



How a design framework for creating data visualisation can help your audience

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Astronomy Data Archives Meeting 2019



Data vis specialists, Visual designers, User experience designers,
Digital producers, Developers



The beginnings

"Among the most important problems of the 17th century were those concerned with physical measurement – of time, distance, and space – for astronomy, surveying, map making, navigation and territorial expansion."

2007. "A brief history of data visualization". In: C. Chen, Wolfgang Härdle and Antony Unwin, eds., *Handbook of Computational Statistics: Data Visualization*, vol. III, chap. 1, pp. 1–34. Heidelberg: Springer-Verlag.

www.datavis.ca/papers/hbook.pdf

http://libweb5.princeton.edu/visual_materials/maps/websites/the-matic-maps/quantitative/sociology-economics/sociology-economic-s.html

<http://www.jeffersonbailey.com/speak-to-the-eyes-the-history-and-practice-of-information-visualization/>

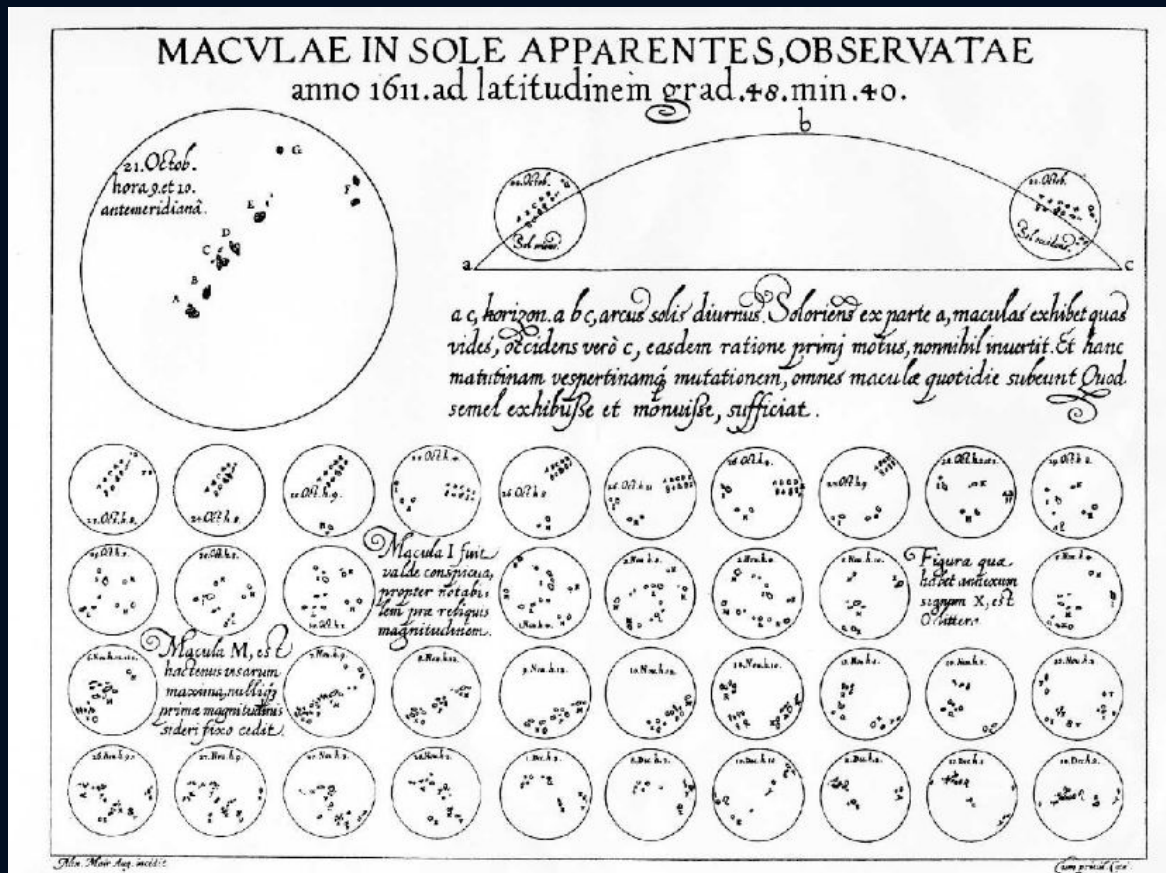


Pre-1800s

Scheiner's 1626 representation of the changes in sunspots over time.

2007. "A brief history of data visualization". In: C. Chen, Wolfgang Härdle and Antony Unwin, eds., Handbook of Computational Statistics: Data Visualization, vol. III, chap. 1, pp. 1–34. Heidelberg: Springer-Verlag.

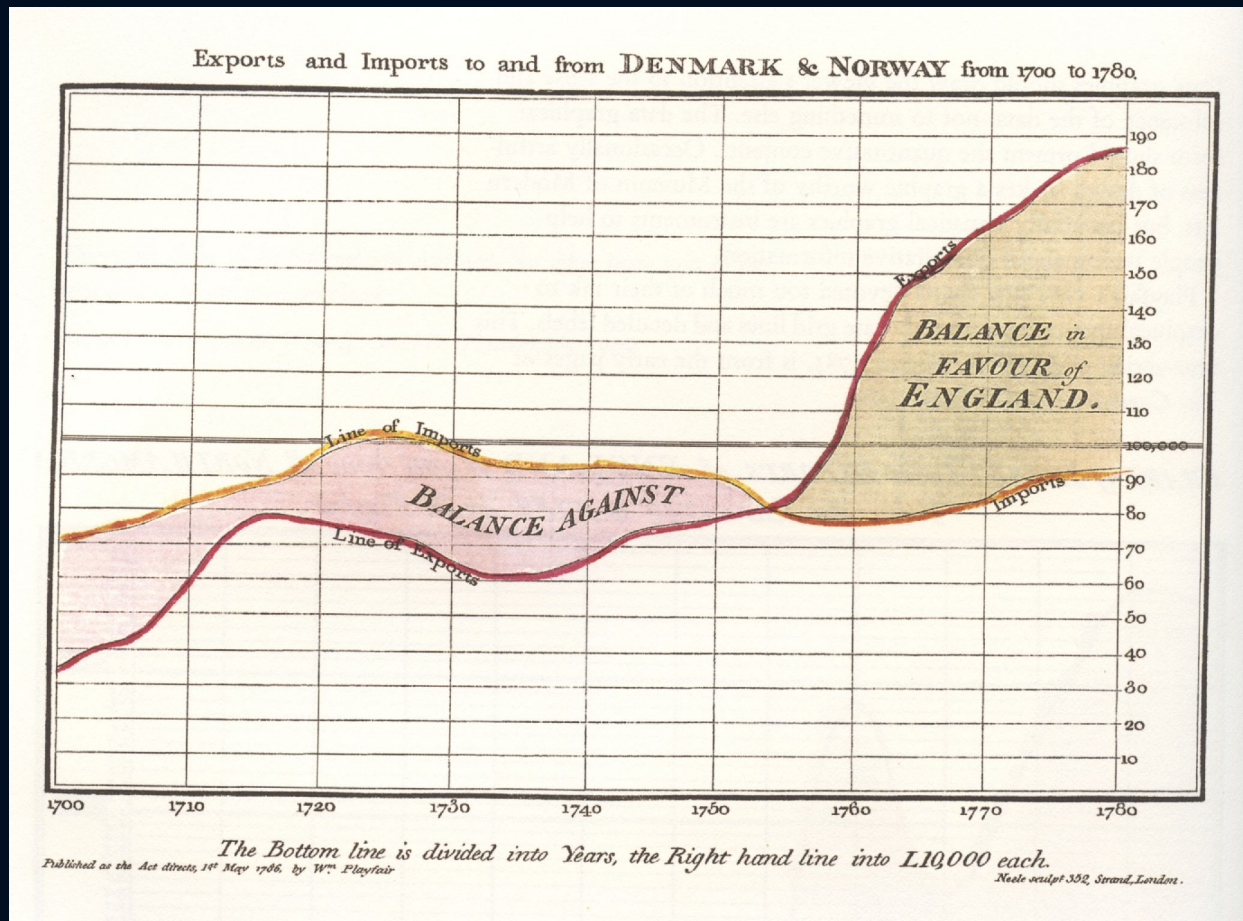
www.datavis.ca/papers/hbook.pdf





1800s: William Playfair

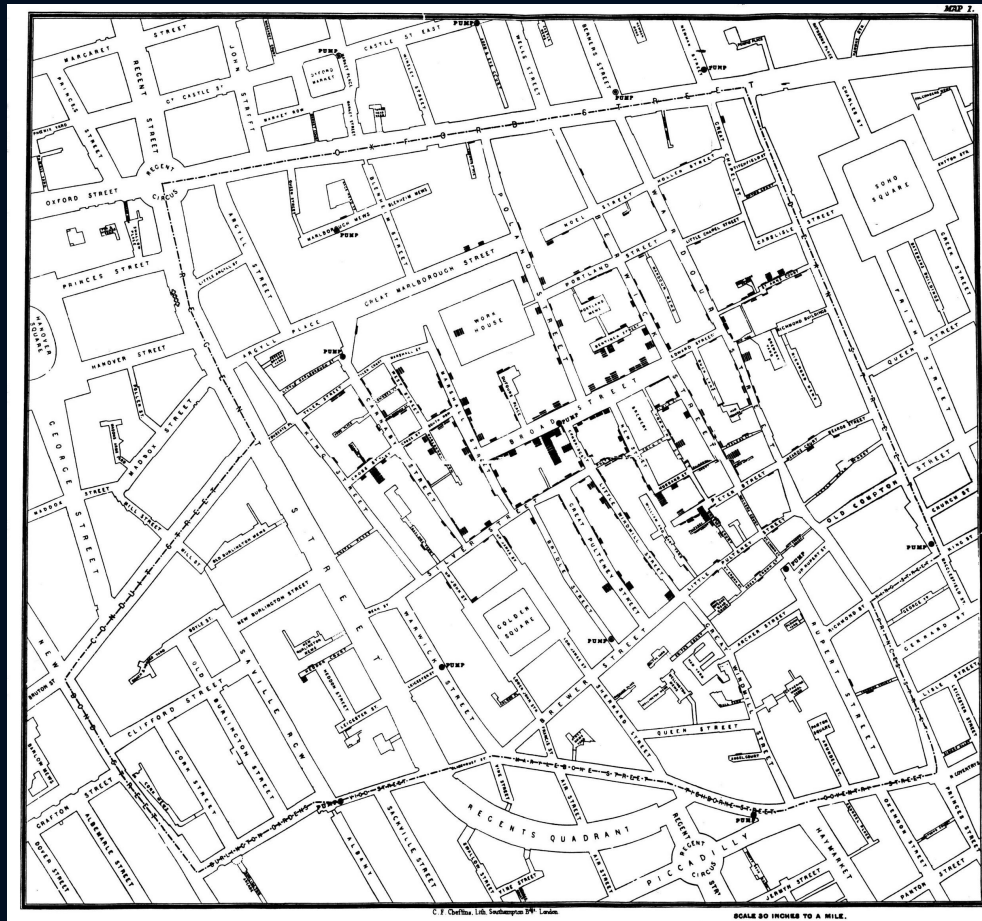
1785-86: The Commercial and Political Atlas; Representing, by Means of Stained Copper-Plate Charts, the Exports, Imports, and General Trade of England, at a Single View.





1855: John Snow

C.F. Cheffins, Lith, Southampton
Buildings, London, England, 1854 in
Snow, John. On the Mode of
Communication of Cholera, 2nd Ed,
John Churchill, New Burlington Street,
London, England, 1855.





1901: Šareni svjetski koledar

http://www.academia.edu/182997/Croatian_Diaspora_Almanacs_A_Historical_and_Cultural_Analysis

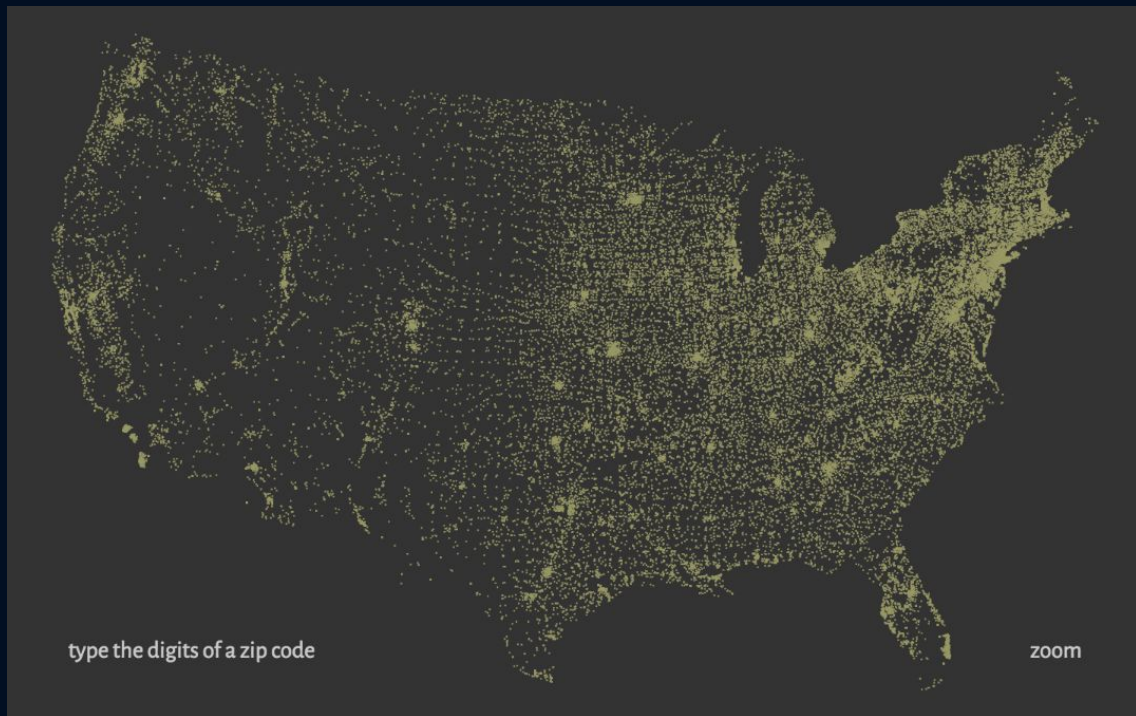




1999: Zipdecode

Ben Fry

<http://benfry.com/zipdecode/>

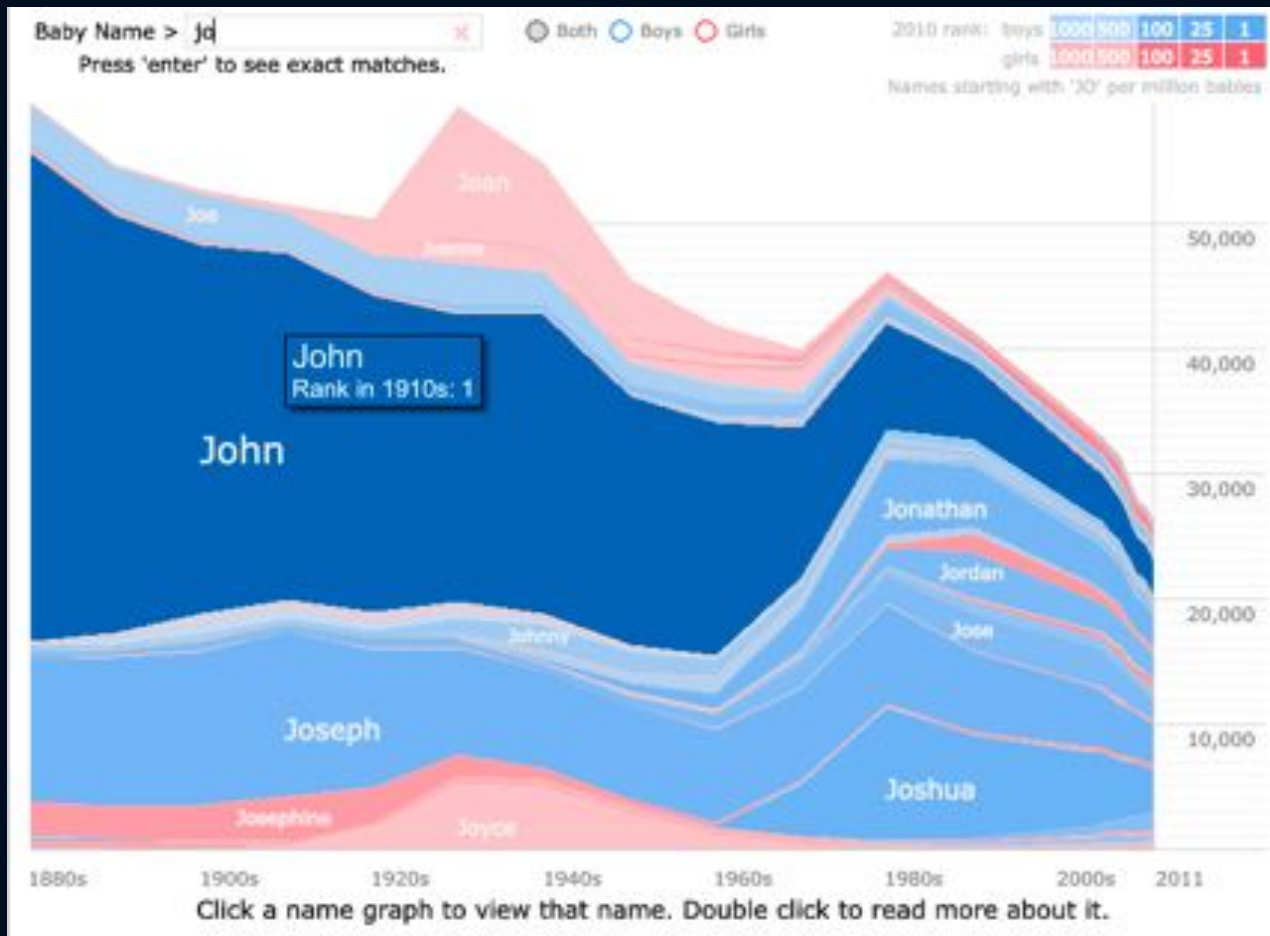




2005: Baby Name Voyager

Martin Wattenberg

babynamewizard.com/voyager

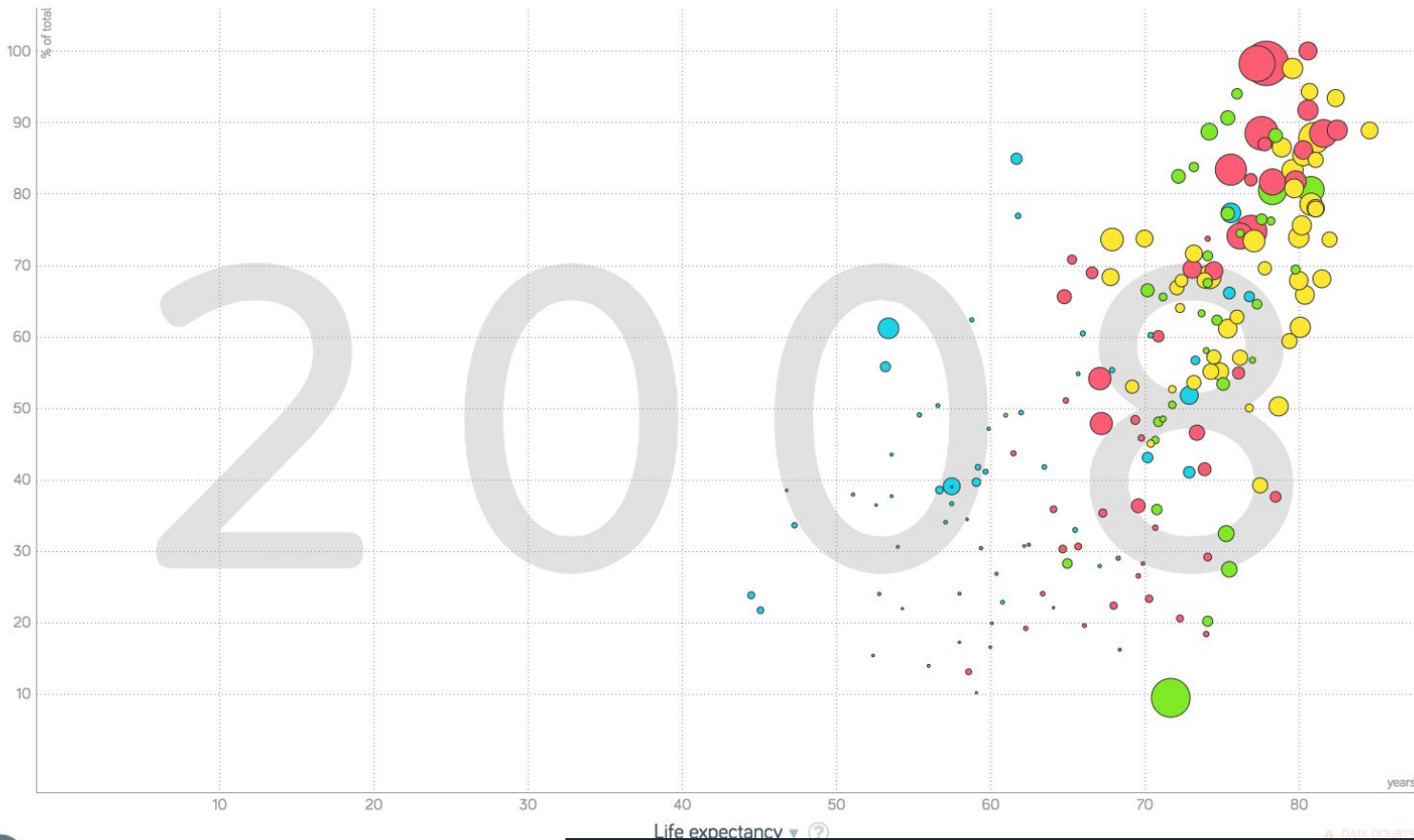




<https://youtu.be/hVimVzgtD6w?t=3m25s>



Urban population ▼ ?



Color World Regions ▼ ?



Select Search...

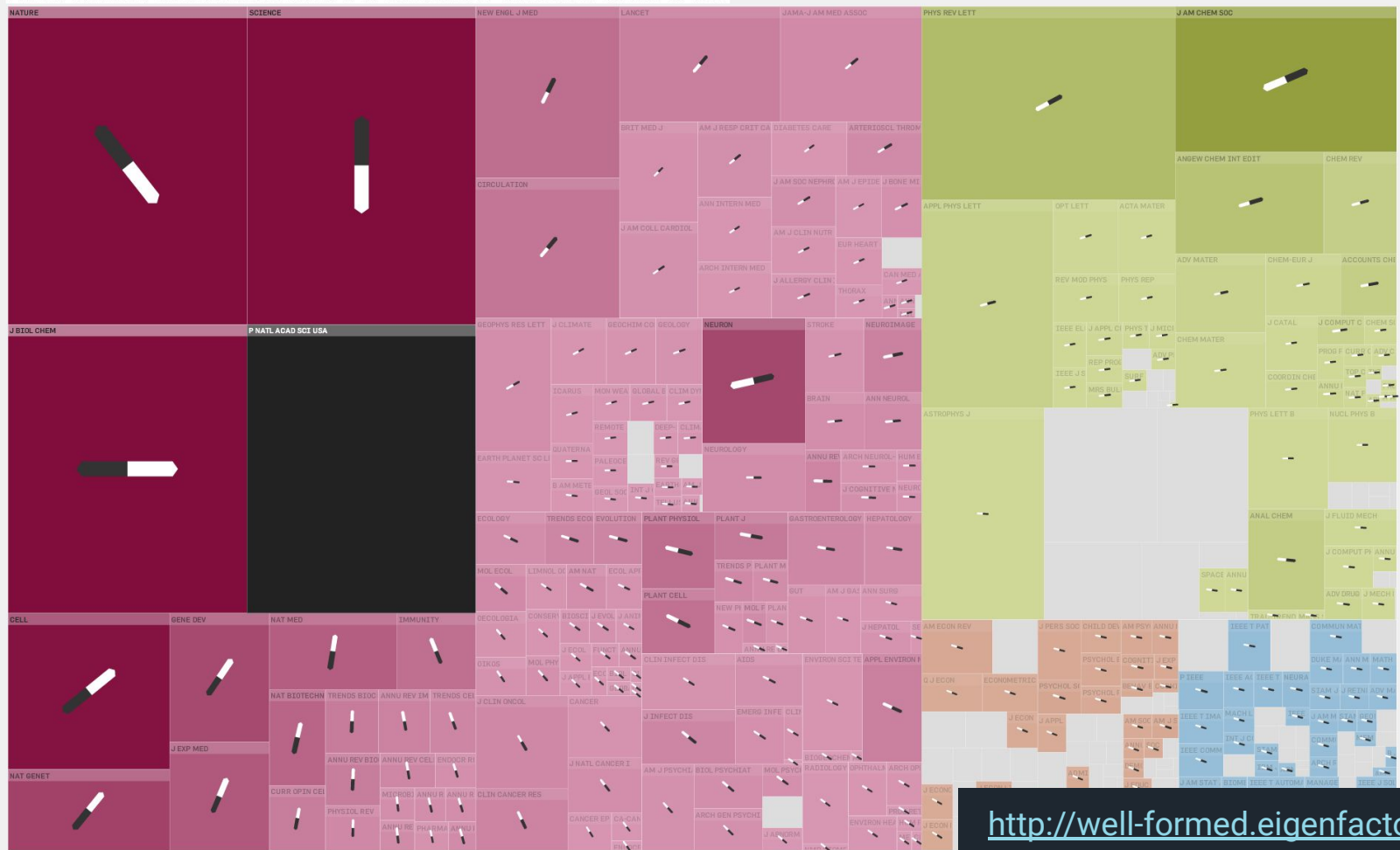
- ☐ Afghanistan
- ☐ Albania
- ☐ Algeria
- ☐ Andorra
- ☐ Angola
- ☐ Antigua and Barbuda
- ☐ Argentina
- ☐ Armenia
- ☐ Australia
- ☐ Austria
- ☐ Azerbaijan
- ☐ Bahamas
- ☐ Bahrain
- ☐ Bangladesh
- ☐ Barbados
- ☐ Belarus
- ☐ Belgium
- ☐ Belize
- ☐ Benin
- ☐ Bhutan

Size CO2 emissions (tonnes p... ▼ ?

Zoom



<https://www.gapminder.org/tools> and <https://youtu.be/hVimVzgtD6w?t=3m57s>





EXISTING ~~YOUR NEW~~ DATA VISUALISATION TEAM



~~MARKETING MANAGER~~

THE DATAVIS
COMMUNICATOR



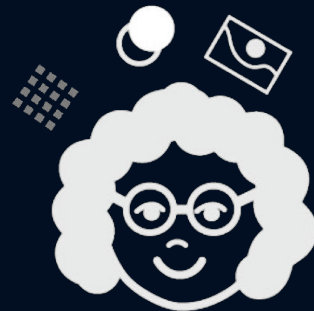
~~SENIOR DEVELOPER~~

THE DATAVIS
CODER



~~DATA ANALYST~~

THE DATA
WRANGLER



~~GRAPHIC DESIGNER~~

THE DATAVIS
DESIGNER



Audience

Data

What will the data
visualisation be?

Question



Audience

Data

Data research and
analysis with story
and audience in mind

Led by available
or existing data

Question



Audience

Data

Led by a topic or
theme

Creating an interesting
story for the audience,
founded in data

Question



Audience

Understanding the audience

Data

Led by a goal or
outcome for people

Question



Audience

Data

A combination
of all three

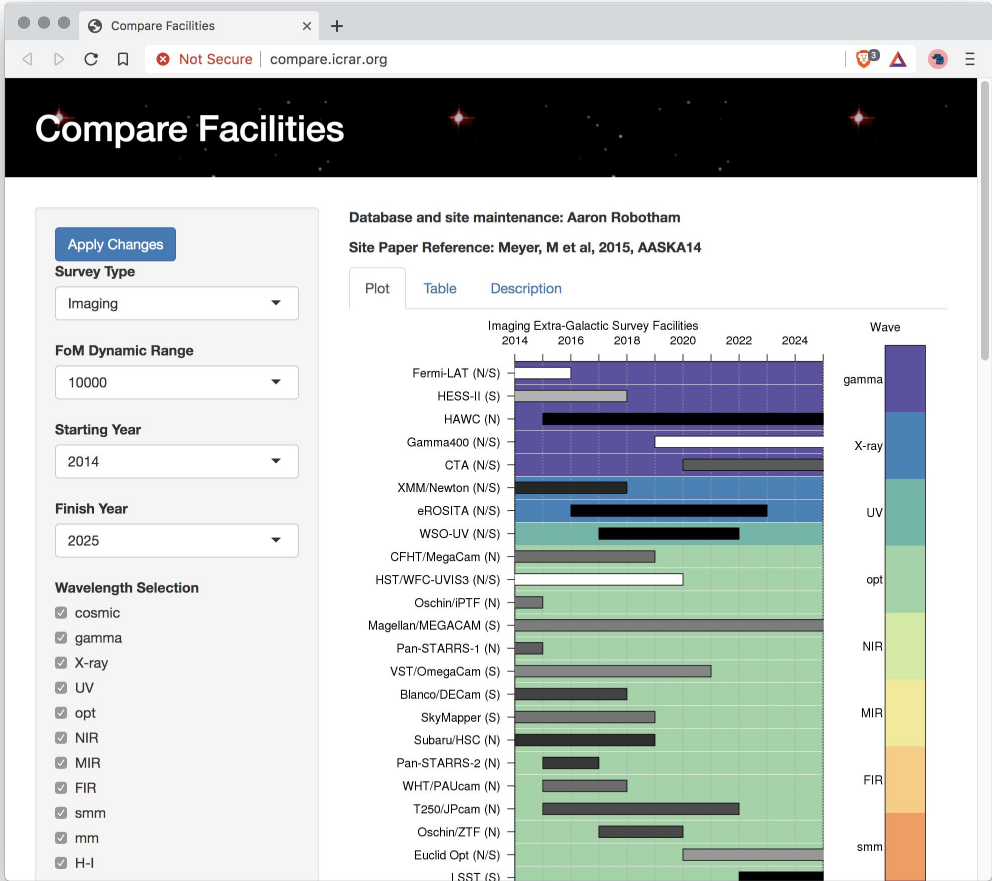
Question



Case study: Nature Index



Good starting screen





No need for explanation

<http://ui-patterns.com/>
<https://usepanda.com/app/#/>
<https://uimovement.com/>

SpecFit

Not Secure | specfit.icrar.org

If you have uploaded your spectrum correctly it should appear in the main panel. You can dynamically change the spectrum inputs if you have made a mistake, and you can see the spectrum units and scaling in the main panel change with your choices.

Spectrum will load here

Uploaded spectrum will appear here

You can still dynamically change these

You can also load one of two example SDSS spectra by clicking on the appropriate button.

Once you are happy with the uploaded spectrum move the "Edit/Analyse" tab.

When done, use this tab to move on

Click here to load example spectrum

Example spectrum will appear here

These will automatically update for example spectrum



What is the pattern?

Marvin | Galaxy

dr15.sdss.org/marvin/galaxy/8317-6102/

Go To Collab

What's NewKnown IssuesProvide Feedback

Plate-IFU: 8317-6102 v2_4_3

Manga-ID: 1-259537

IAU Name: J125942.00+434511.5

OBJ RA, Dec	194.925026457	43.7531796624
IFU Glon, Glat	117.736462027	73.2917588396
SN2 Blue, Red	37.46	66.4
Date Observed	2015-02-24	
DAP Output	DAP URL	

Cube Quality: Good

Bit: 0

Flags

Download

Go to SkyServer

MaNGA Target

Galaxy Bit: 1040

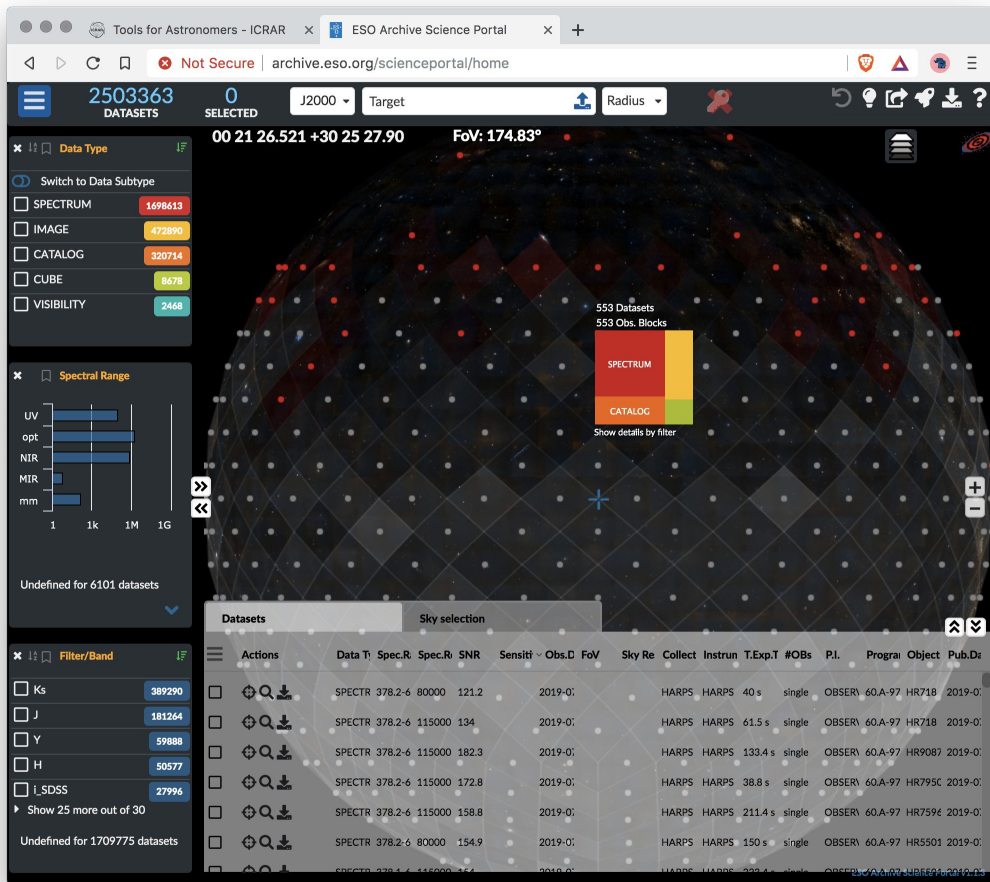
Flags

Map/SpecView Off

Use this cube in Python



What is most important?



Thank you

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