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Edinburgh Data Visualization Meetup

Edinburgh, United Kingdom

593 members · Public group ?

Organized by **Brendan Hill** and 2 others

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About

Events

Members

Photos

Discussions

More

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Create event ▼



Tools for Data Visualization (a fast forward)

Benjamin Bach

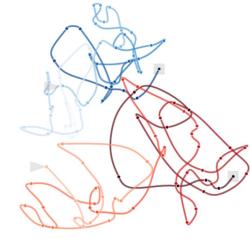
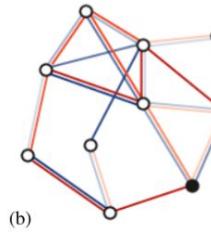
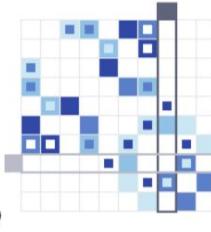
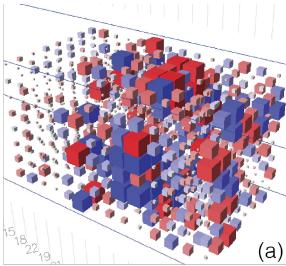
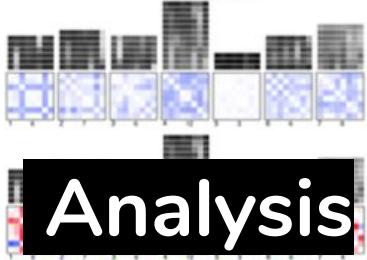
Lecturer for Design Informatics and Visualization

@benjbach

<http://benjbach.me>



THE UNIVERSITY
of EDINBURGH



Analysis

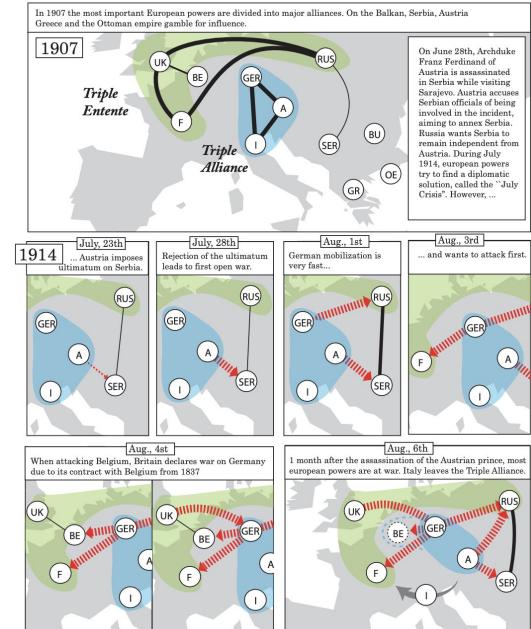
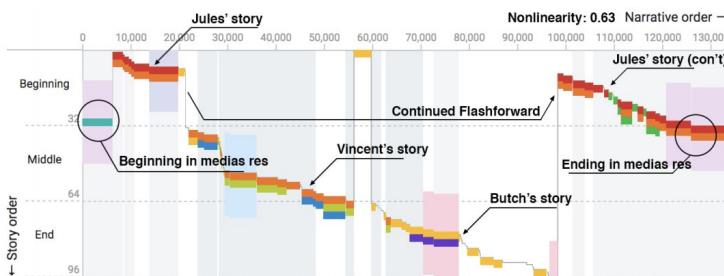
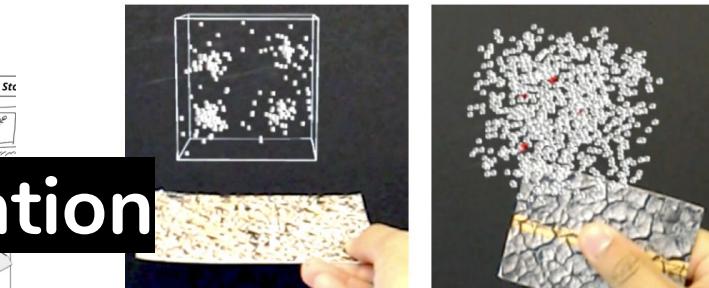
Tasks

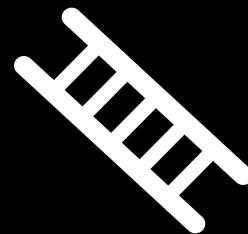
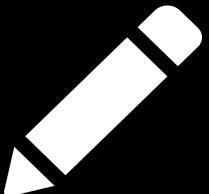
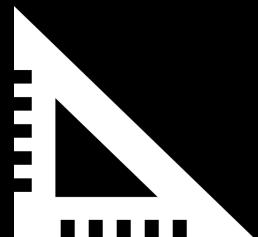
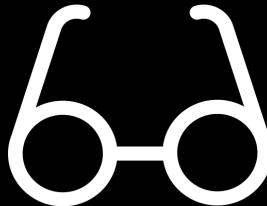
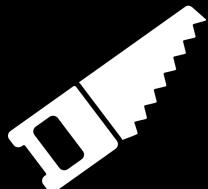
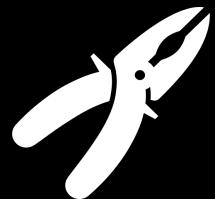
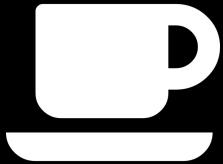
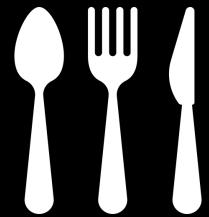
Design

Implementation

Evaluation

Theory

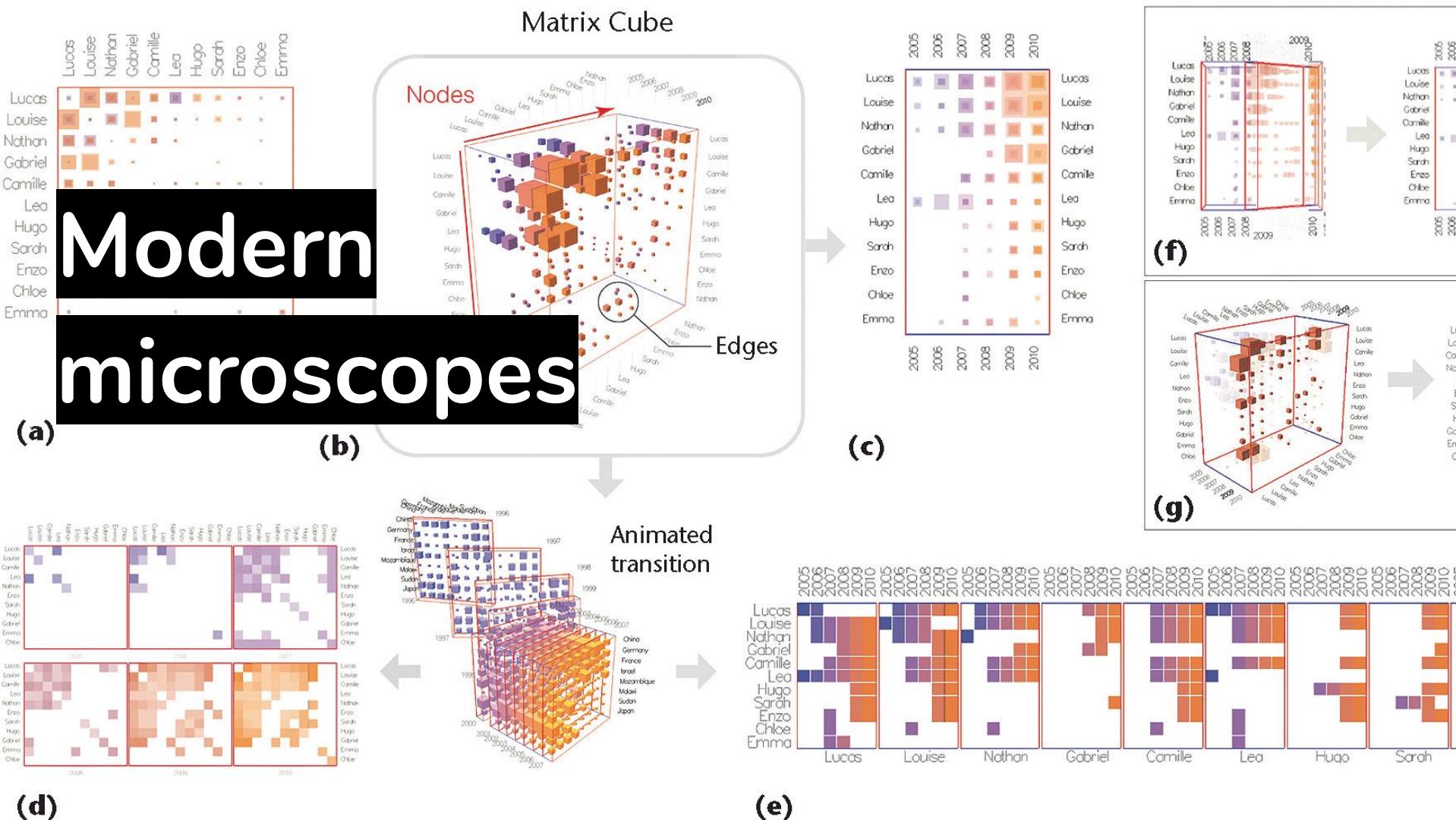




A high-contrast, black-and-white image showing a dense network of neurons. The neurons are represented by small, dark, circular cell bodies (soma) and their intricate, branching processes (dendrites and axons). They are set against a light gray background, creating a stark contrast. The neurons are distributed throughout the frame, with some appearing more prominent than others, suggesting depth or density.

**Discovery
Understanding
Communication**

Matrix Cube



Data



Visualization Tool



Visualization

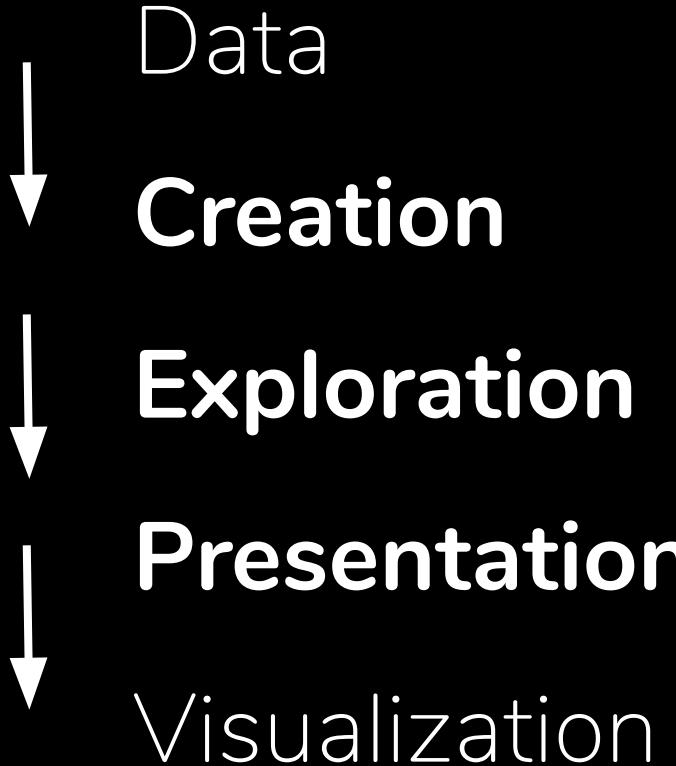


RAWGraphs



COLORBREWER 2.0
color advice for cartography



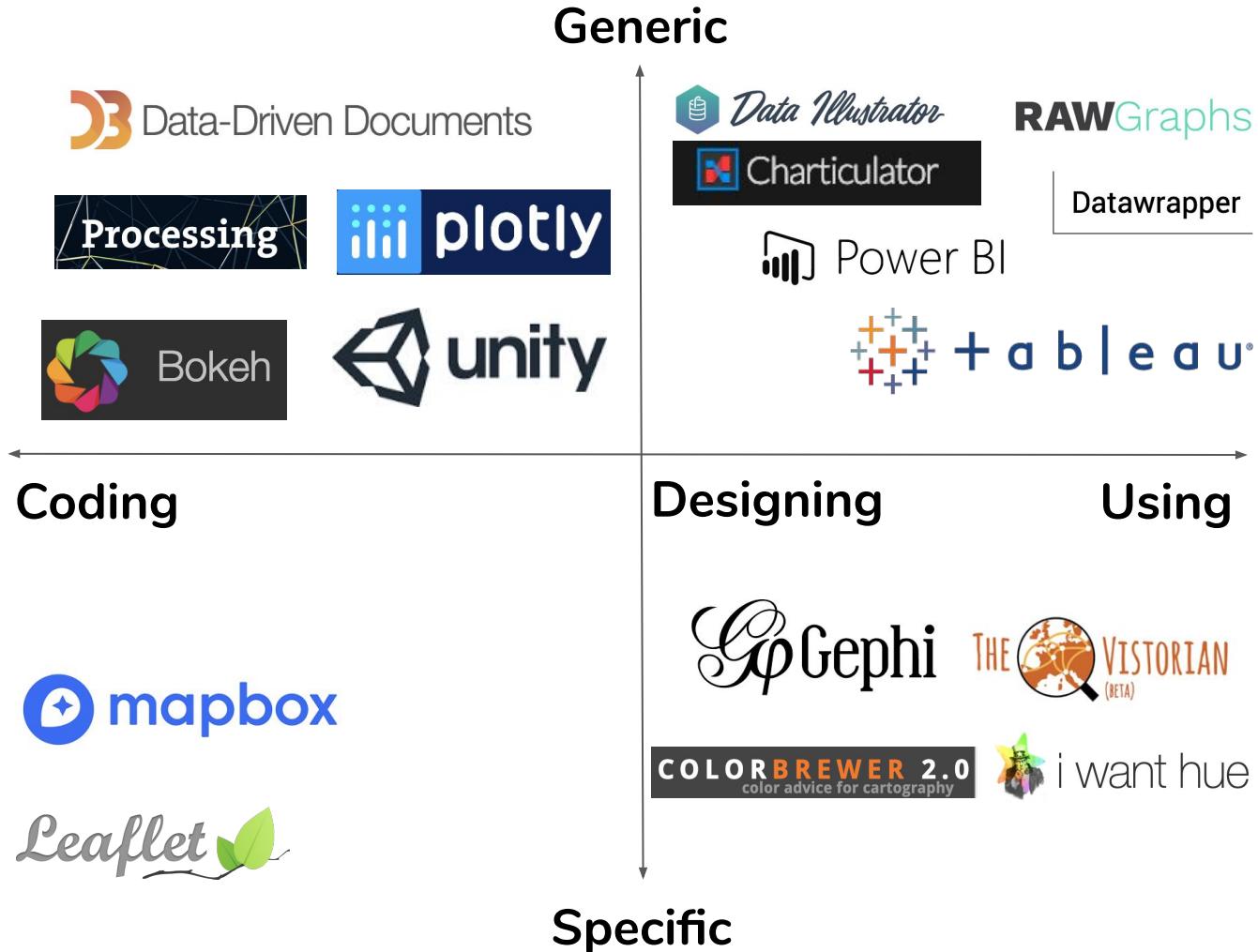


Overview

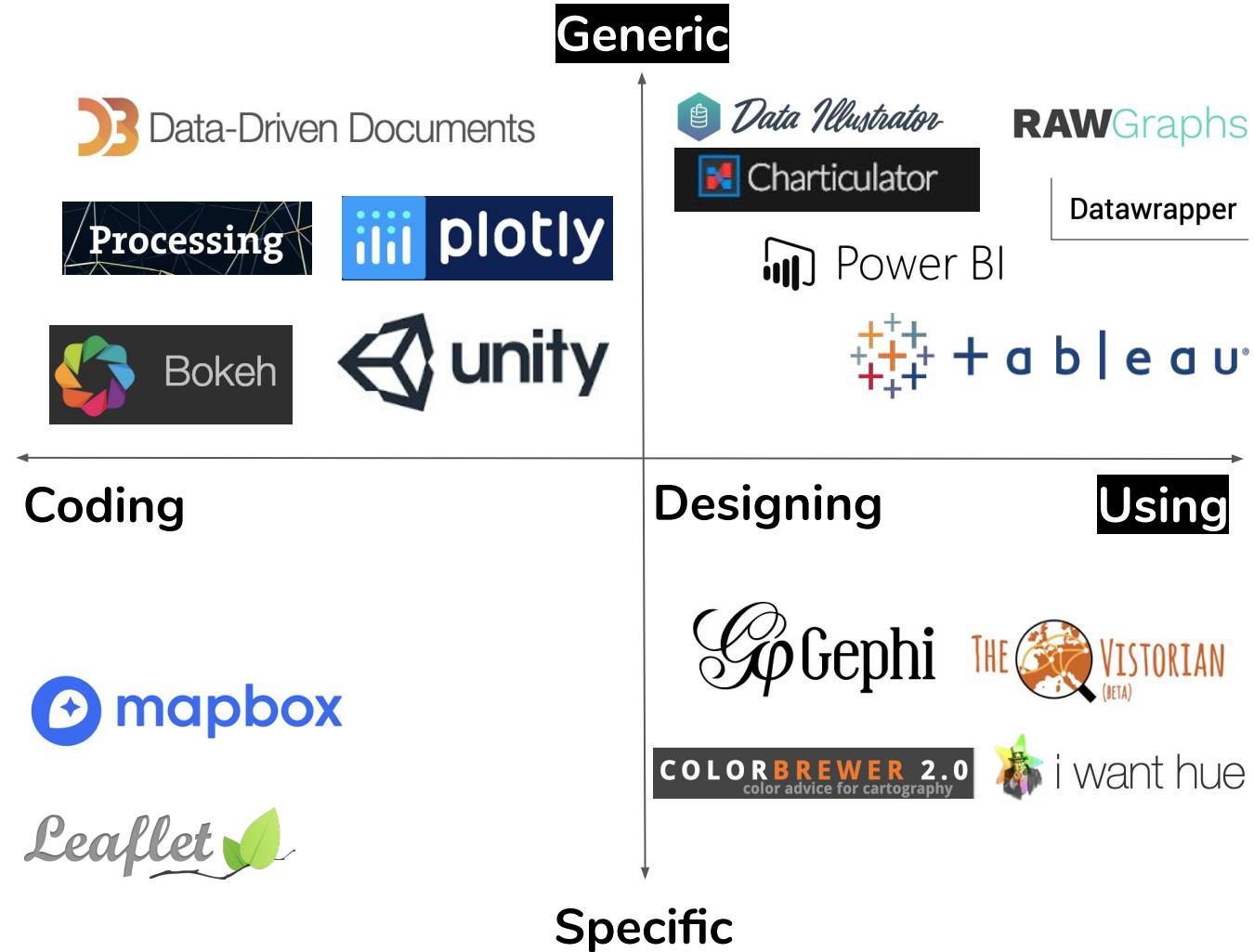
Variety

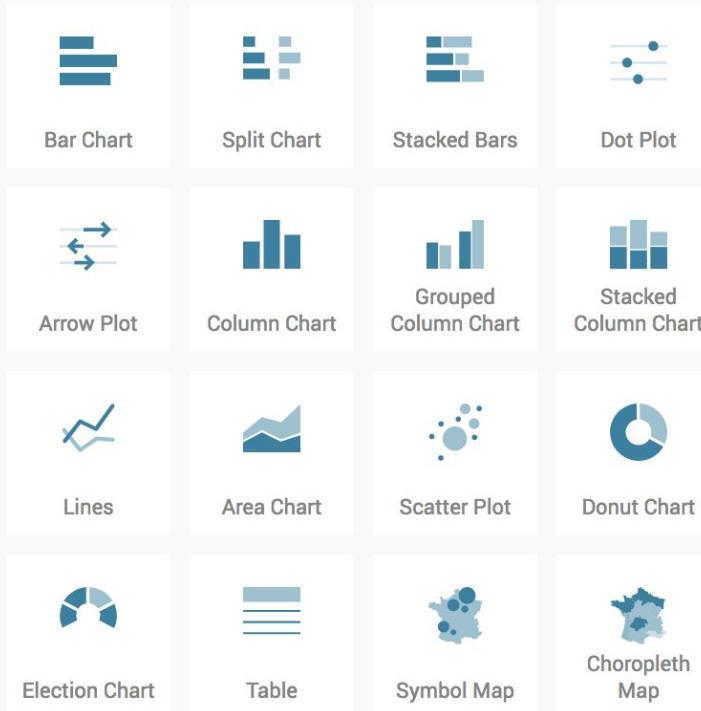
Workflows

Toolspace



Toolspace

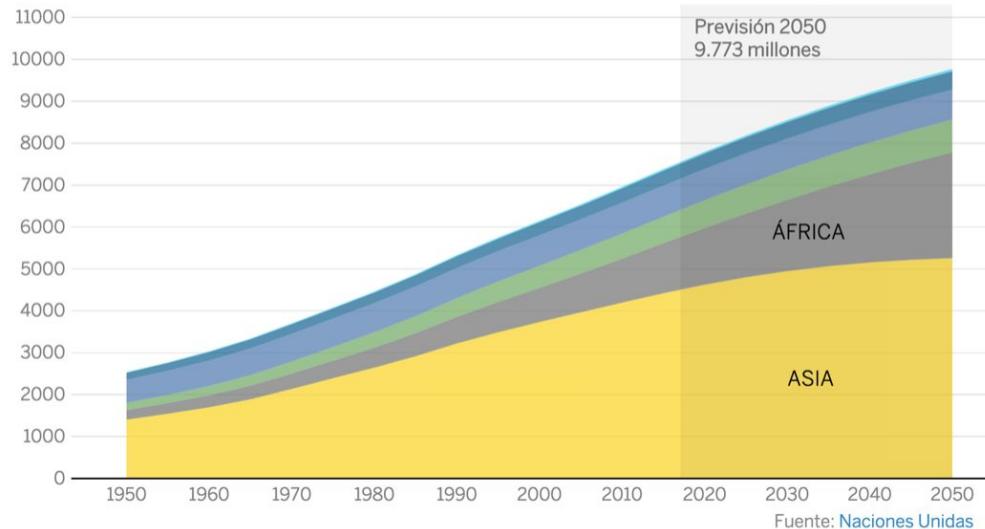


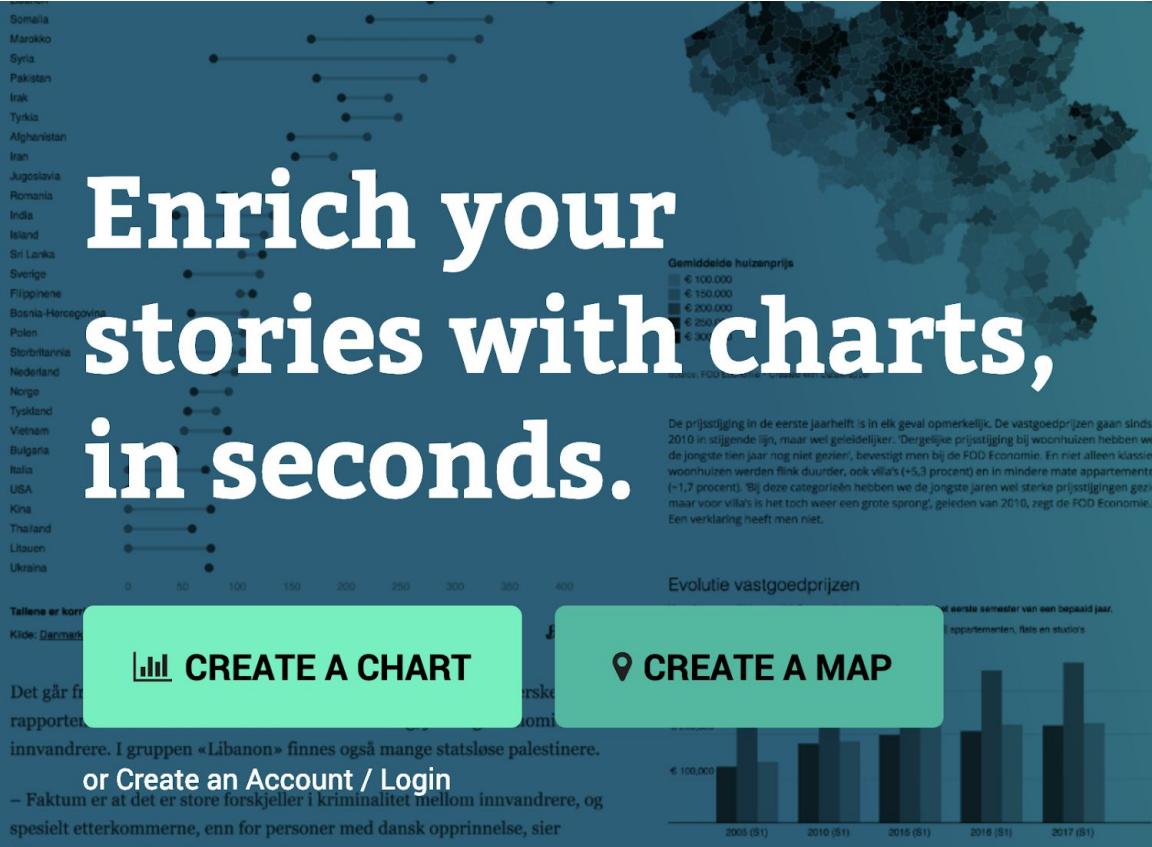


Evolución de la población mundial

En millones de habitantes

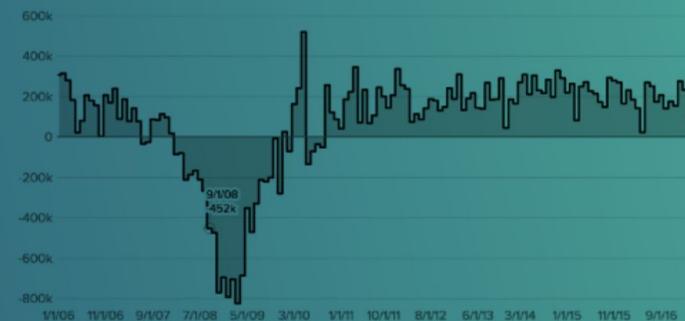
■ Asia ■ África ■ América Latina y Caribe ■ Europa ■ América del Norte (excepto México) ■ Oceanía





was a snowstorm in the Northeast and Midwest during the week that the BLS does its survey, which kept some workers at home. Additionally, the “retail apocalypse” of announced store closings meant that more jobs than normal left the economy during the month. This month, the disappointing March number was revised down from 98,000 to 79,000. But the April jobs report provides a bounce back in part because of warmer weather and fewer layoffs. The Labor Department reported gains in hospitality, mining, healthcare, and finance. Including the revisions for the February and March reports, an average of 174,000 jobs were added per month over the last three months.

Monthly Changes in U.S. Employment (Non-Farm), 2006-2017



Source: Bureau of Labor Statistics | Get The Data | Embed

By Atlantic

3. An interest-rate hike in June now looks more likely.

In the past, the Fed has indicated that sustained growth in the U.S. labor market is one of the factors it considers when deciding interest rates. The strong April jobs

Gemiddeld kost een woonhuis in België nu 220.920 euro, een villa 362.829 en een appartement 225.171 euro. In Vlaanderen bleef de gemiddelde prijsstijging in de eerste zes maanden beperkt tot 4,2 procent voor een woonhuis en 3,8 procent voor een villa, tot respectievelijk 233.382 euro

Upload Data

Check & Describe

3 Visualize

Publish & Embed

Chart type: Refine Annotate Design

Donut slicesSlice color: Outer radius: %Inner radius: %Minimum grid column width: %Sort by: Largest first
 Smallest first
 Keep order

Slice order is determined by the first metric.

LabelsFor help on custom styling, check the [Numerical documentation](#).Number format: Convert values to percentages Show inside values Show value inside donut**Gender Pay Gap**

Median earnings of full-time workers in constant US-Dollars, 2006

 Doctorate
 Master's degree
 Bachelor's degree
 Associate degree
 Other
 

Men



Women

Source: US Census, 2006 - Get the data | Licensed with Creative Commons

View original data



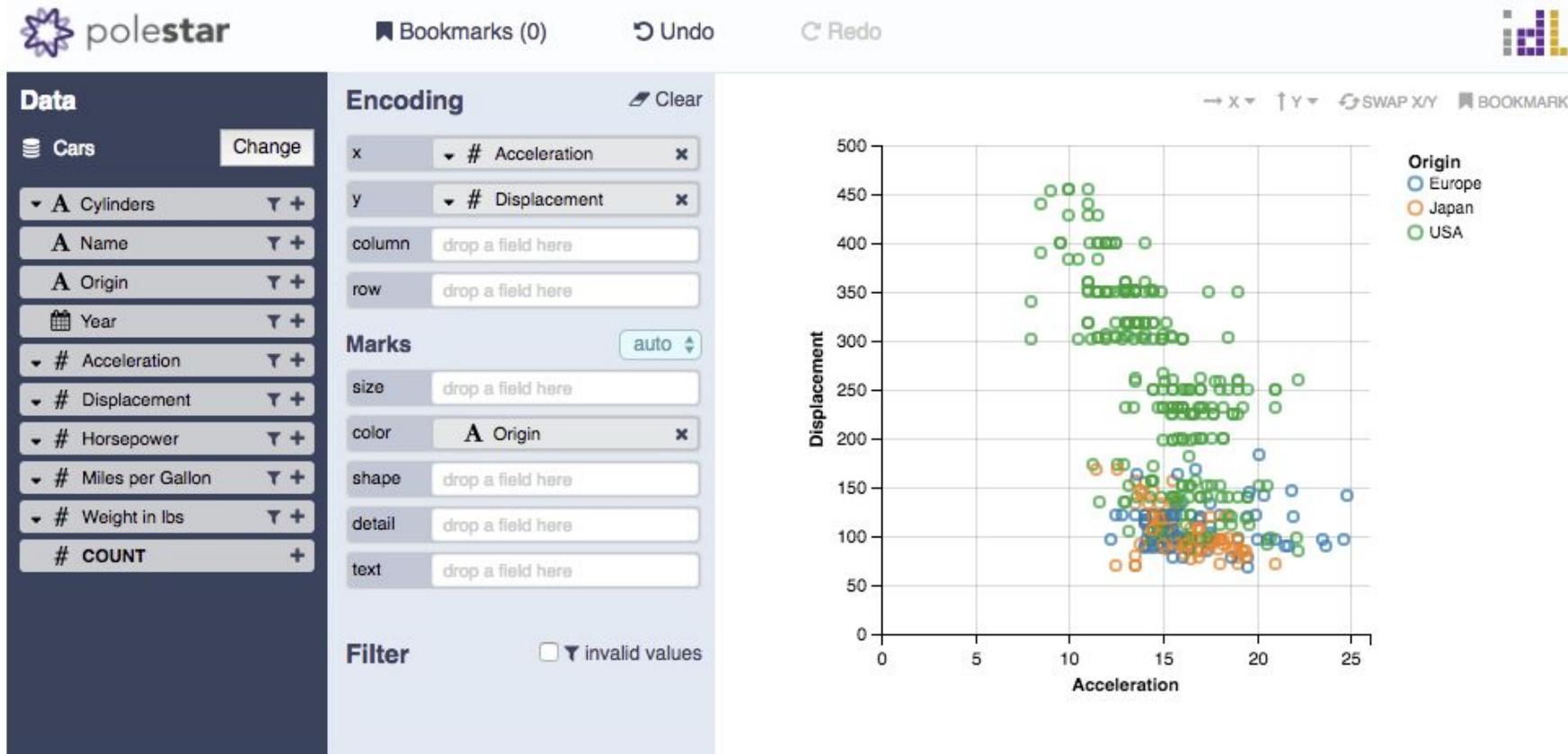
Tolkaempie is a form of blue-yellow blindness. Data from 1% affected.



	Basic free	Single 29€/month	Team 99€/month	Custom 499€/month	Enterprise Contact us
User type	Just want to try	Use daily	Professional use in a team	Full solution with custom branding	

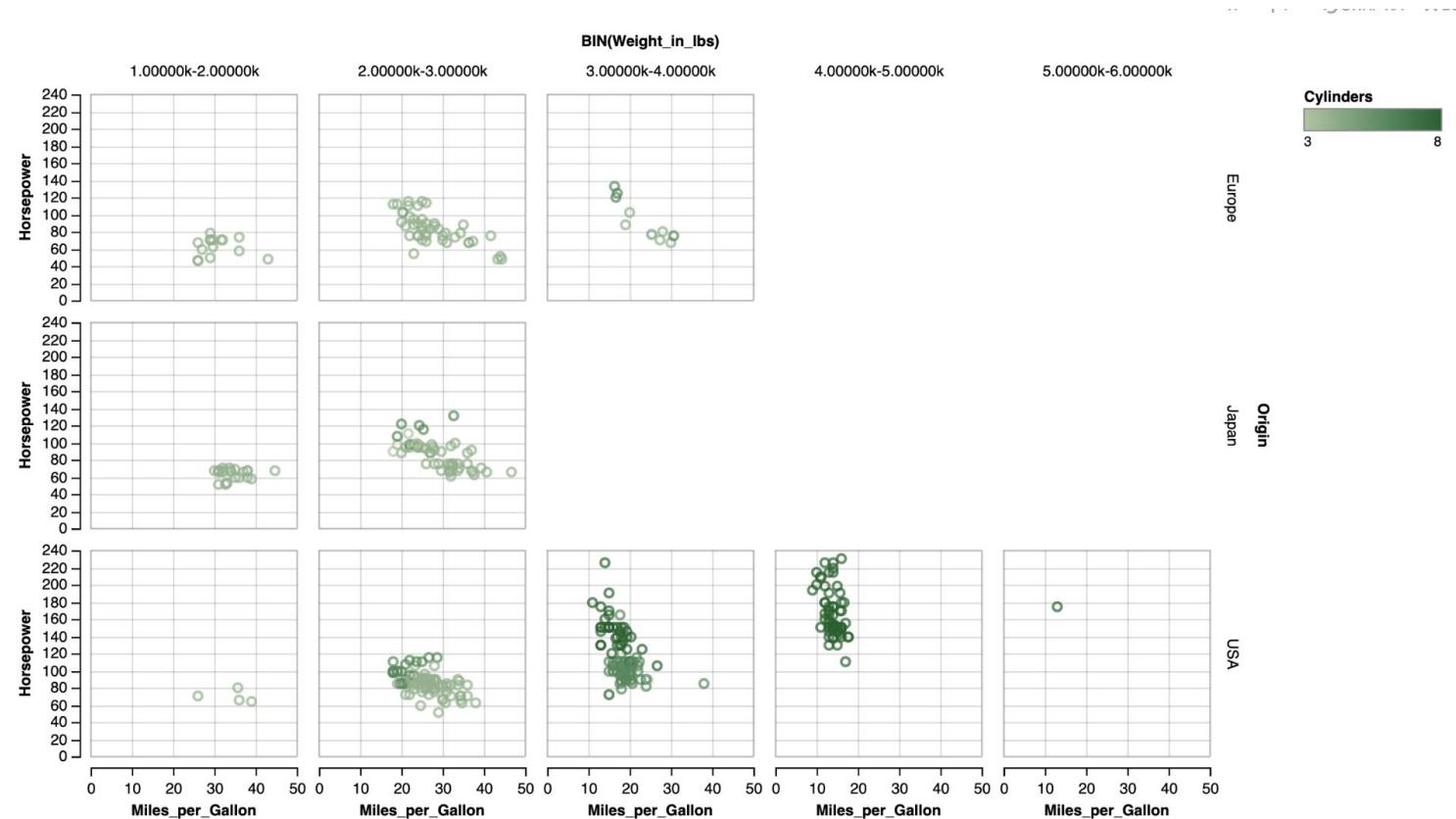
PoleStar / Vega

<https://vega.github.io/polestar>



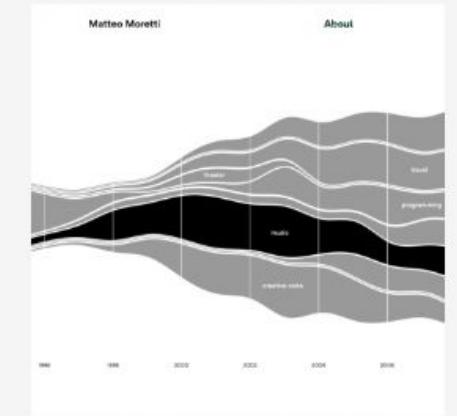
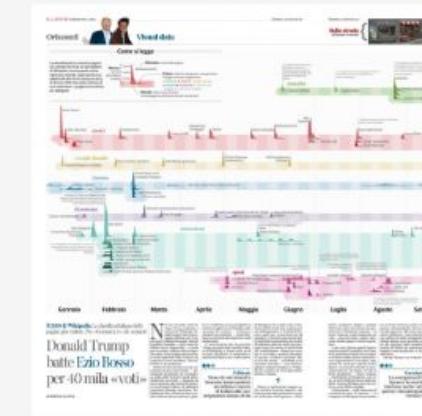
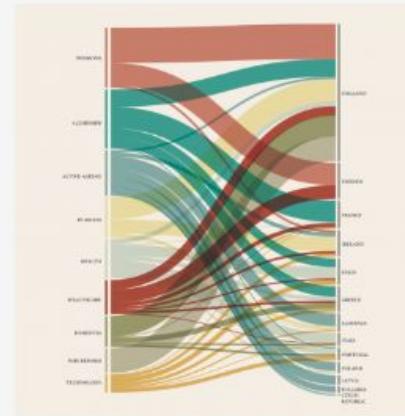
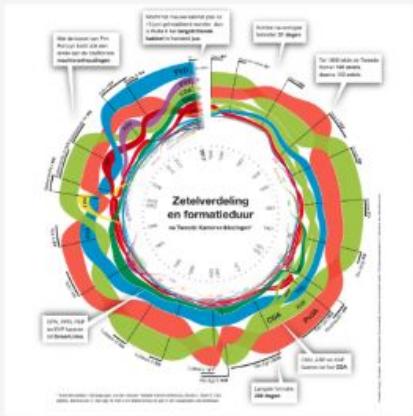
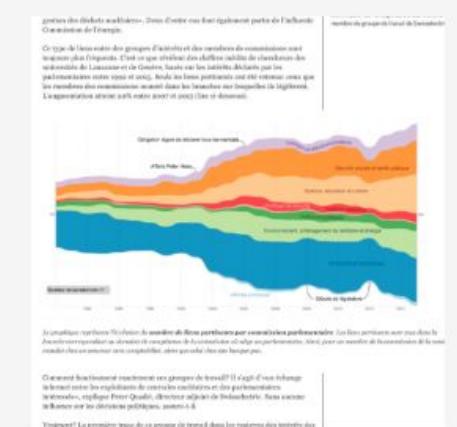
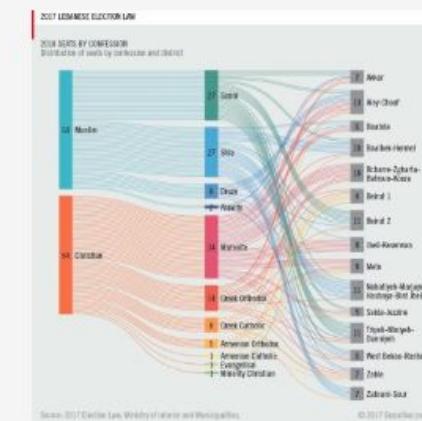
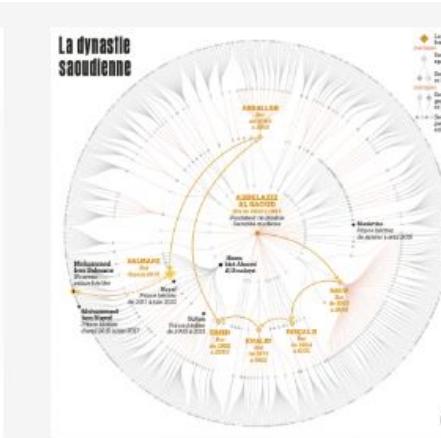
PoleStar / Vega

<https://vega.github.io/polestar>



RawGraphs

<https://www.rawgraphs.io>



Streamgraph

Time series

Custom

Map your chart

Map your Dimensions

Media source

Newspaper

Market Share source

Group

Drag numbers, strings, names here

Media source

Date

Drag numbers, dates, strings here

Newspaper

Size

Drag numbers here

Customize your Visualization

width

600

height

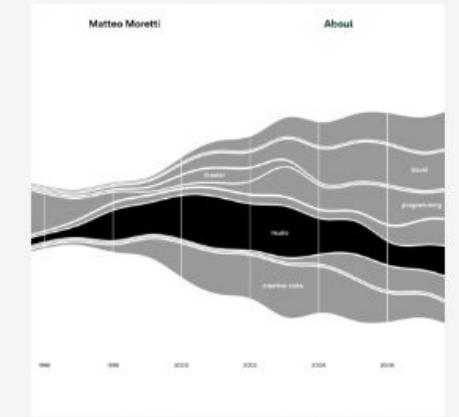
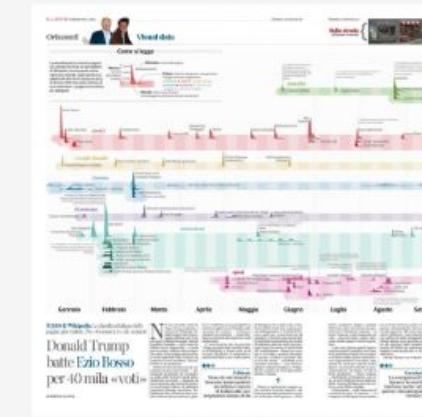
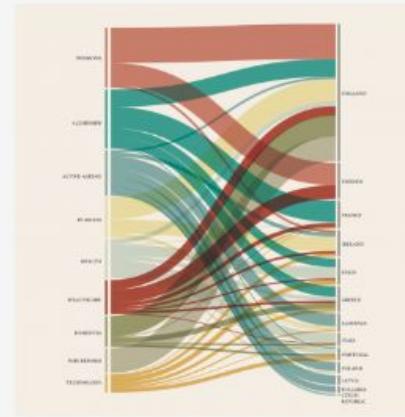
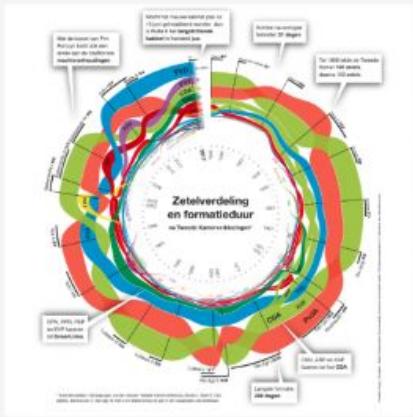
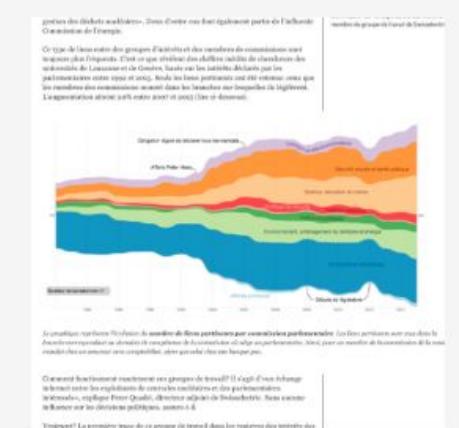
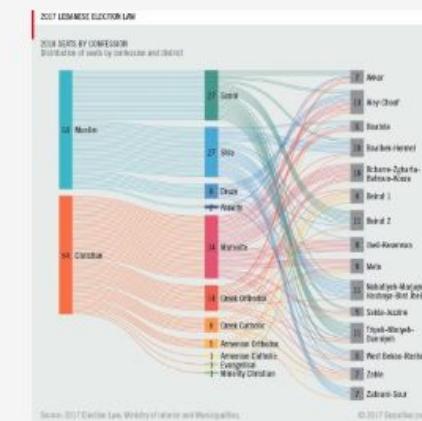
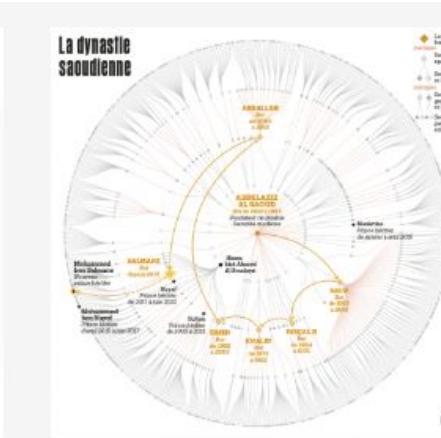
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padding

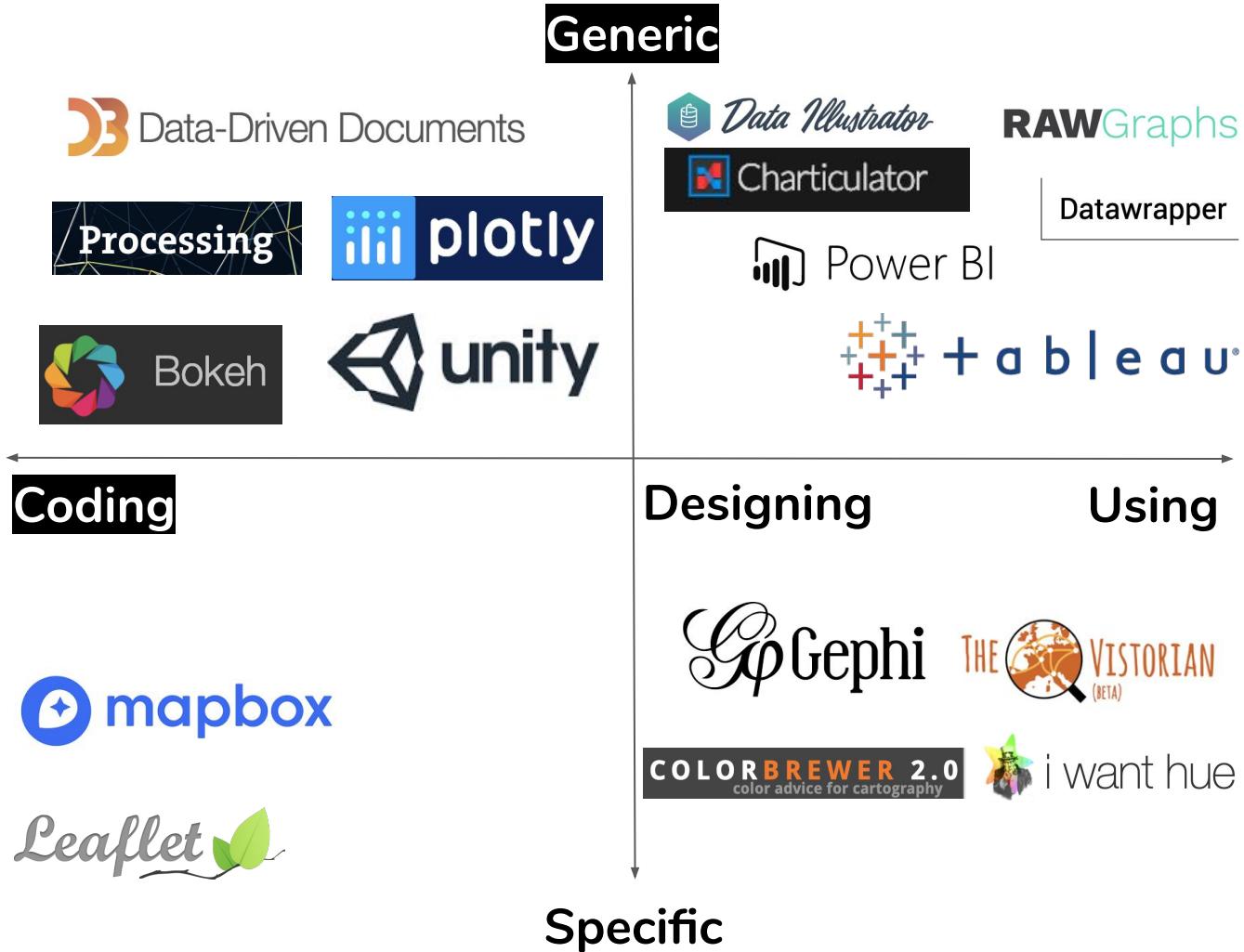


RawGraphs

<https://www.rawgraphs.io>



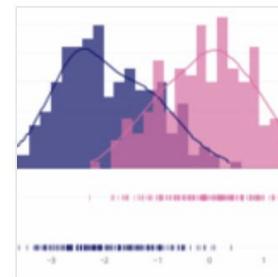
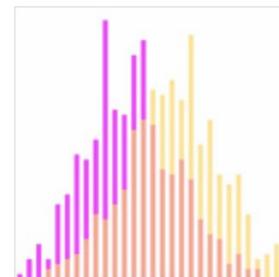
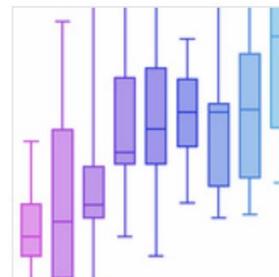
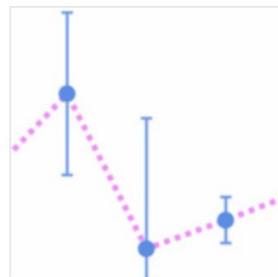
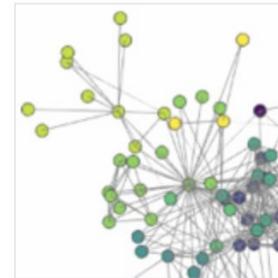
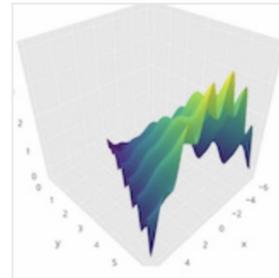
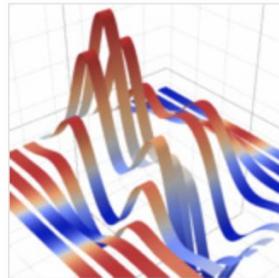
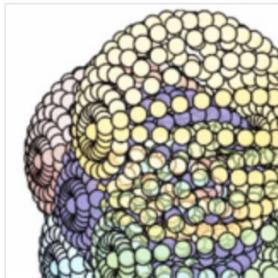
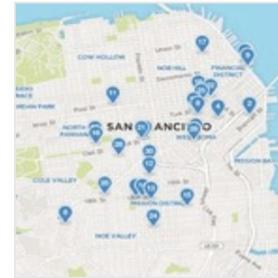
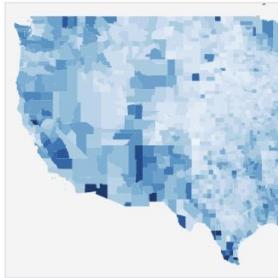
Toolspace



Python: Bokeh



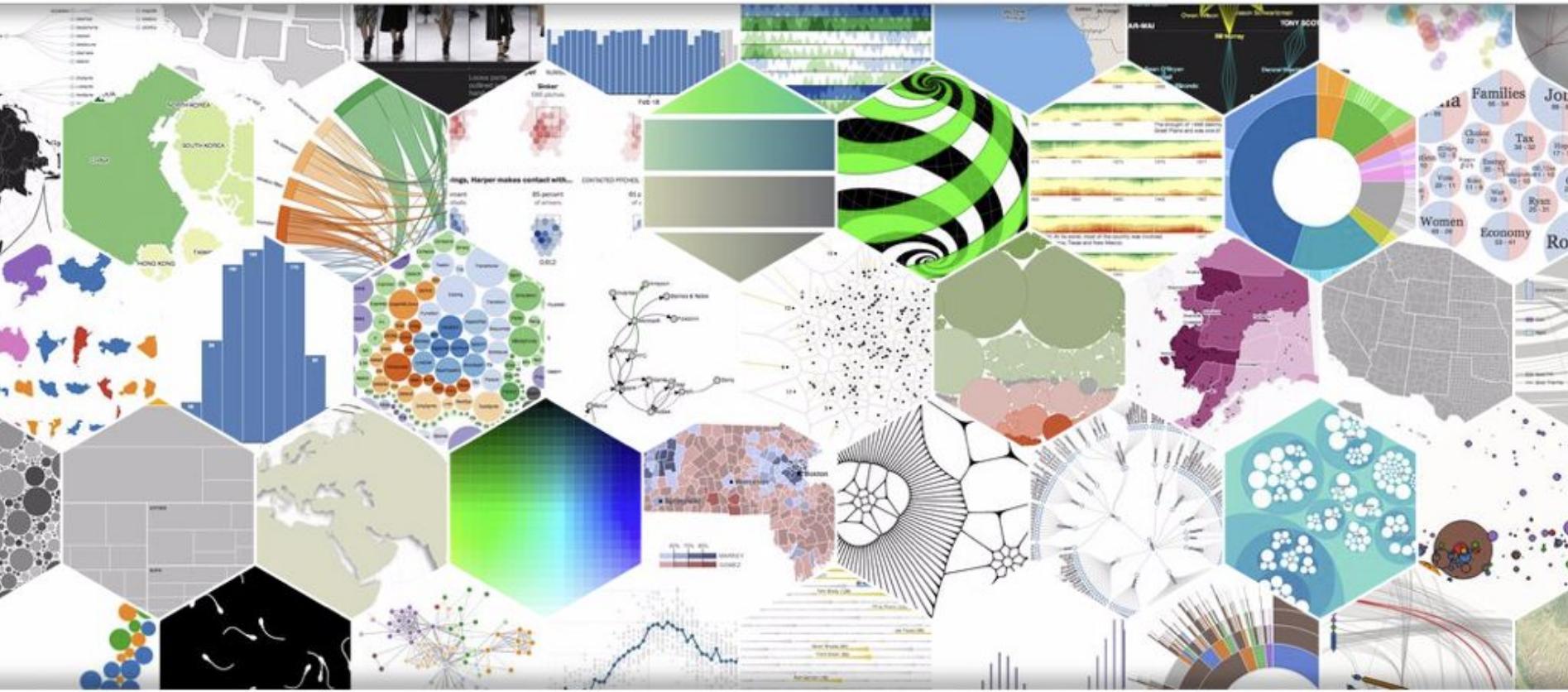
Plotly (Python, R, MatLab, Perl, REST,) > JavaScript





Data-Driven Documents

<http://d3.js>



Data-Driven-Documents (D3)

<http://d3.js>

- Importing (CSV, Json, etc..)
 - Objects (shapes) and visual attributes
 - JQuery
 - Convenience functions
 - Tons of examples and huge community
-
- Tricky to learn (start now)
 - Tons of libraries and tutorials
 - Powerful and nice



Notebooks



D3

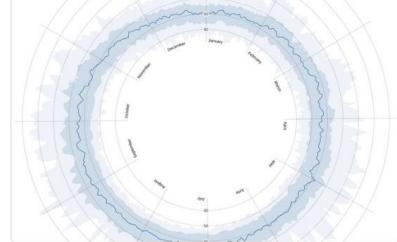
d3js.org

Bring your data to life.

343 Published 3,157 Likes 1,975 Forks

Notebooks

Collections

[Browse by collections](#)[d3-array](#)[d3-axis](#)[d3-brush](#)[d3-chord](#)[d3-color](#)[d3-contour](#)[d3-delaunay](#)[d3-dispatch](#)[d3-drag](#)

Radial Area Chart

Mike Bostock in D3
Sep 14 • In d3-shape • ❤ 21

A simple legend for a color scale. Supports sequential, diverging, quantile, and threshold scales. To use:

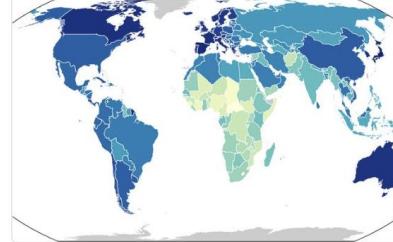
```
import {Legend} from "d3/color-legend"
```

Then call the legend function as shown below:

```
Sequential: Legend({color: d3.scaleSequential([0, 100], d3.interpolateViridis), title: "Temperature (\u00b0C)"})
```

```
Diverging: Legend({color: d3.scaleSequentialBr([v, 1], d3.interpolateTurbo), title: "Tunnel (m)"})
```

```
Quantile: Legend({color: d3.scaleQuantile([0, 1, 6, 10], d3.interpolatePkg1G), title: "Daily change"})
```



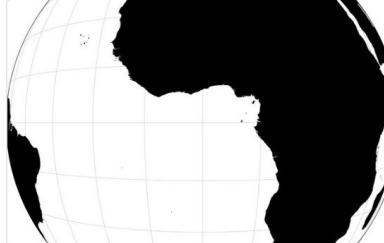
World Choropleth

Mike Bostock in D3
Sep 1 • In d3-geo • ❤ 2



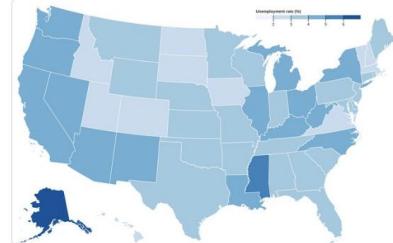
U.S. Map with Puerto Rico

Mike Bostock in D3
Aug 31 • In d3-geo • ❤ 2



Satellite Explorer

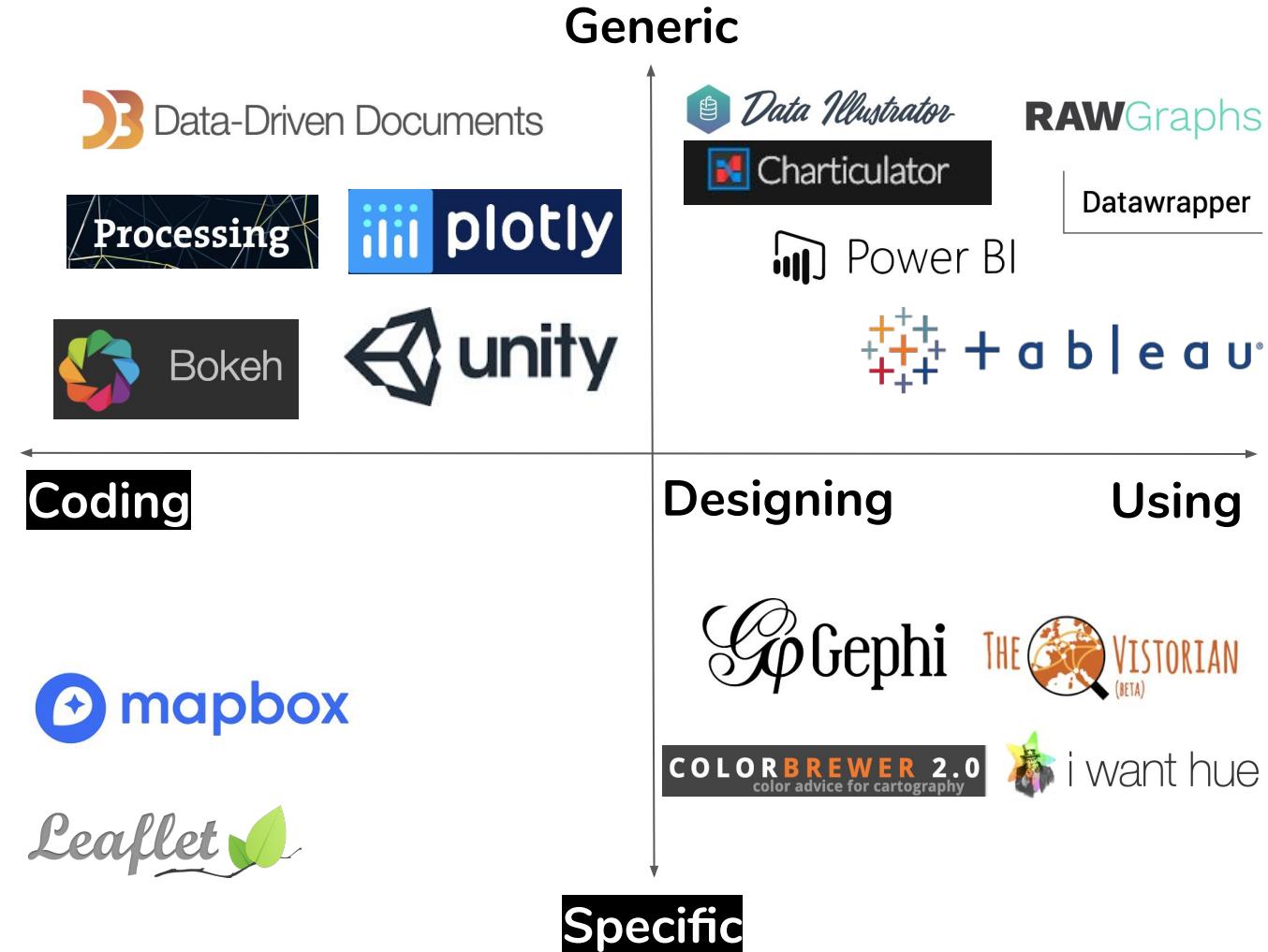
Mike Bostock in D3
Aug 30 • In d3-geo-projection • ❤ 13



State Choropleth

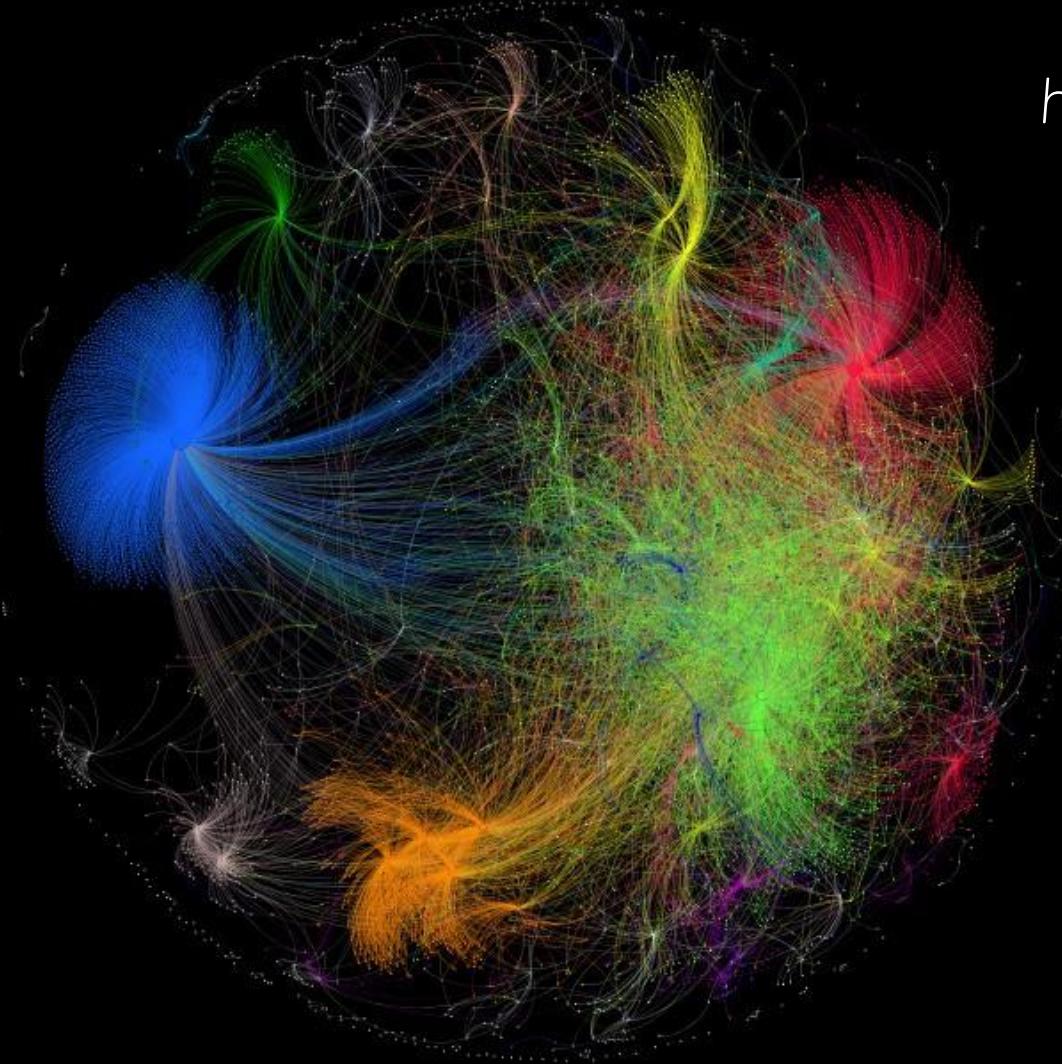
Mike Bostock in D3
Aug 24 • In d3-geo • ❤ 1

Toolspace



Gephi

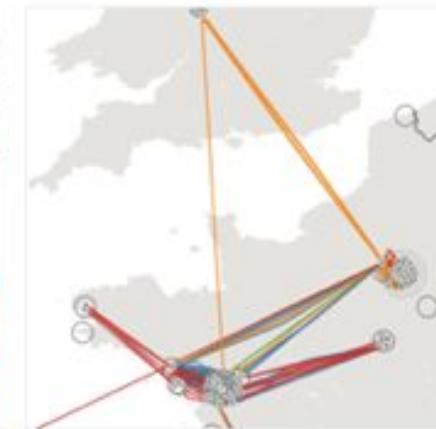
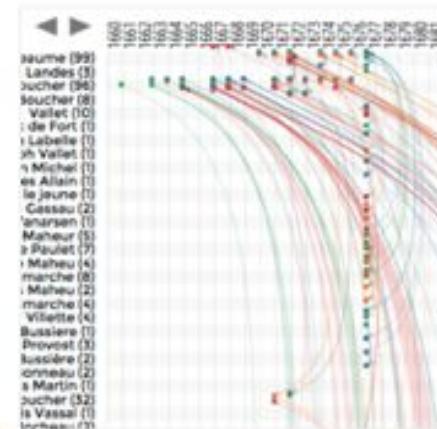
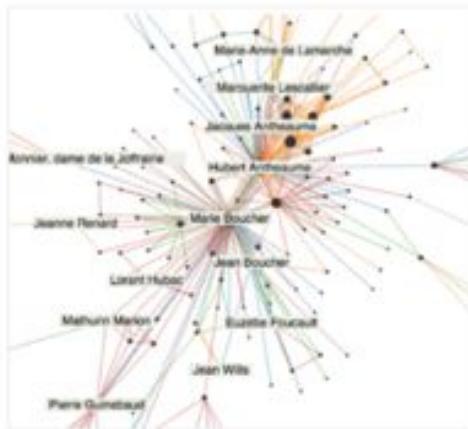
<https://gephi.org>

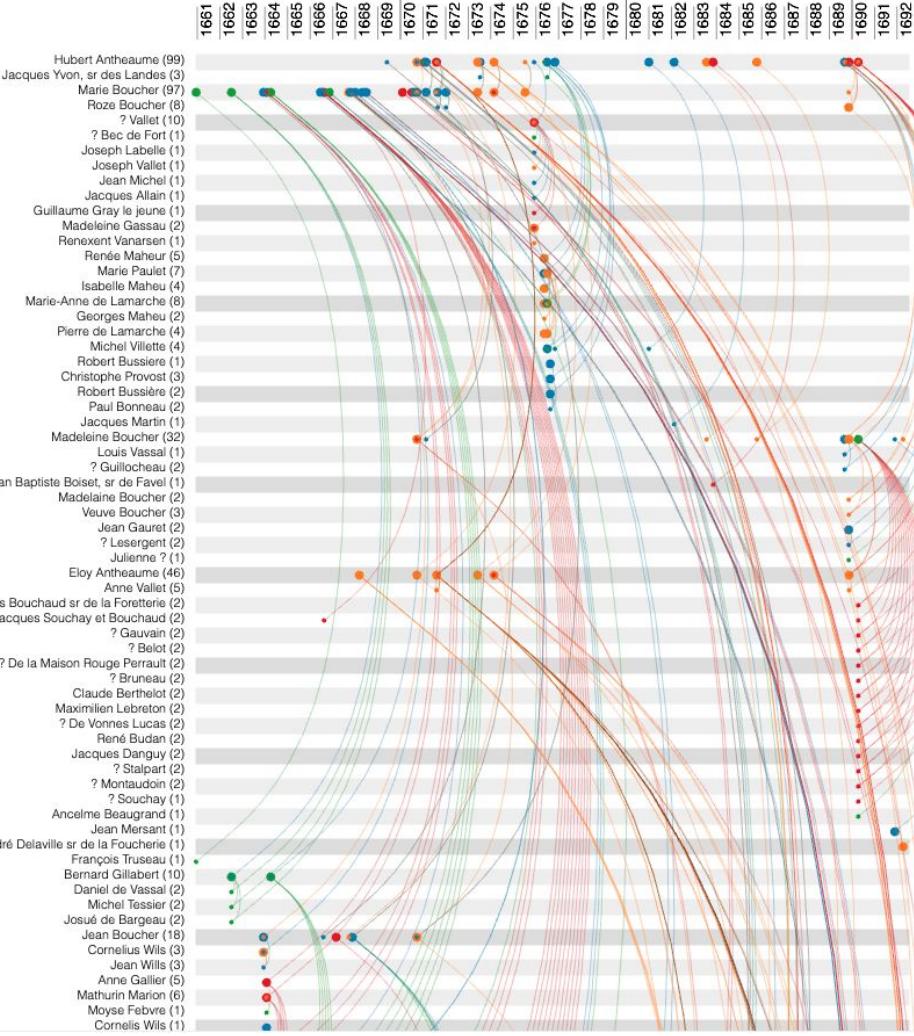
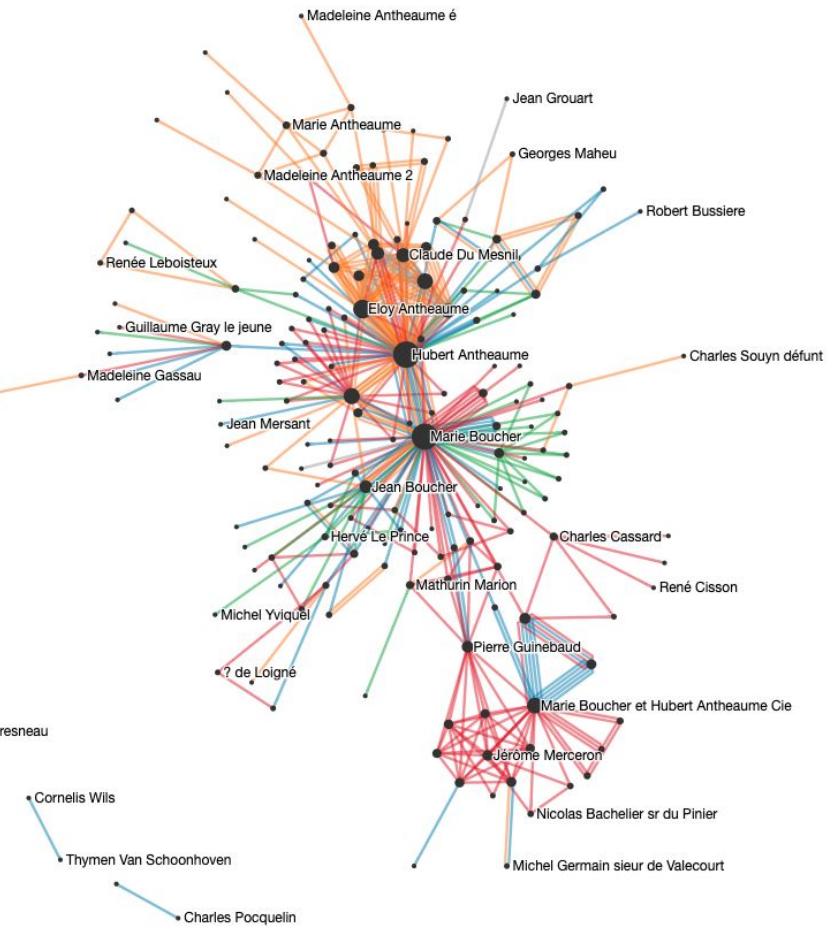




<https://vistorian.net>

Interactive Visualizations for Dynamic and Multivariate Networks.
Free, online, and open source.





This is your data view. Below you find a list of visualizations and the network currently in your dataset.

Network

Resource Store

Link List

File

Share & Work Log

...

Networks

Network



Network 2023-06-23T09:00:00Z

Name: Name (Nameless)

Select by visualization. Select a visualization from the menu on the top.

Data Tables

Node Table

A node table describes the nodes in the network. That means that each row in the node table describes a node and its metadata, or attributes.

Select a previously uploaded node table from the list:

Link Table

A link table describes the links in a network. That means that each row describes a link with at least a source and target. Optional attributes include time, link type, link weight, and locations of source and target nodes while connected through this link.

Select a previously uploaded link table from the list:

Table preview (first 200 rows) out of 4992 rows in total.

Index	Actions	Name	Parent	Content	Named	Parent	Object type	Class ID	Future arr	Date
0	<input type="button" value="New"/> <input type="button" value="Import"/>	Robert Arribalzaga	St. Nicolas, Names	Commerce	Robert Arribalzaga	St. Nicolas, Names	Document	4339624	possible	2023-06-17T0
1		Maria Rochelet	St. Nicolas, Names	Commerce	Maria Rochelet	St. Nicolas, Names	Document	4339625	possible	2023-06-17T0
2		Maria Rochelet	St. Nicolas, Names	Family	Maria Rochelet	St. Nicolas, Names	Document	4339626	possible	2023-06-17T0
3		Maria Rochelet	St. Nicolas, Names	Family	Maria Rochelet	St. Nicolas, Names	Document	4339627	possible	2023-06-17T0
4		Maria Rochelet	Paris	Commerce	Maria Rochelet	St. Nicolas, Names	Document	4339628	possible	2023-06-17T0
5		Maria Rochelet	Paris	Commerce	Maria Rochelet	Paris	Document	4339629	possible	2023-06-17T0
6		T' Valer	St. M. Domingo	Travel	T' Valer de Frey		Document	4339630	possible	2023-06-17T0
7		T' Valer	St. M. Domingo	Commerce	Joseph Lavelle	L'Argent, St. M.	Document	4339631	possible	2023-06-17T0

Geographical



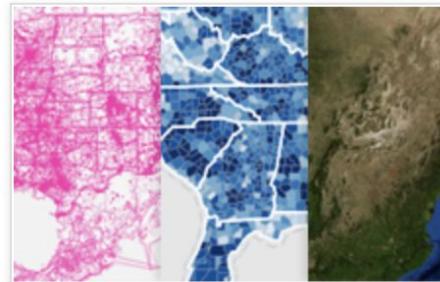
Leaflet

A lightweight JavaScript library for making tile-based interactive maps for desktop and mobile browsers.



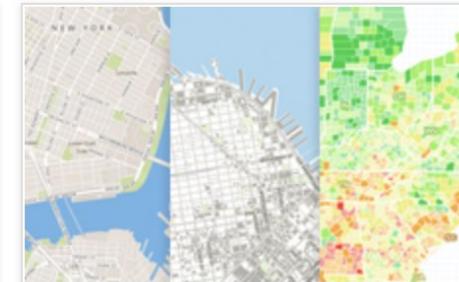
CartoDB

A web service for mapping, analyzing and building applications with data.



Polymaps

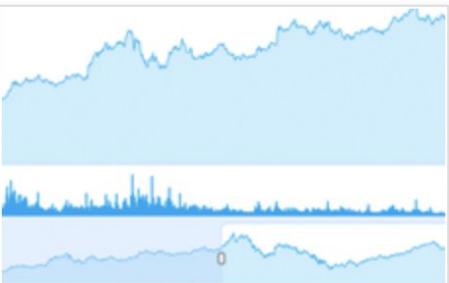
A library for making dynamic, interactive maps with image- and vector-based tiles.



MapBox

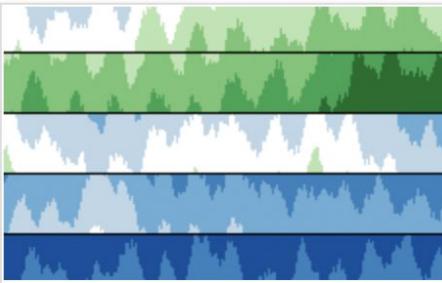
A web platform for hosting custom designed map tiles and a set of open source tools to produce them.

Temporal



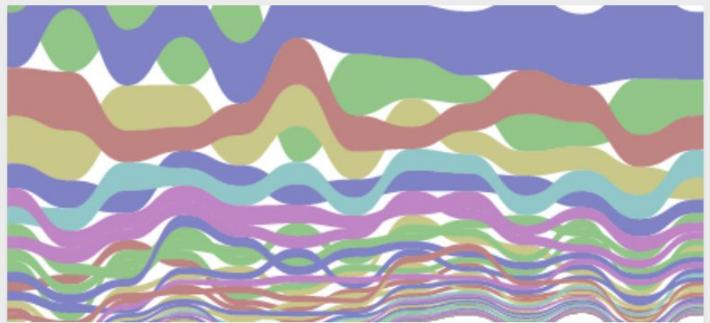
Envision.js

A library for creating fast, dynamic and interactive time series visualizations.

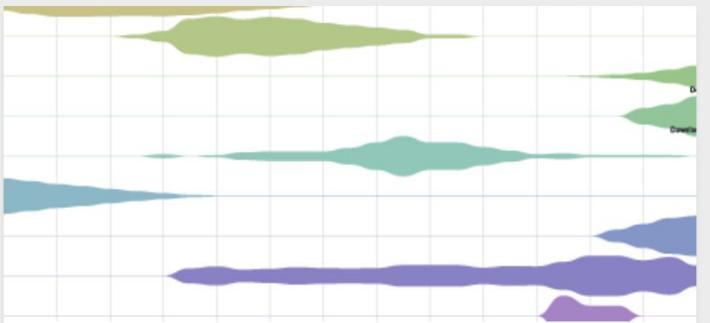


Cubism.js

A library for creating interactive time series and horizon graphs based on D3.js



Bump Chart
Time series

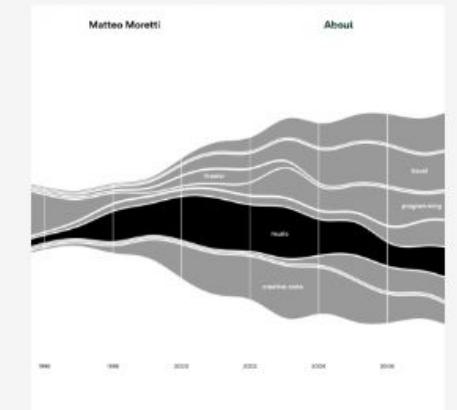
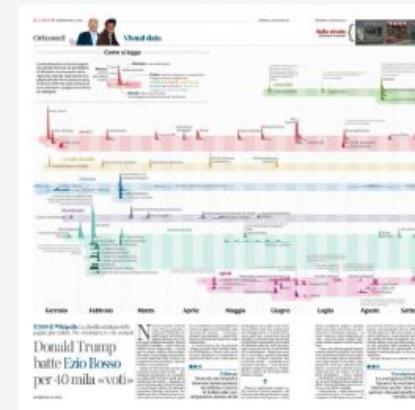
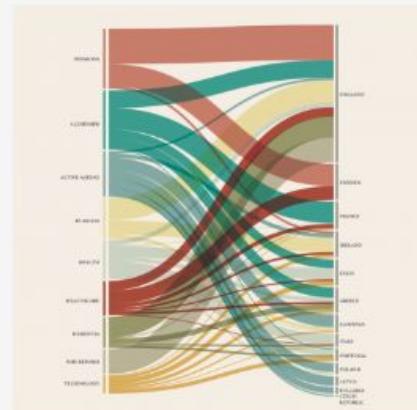
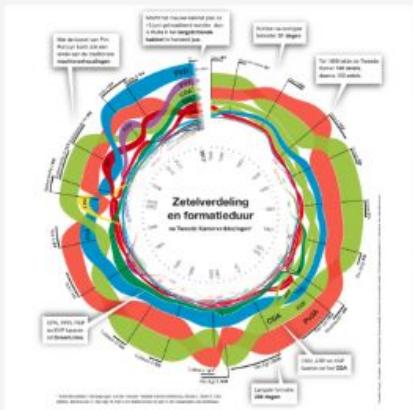
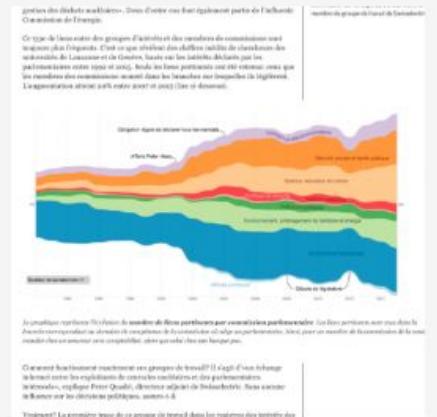
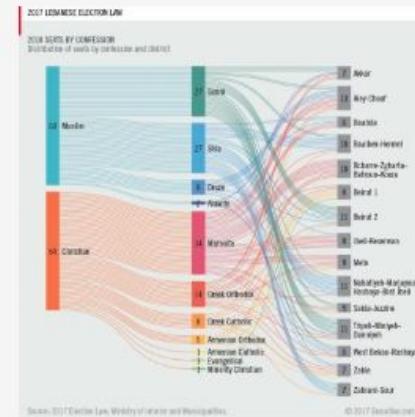
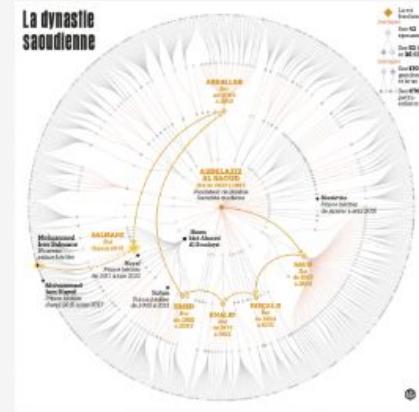


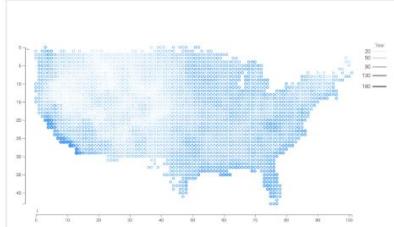
Area graph
Time series

Presentation & Infographics

RawGraphs

<https://www.rawgraphs.io>

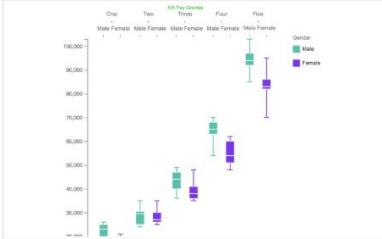




The Pleasant Places to Live

Binned map showing pleasant weather days in the US.

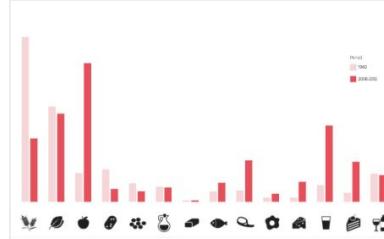
[Open Example](#) | [Watch Demo](#)



Gender Pay Gap - Box Plot

A box and whisker plot demonstrating the gender pay gap across salary grades.

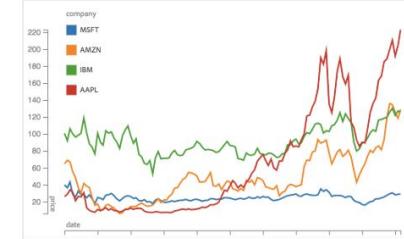
[Open Example](#) | [Watch Demo](#)



How Consumption Has Changed

How consumption of different types of food has changed since 1960

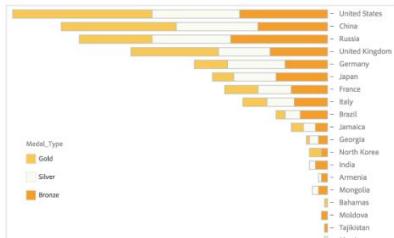
[Open Example](#) | [Watch Demo](#)



Stock Market

Monthly stock prices for four companies from 2000 to 2010

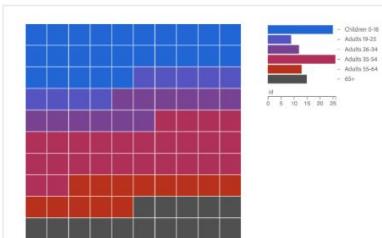
[Open Example](#) | [Watch Demo](#)



2012 Summer Olympic Medals

Stacked bar chart on the number of gold, silver and bronze medals by country

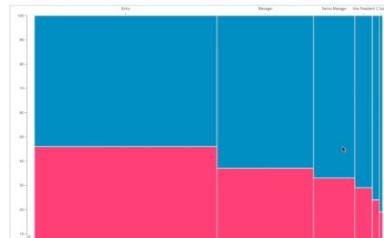
[Open Example](#) | [Watch Demo](#)



Population Distribution by Age

The distribution of population by age groups in the United States in 2016

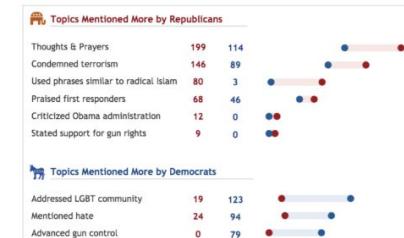
[Open Example](#) | [Watch Demo](#)



Share of Women across Job Levels

The proportion of women declines in higher job titles.

[Open Example](#) | [Watch Demo](#)



Partisan Reactions on Mass Shooting

Topics mentioned by the two parties after the Orlando nightclub shooting

[Open Example](#) | [Watch Demo](#)

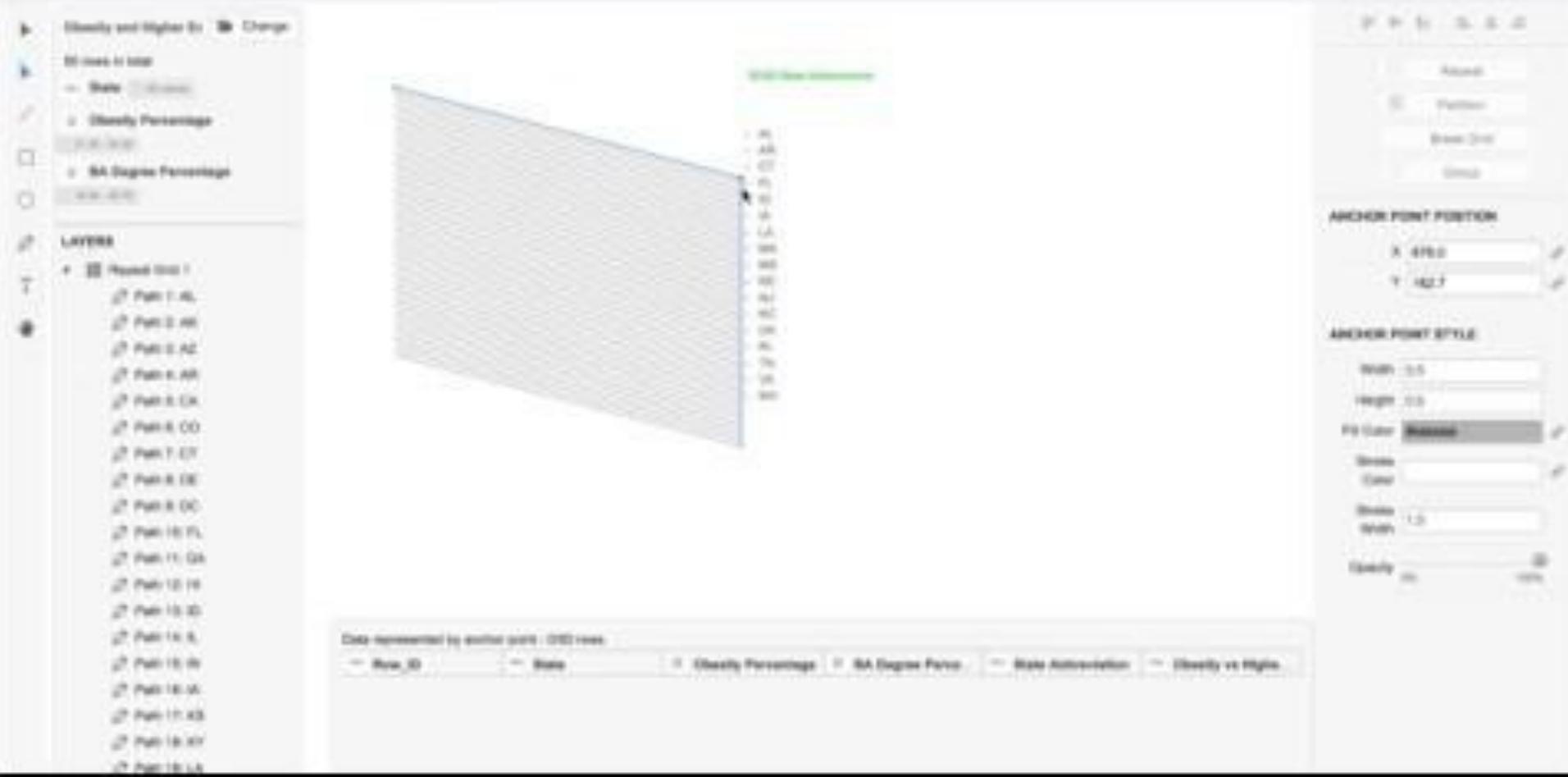
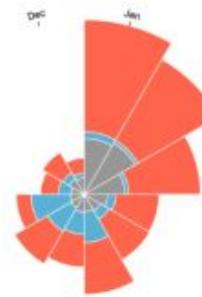


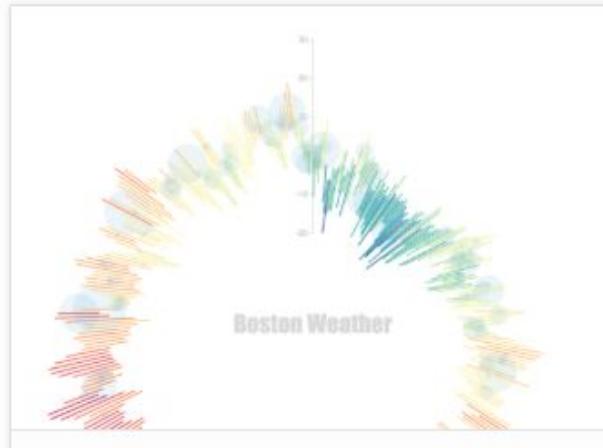


Diagram of the Causes of Mortality in the Army in the East

Disease
Other
Wounds



Causes of Mortality over time (Reproduction of the Nightingale chart)



Boston weather in a year

Fitbit Activity of 2016



Spiral Bar Chart

Coloring

Number of data classes: 9

[how to use](#) | [updates](#) | [downloads](#) | [credits](#)

COLORBREWER 2.0
color advice for cartography

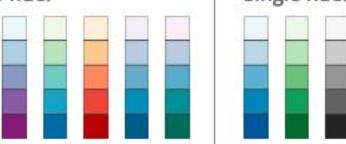
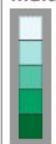
Nature of your data:

sequential diverging

qualitative

Pick a color scheme:

Multi-hue:



Only show:

- colorblind safe
- print friendly
- photocopy safe

Context:

- roads
- cities
- borders

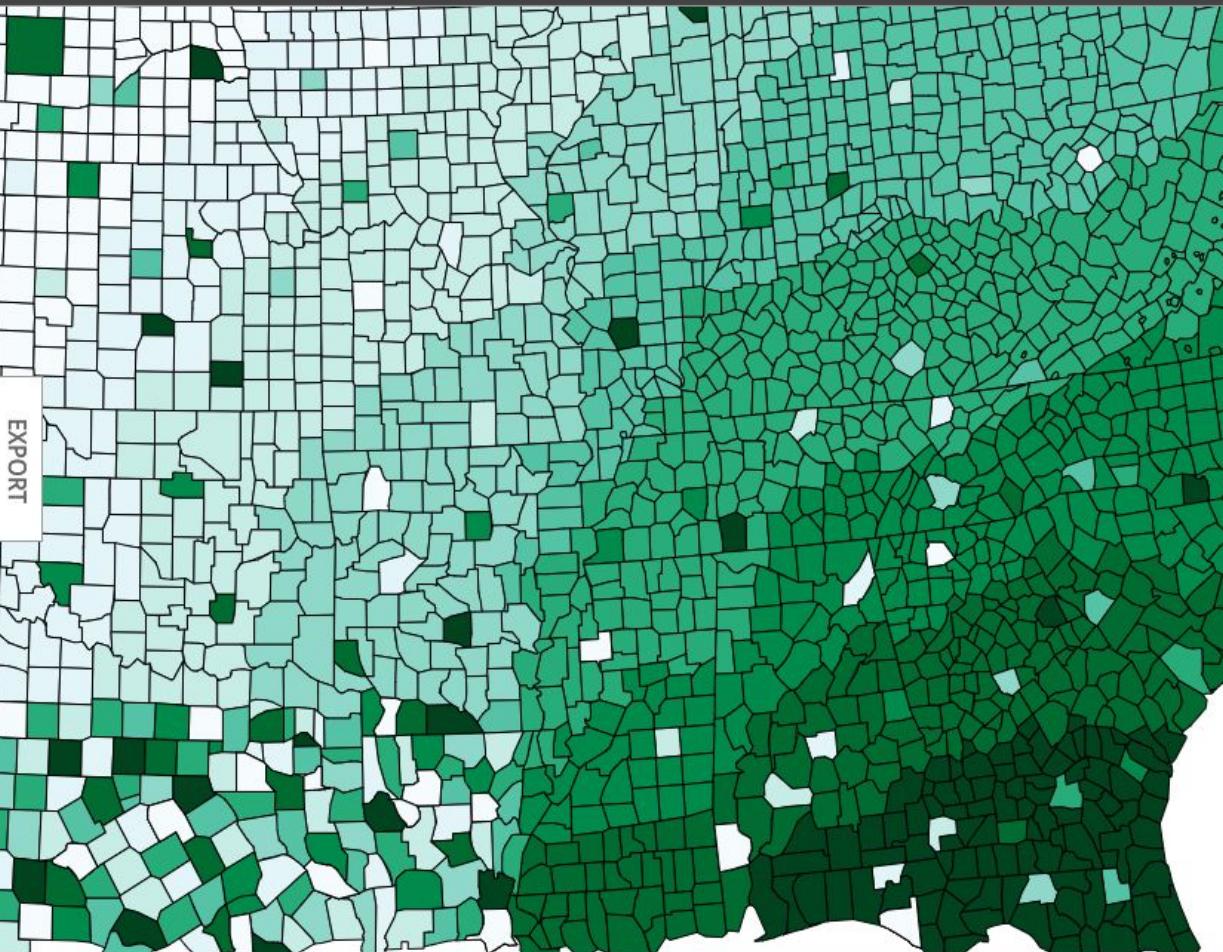


Background:

- solid color
- terrain



color transparency



Number of data classes: 9

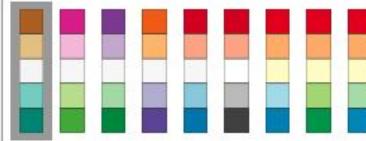
[how to use](#) | [updates](#) | [downloads](#) | [credits](#)

COLORBREWER 2.0
color advice for cartography

Nature of your data:

- sequential
- diverging
- qualitative

Pick a color scheme:



Only show:

- colorblind safe
- print friendly
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Context:

- roads
- cities
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Background:

- solid color
 - terrain
- color transparency

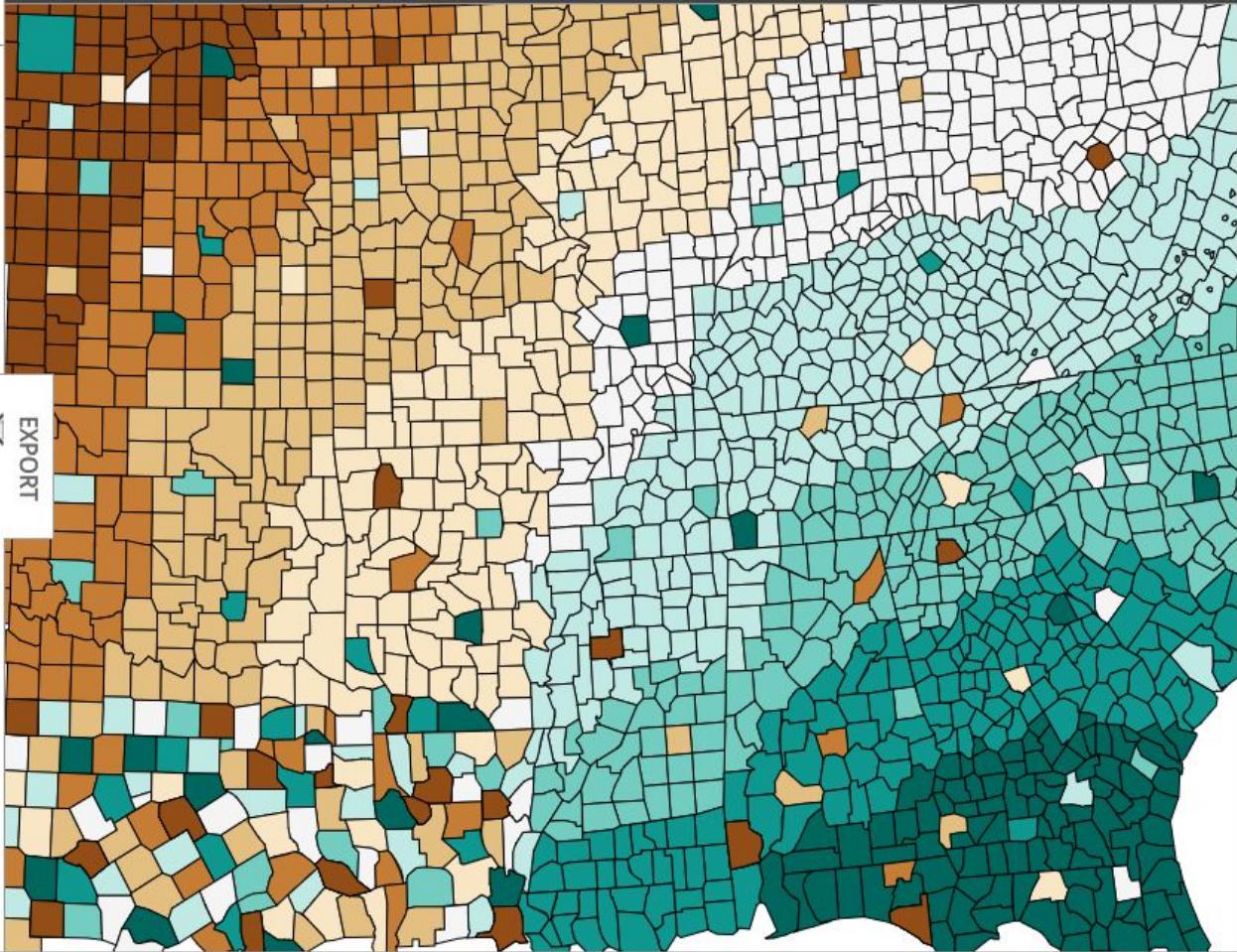
9-class BrBG



EXPORT

HEX

#8c510a
#bf812d
#fdc27d
#f6e8c3
#f5f5f5
#c7eae5
#80cdc1
#35978f
#01665e



Number of data classes: 9

[how to use](#) | [updates](#) | [downloads](#) | [credits](#)

COLORBREWER 2.0

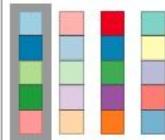
color advice for cartography

Nature of your data:

sequential diverging

qualitative

Pick a color scheme:



Only show:

- colorblind safe
- print friendly
- photocopy safe

Context:

- roads
- cities
- borders

Background:

- solid color
- terrain

color transparency

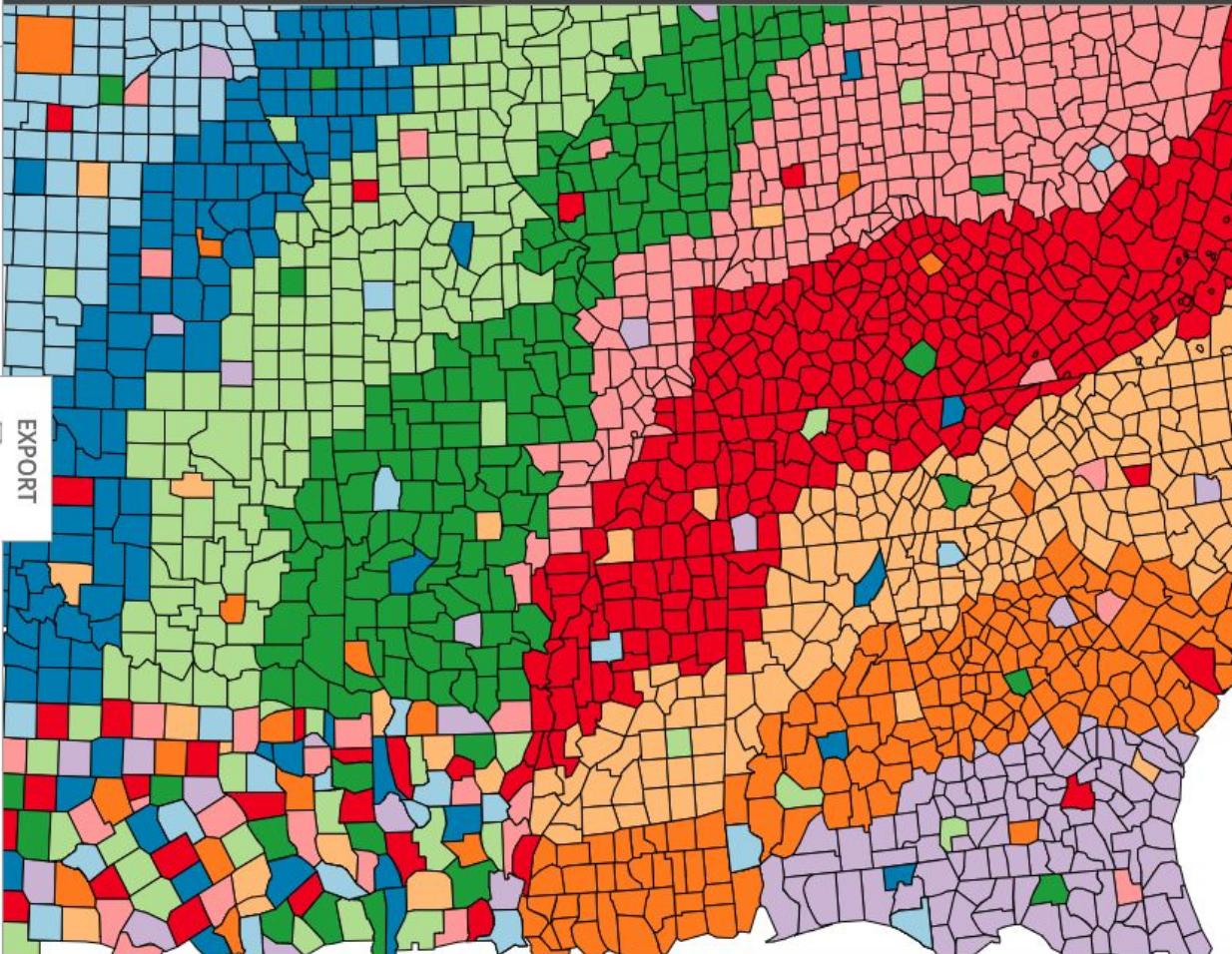
9-class Paired



EXPORT

HEX

#a6cee3
#1f78b4
#b2df8a
#33a02c
#fb9a99
#e31a1c
#fdbf6f
#ff7f00
#cab2d6





i want hue

Colors for data scientists.

Generate and refine palettes of optimally distinct colors.

Color space

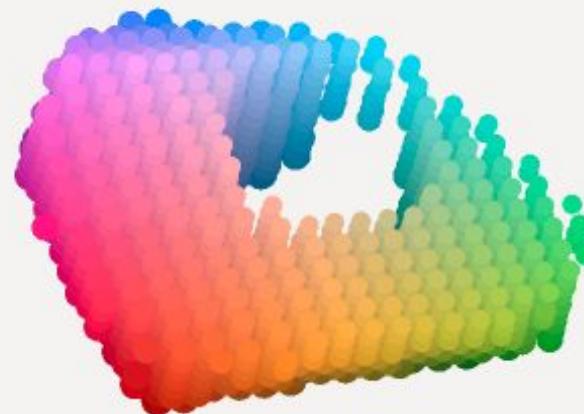
Default preset

H 0 360

C 30 80

L 35 80

- Improve for the **colorblind** (slow)
- Dark background



Palette

5 colors soft (k-Mean)

Make a palette



Color space

Pastel

H: 0 S: 100 L: 70

Improve for the colorblind (now)

Dark background



Palette

6 colors soft (3-Minuted)

Random palette

Sort by: HUE SAT BRIGHTNESS DARKNESS

Fit to color space



Colors



#29424B

hex

41,66,64

rgb

JSON

HEX json

```
[ "#29424B",  
  "#66ccc2",  
  "#2f253b",  
  "#858ab4",  
  "#655b4c" ]
```

RGB json

CSS

HEX list for CSS

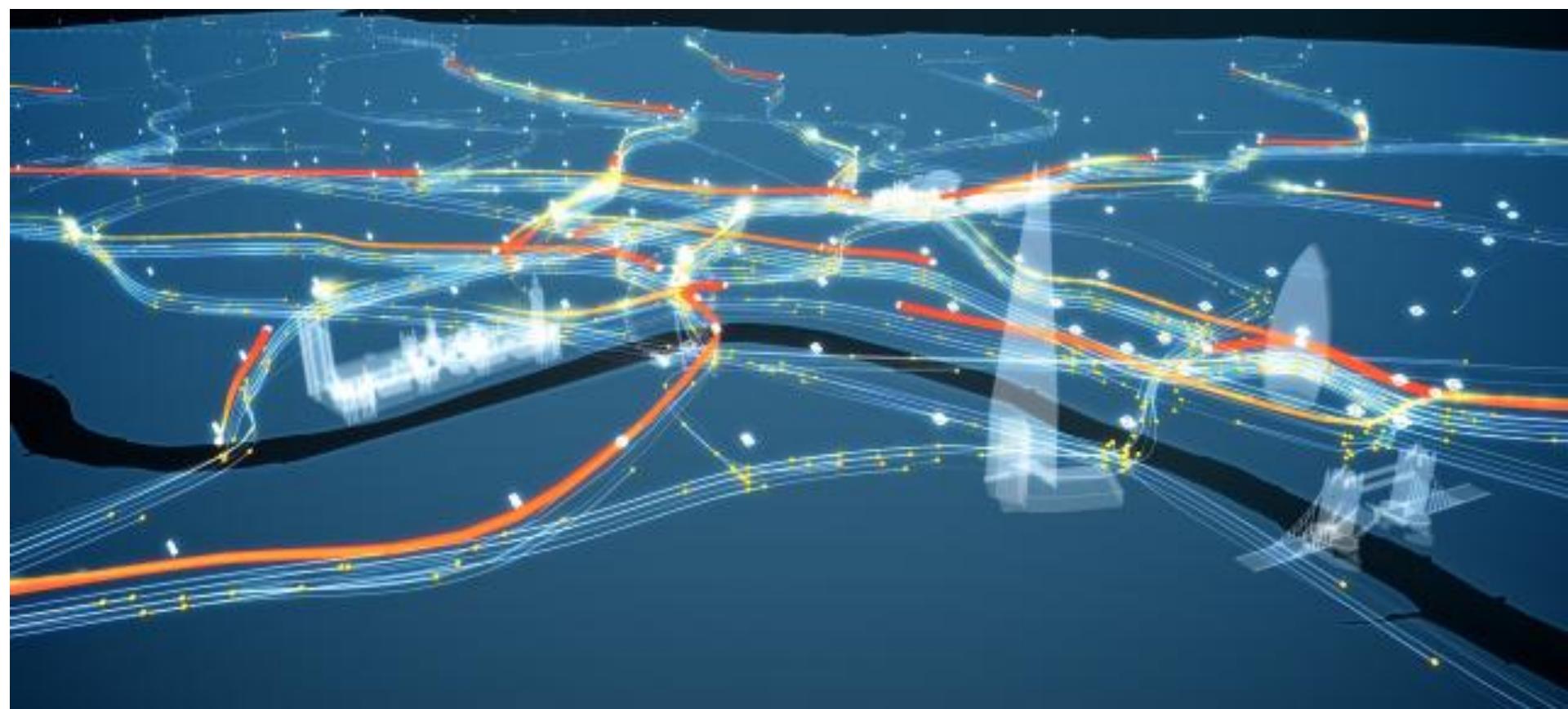
```
#29424B  
#66ccc2  
#2f253b  
#858ab4  
#655b4c
```

RGB list for CSS

Immersive Environments



<https://unity3d.com>



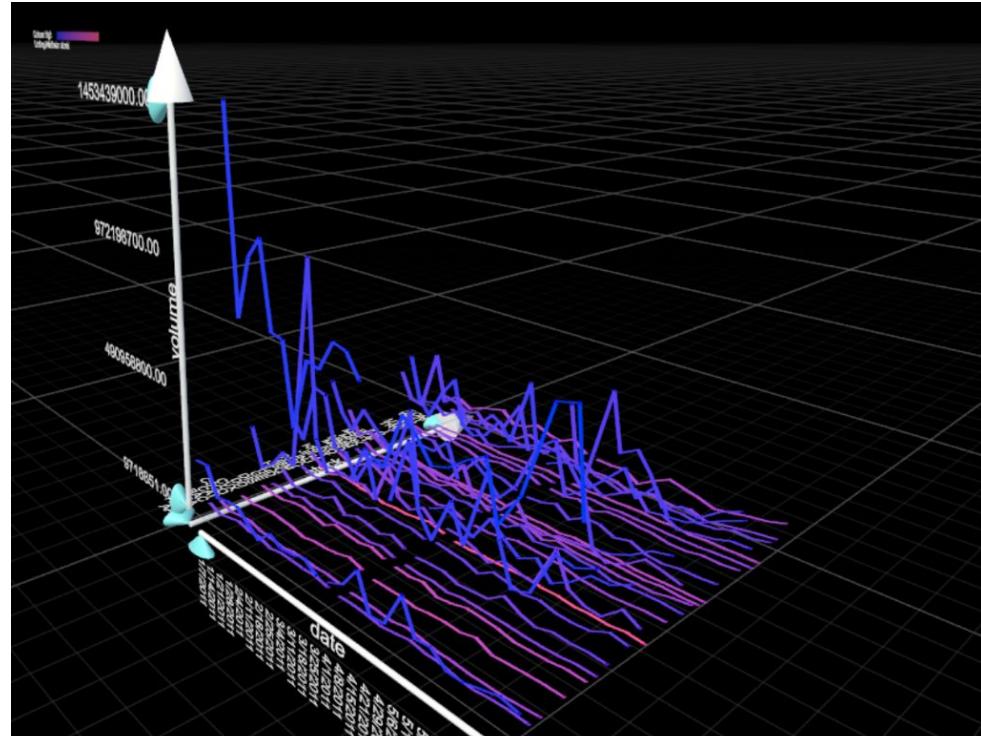
DXR

<https://sites.google.com/view/dxr-vis>

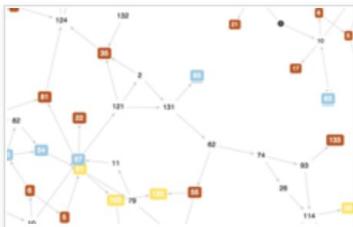


IATK

<https://github.com/MaximeCordeil/IATK>



More Tools!



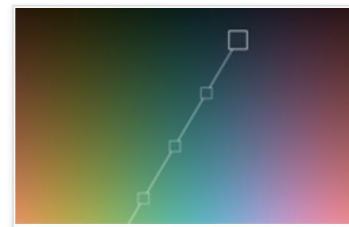
Arbor.js

A library of force-directed layout algorithms plus abstractions for graph organization and refresh handling.



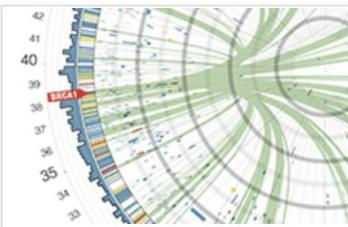
CartoDB

A web service for mapping, analyzing and building applications with data.



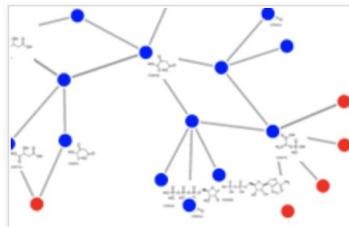
Chroma.js

Interactive color space explorer that allows to preview a set of linear interpolated equidistant colors.



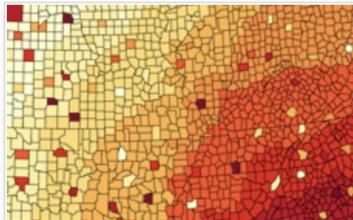
Circos

A software package for visualizing data in a circular layout.



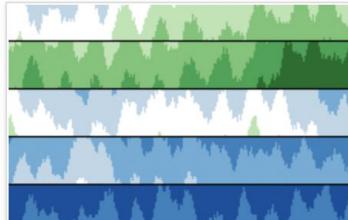
Cola.js

A library for arranging networks using constraint-based optimization techniques.



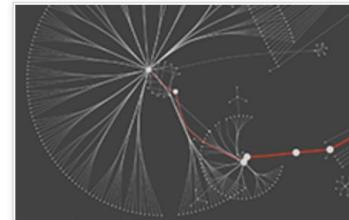
ColorBrewer

A web tool for selecting colors for maps.



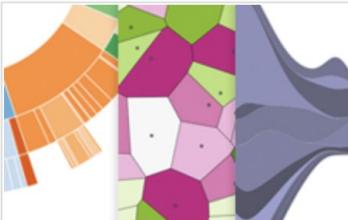
Cubism.js

A library for creating interactive time series and horizon graphs based on D3.js



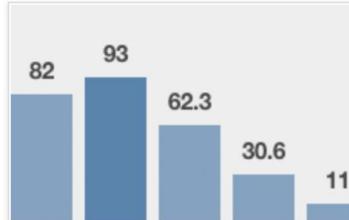
Cytoscape

An application for visualizing complex networks and integrating these with any type of attribute data.



D3.js

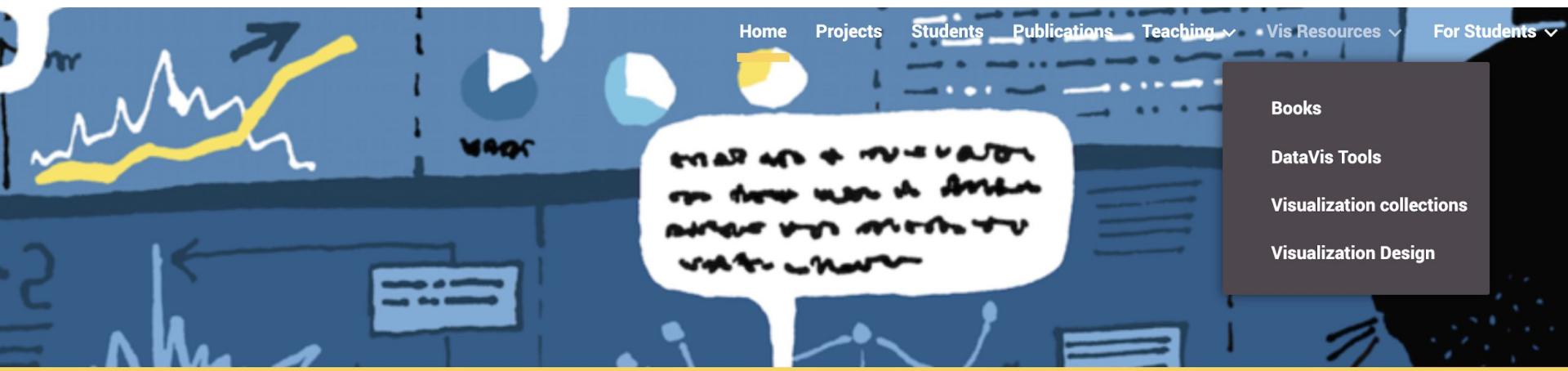
An small, flexible and efficient library to create and manipulate interactive documents based on data.



Dance.js

A simple data-driven visualization framework based on Data.js and Underscore.js

<http://benjbach.me>

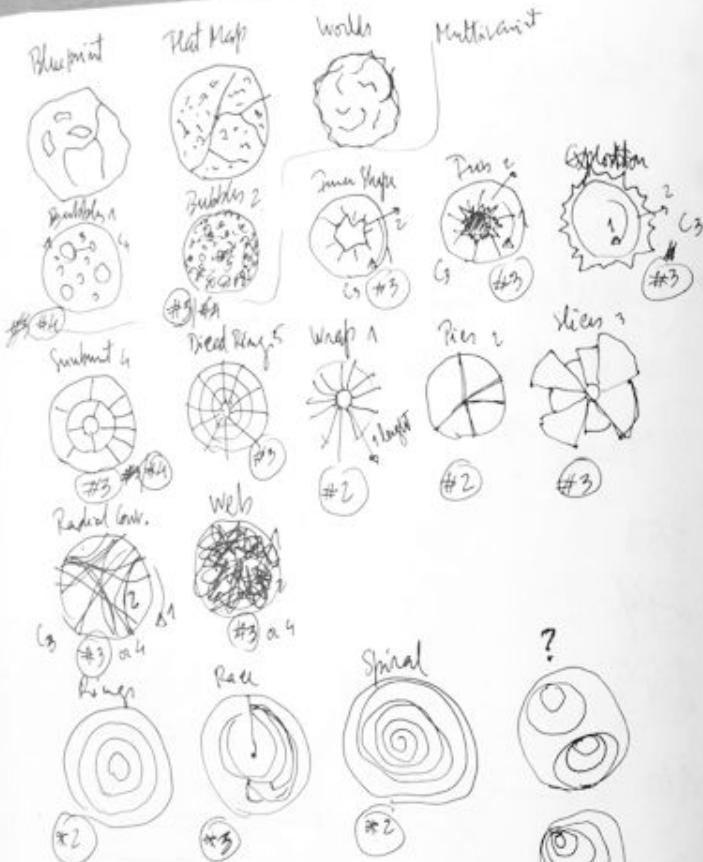


Benjamin Bach

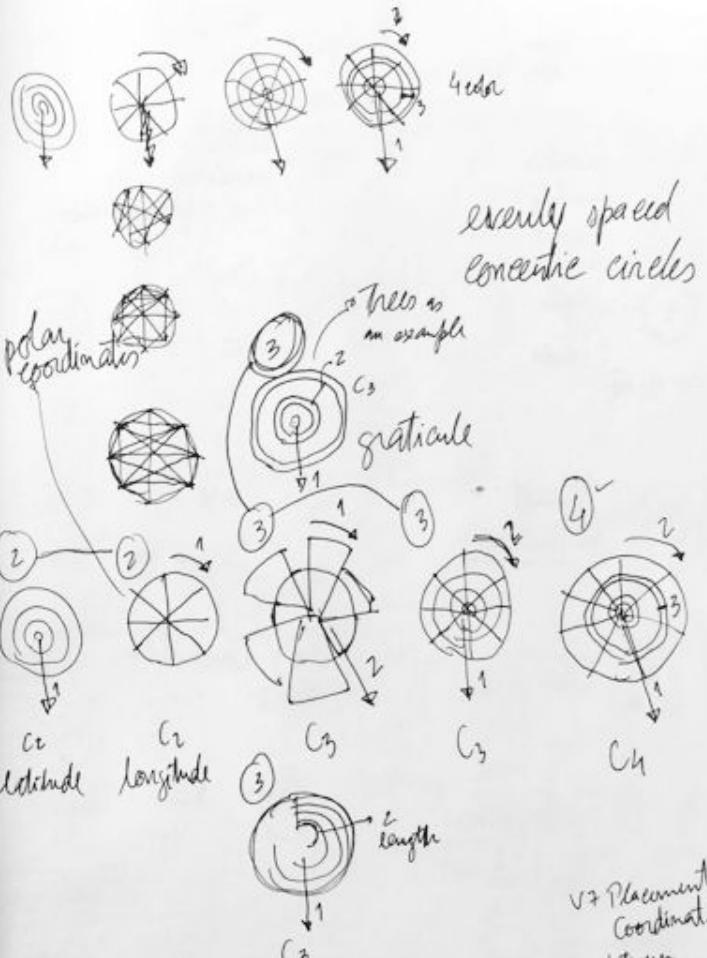
Benjamin is a Lecturer (Assistant Prof.) in Design Informatics and Visualization at the [University of Edinburgh](#). His research designs and investigates **interactive information visualization interfaces** to help people explore, communicate, and understand data across media such as screens, mixed reality, paper, and physicalizations.

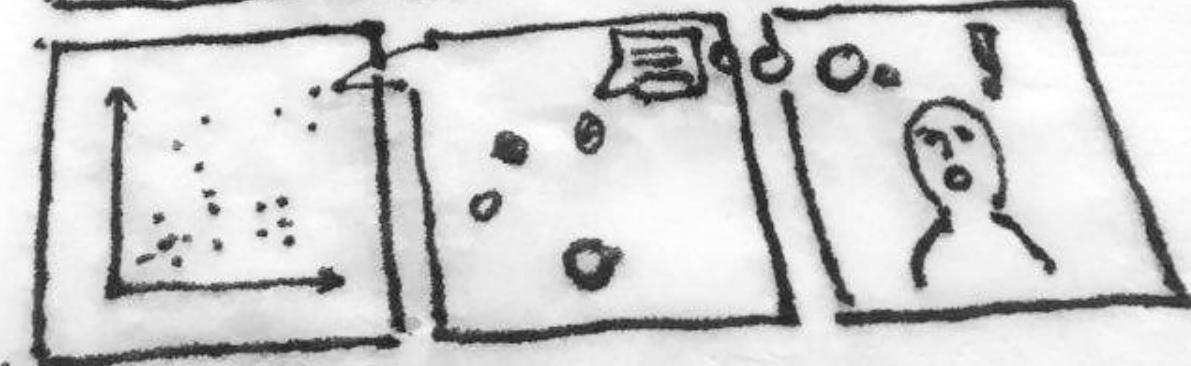
Contact

- Phys.: Informatics Forum (IF 4.30), 10 Crichton St, Edinburgh



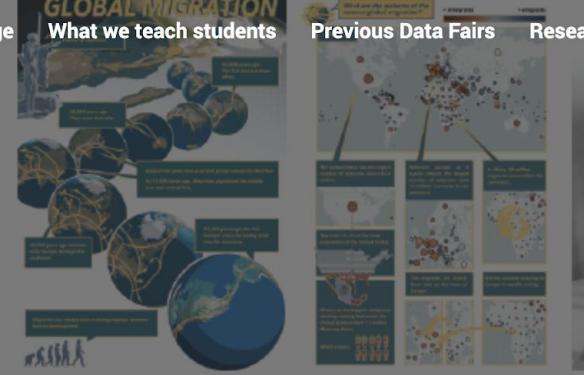
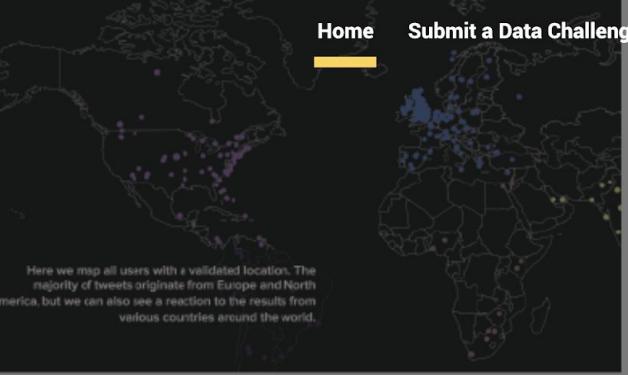
- ① Rings | Rail | Spiral | Explode
- ② Wrap | Pier | Subunit | Diced Ring



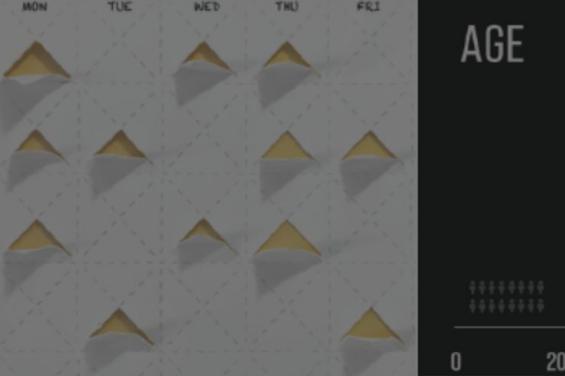
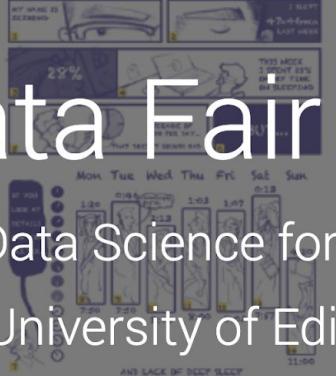


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Topic	Replies	Views	Activity
Distribution areas of dengue fever and its vector 	1	32	19h
■ Visual Design	 		
Visualisation of Average and Median Dengue infection rates across countries	2	33	23h
■ Visual Design	  		
Visualising Fatalities Rate of Measles in US across the years	2	114	23h
■ Visual Design	  		
Visualising Disease Distribution Across the US	1	36	2d
■ Pie Charts	 		
Visualising the evolution of Dengue in 5 countries	1	52	5d
■ Visual Design	 		
Visualization Common contagion	1	46	5d
■ Visual Design	 		
Visualizing Incidents of Meningitis and fatalities in the US (1920-1921)	1	32	5d
■ Visual Design	 		



CYCLING EDINBURGH



Data Science for Design
University of Edinburgh





What tools? What's + / - ? Challenges?

Benjamin Bach

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@benjbach

<http://benjbach.me>



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