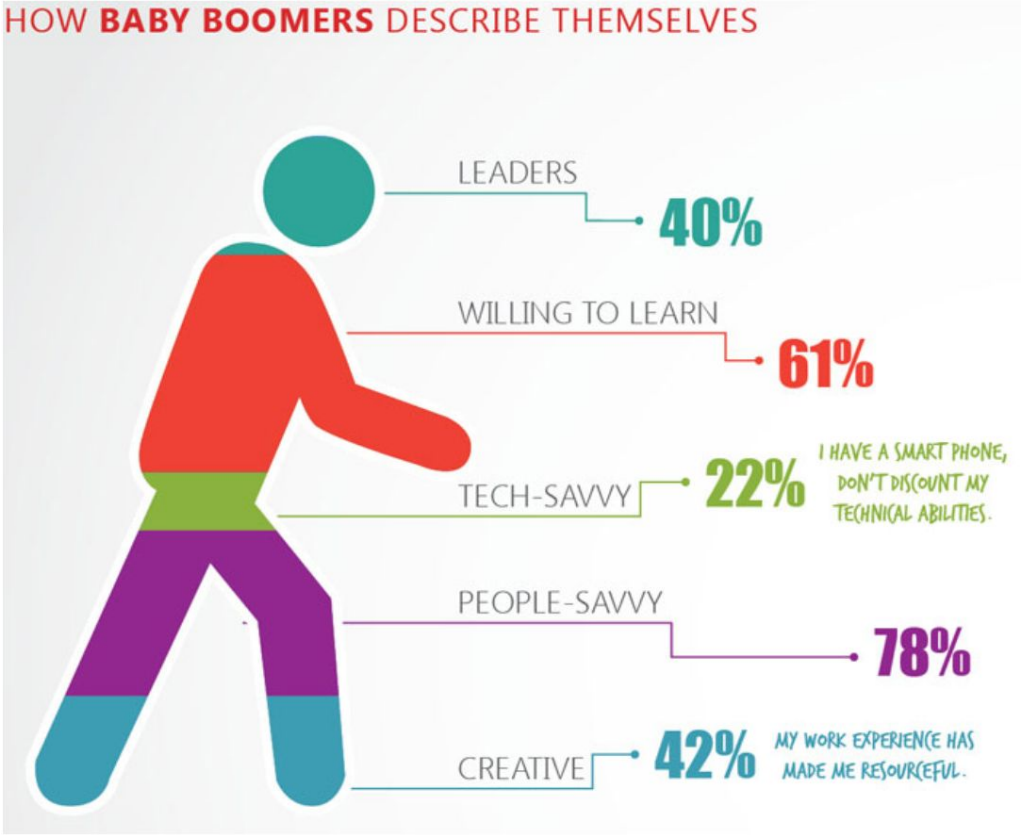
Aberrations



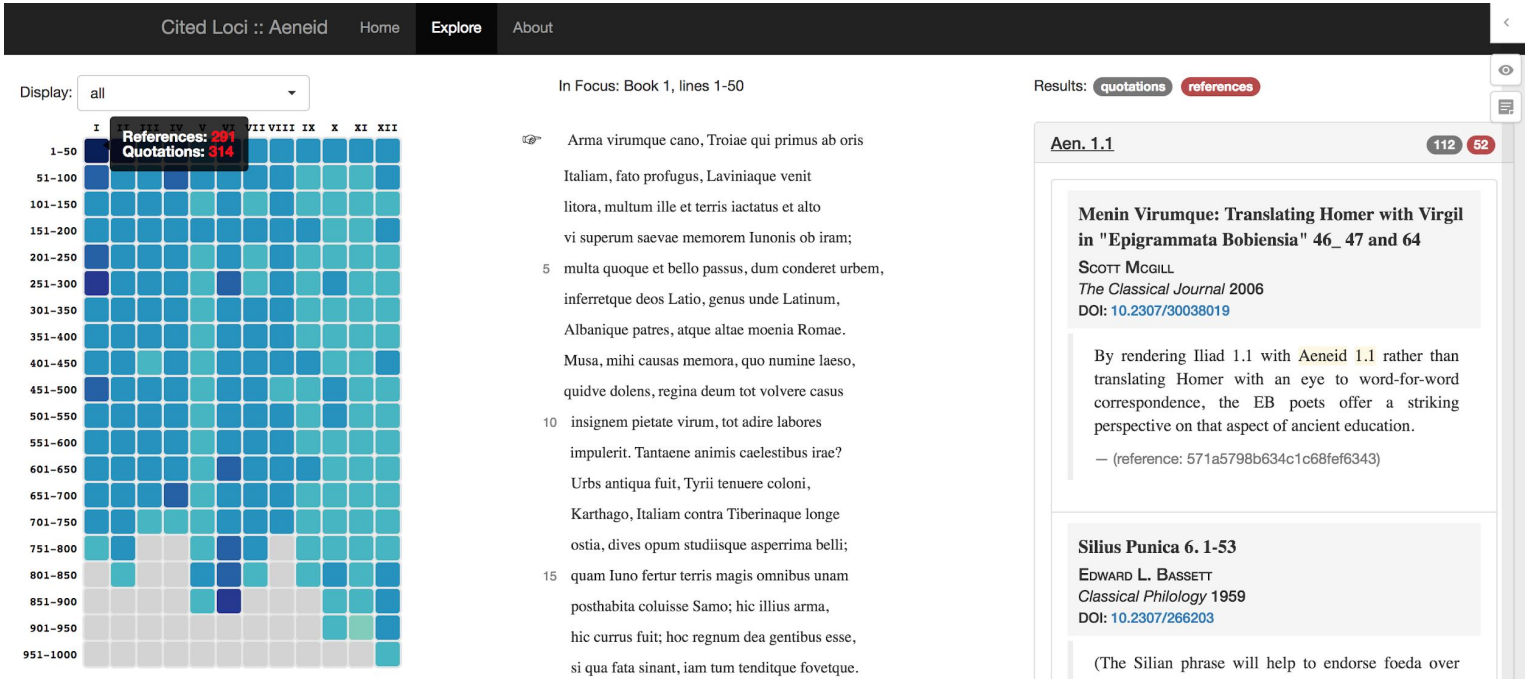
Aberrations



Tools, libraries, frameworks

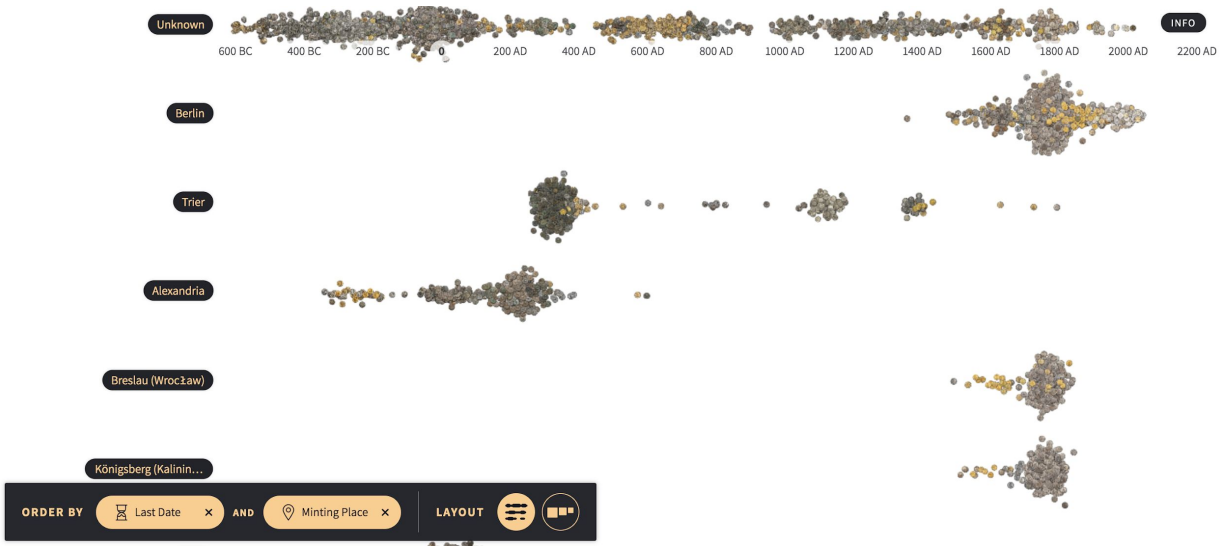
(GUI) Palladio, Tableau	Exploration
(Python, static) matplotlib, seaborn	Scientific communication
(Python, interactive) bokeh, plotly, dash	Interactive exploration
(JS libraries) d3.js, ecc.	Viz embedded in web applications

From static to dynamic visualization



https://mromanello.github.io/Aeneid_in_JSTOR/

A final example



DH Awards 2018 Winner: Best DH data visualization

https://uclab.fh-potsdam.de/coins/