

DSCI 532 - Lecture 1

Dashboard intro

- Understand what dashboards are
- Know when to use them
- Design effective dashboards
- Identify when interactivity is beneficial

What is a
dashboard?

Total Cases

56,632

Laboratory Diagnosed
56,131

Epi-Linked
501

Currently Hospitalized

358

Total to Date: 3,165

Currently in Critical Care

75

Confirmed Deaths

988

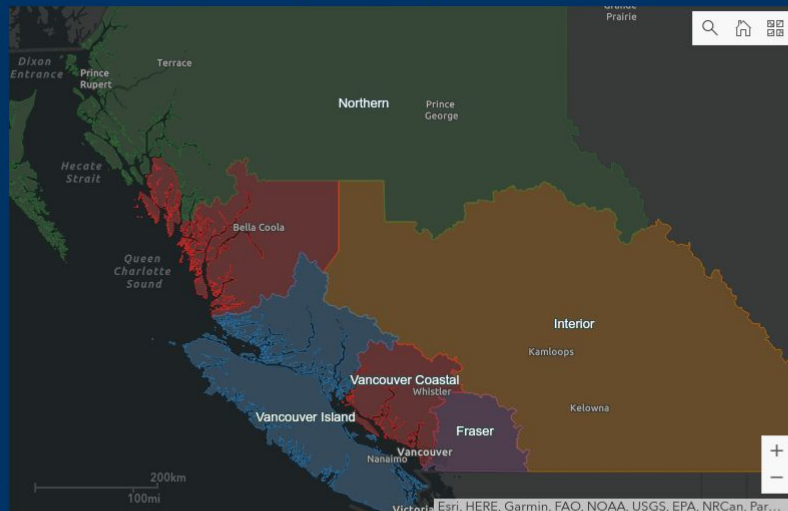
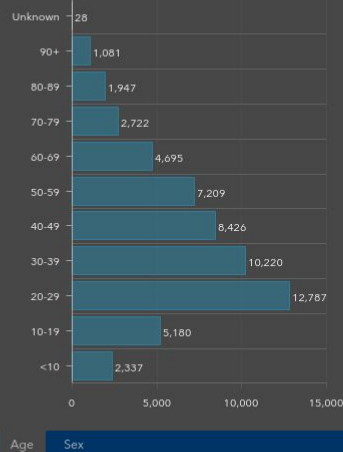
Recovered

48,205

Last Update

1/8/2021, 4:30 PM

Distribution by Age



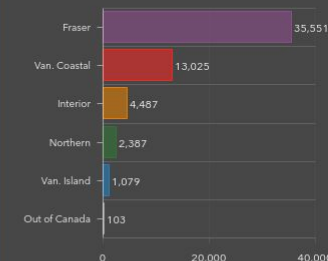
Today's New Cases

617

Active Cases

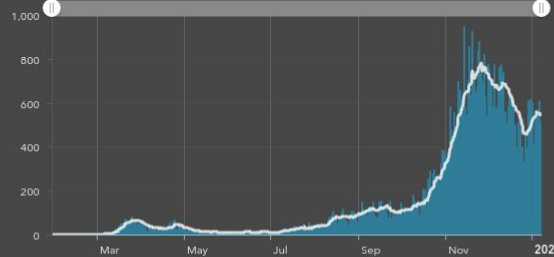
6,118

Total Cases Reported by Health Authority



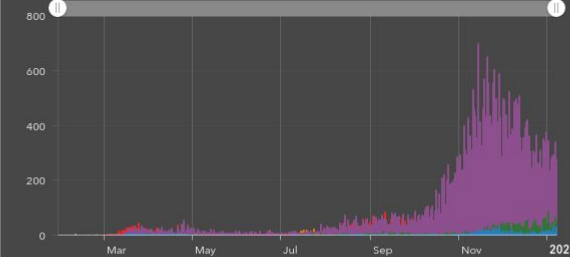
Cases New Active List

B.C. Cases Reported to Public Health



Note: Y-axis varies between graphs.

Health Authority Cases Reported to Public Health



Note: In an effort to provide as current information as possible, "Today's New Cases" (as shown on this dashboard and reported publicly through daily media statements) are calculated at different points in time and may not align exactly to what is reported on the graphs. See the Data Notes for details.

Cases by Day

Cases (Moving Avg.)

New Tests

Turn-Around

Positivity

Total Tests

1,518,311

B.C. Testing Rate

194,070
People per 1,000,000

New Tests

9,345

Canadian Testing Rate

381,241
People per 1,000,000

Note: As of January 7, 2021, the number of cases over time are reported by the result date of the client's first positive lab result where available; otherwise by the date they are reported to public health. Please refer to the data notes below for additional information.

Data notes, terms of use, disclaimer and limitations of liability



BCCDC COVID-19 Epidemiology App

Date Range

2020-03-01 to 2021-01-09

Select Comparison Groups:

☒ Pre-selected Groups
☐ Custom Groups

Select Comparison Group:

BC Health Service Delivery Areas



Select Y Scale

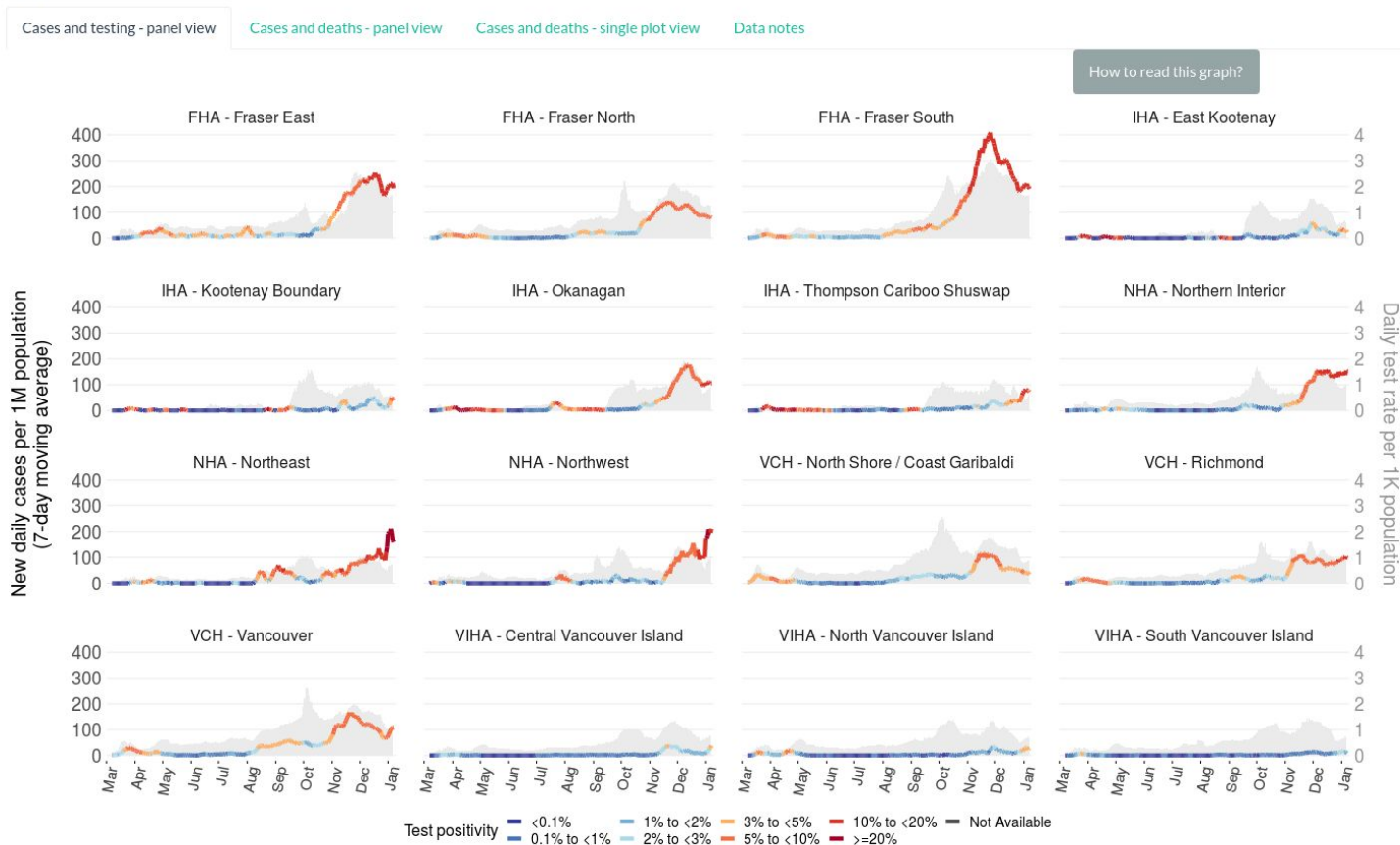
☒ Single Scale ☐ Individual Scales

Click the button below to download the figure shown:

Download graph

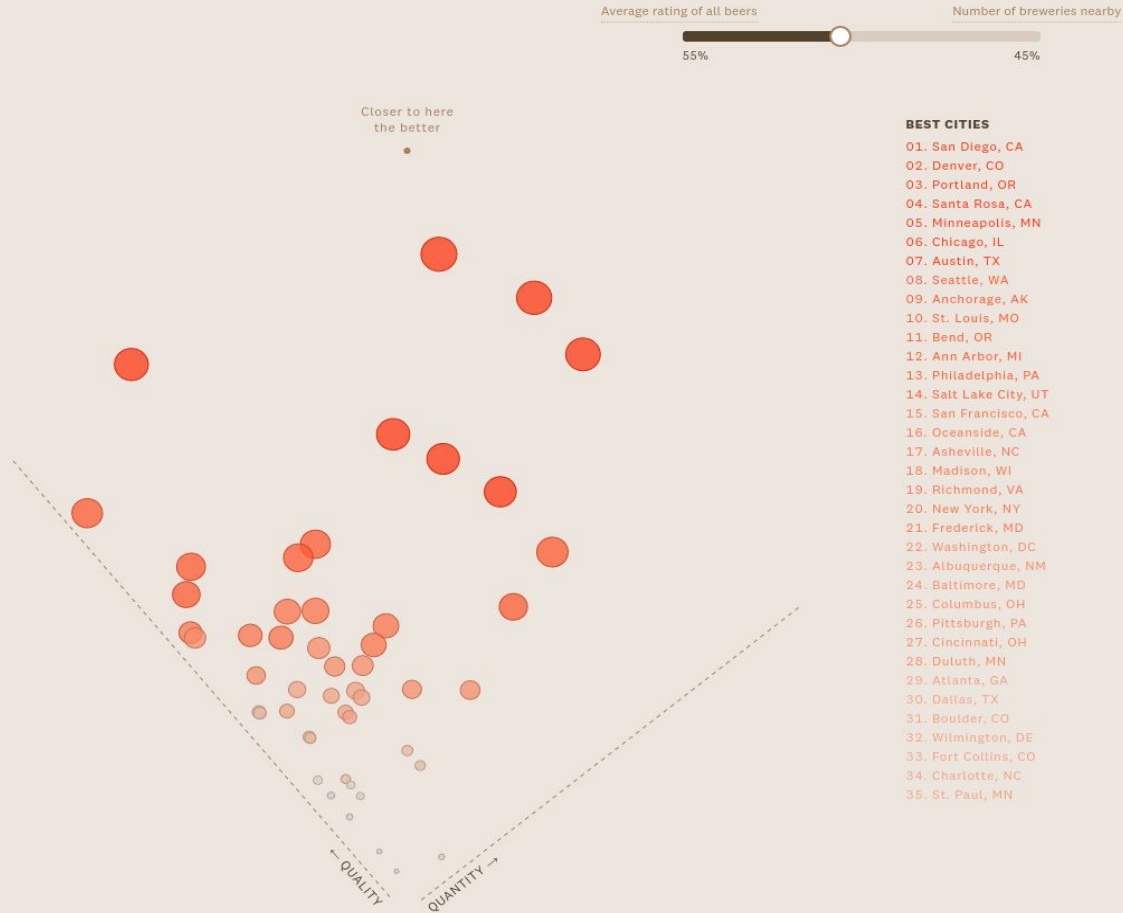
For more BC data, please visit BCCDC COVID-19 data page:
<http://www.bccdc.ca/health-info/diseases-conditions/covid-19/data>



Data up to 2021-01-07

Cities with at least 5 breweries within 20 miles based on all beers.



BEST CITIES

01. San Diego, CA
02. Denver, CO
03. Portland, OR
04. Santa Rosa, CA
05. Minneapolis, MN
06. Chicago, IL
07. Austin, TX
08. Seattle, WA
09. Anchorage, AK
10. St. Louis, MO
11. Bend, OR
12. Ann Arbor, MI
13. Philadelphia, PA
14. Salt Lake City, UT
15. San Francisco, CA
16. Oceanside, CA
17. Asheville, NC
18. Madison, WI
19. Richmond, VA
20. New York, NY
21. Frederick, MD
22. Washington, DC
23. Albuquerque, NM
24. Baltimore, MD
25. Columbus, OH
26. Pittsburgh, PA
27. Cincinnati, OH
28. Duluth, MN
29. Atlanta, GA
30. Dallas, TX
31. Boulder, CO
32. Wilmington, DE
33. Fort Collins, CO
34. Charlotte, NC
35. St. Paul, MN

HIDE FILTERS

SORT BY

Position: Ascending

CATEGORY

Decor

Wall Art & Paintings

Cushions & Throws

Mirrors

Lanterns & Candleholders

Vases, Bowls & Trays

Storage & Baskets

Bedding

Rugs

Planters, Artificial Plants & Flowers

Home Accents & Sculptures

Curtains & Curtain rods

Dinnerware & Table Linen

Lightbulbs

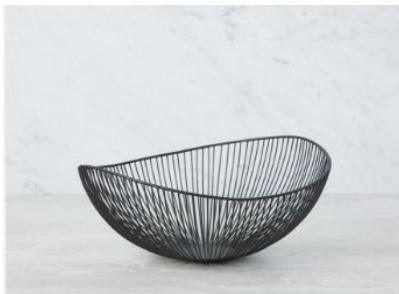
PRICE RANGE

\$0 \$39

AVAILABILITY

☐ In Stock online (8)☐ In Store (6)

SPECIAL OFFERS

☐ On Sale (3)☐ Last Chance (7)**BAUHAUS**
basket 37cm**\$24**

IN STOCK

ADD TO CART

**MICAH**
dinnerware set~~(\$39)~~ **\$29**

IN STOCK

IN STORE ONLY

**LUCE**
porcelain mug~~(\$2)~~ **\$1**

IN STOCK

ADD TO CART

**SHANA**
dinnerware set~~(\$49)~~ **\$39**

IN STOCK

IN STORE ONLY

**RIPPLE**
set of 4 tumblers**\$13**

IN STOCK

ADD TO CART

**SWIRL**
set of 4 wine glasses**\$16**

IN STOCK

ADD TO CART

In essence, a dashboard is a board that displays information, usually as some key numbers and a few panels of plots.



Why is it called
dash-board?



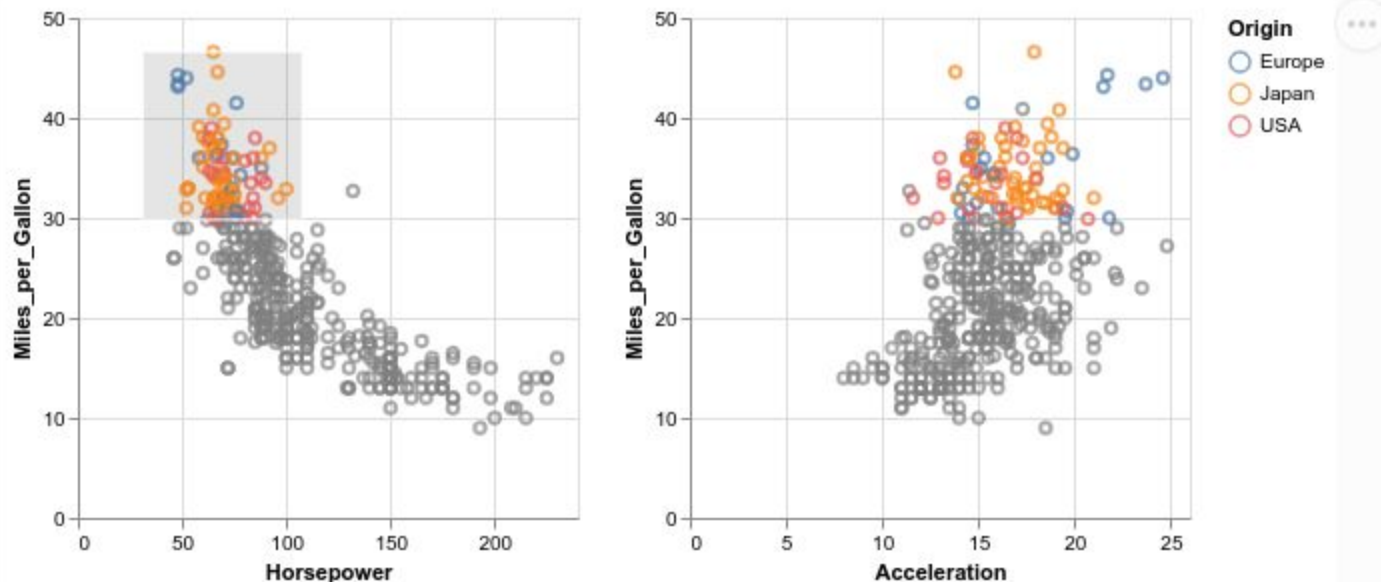
532 =



Interactivity

Multi-panel Scatter Plot with Linked Brushing

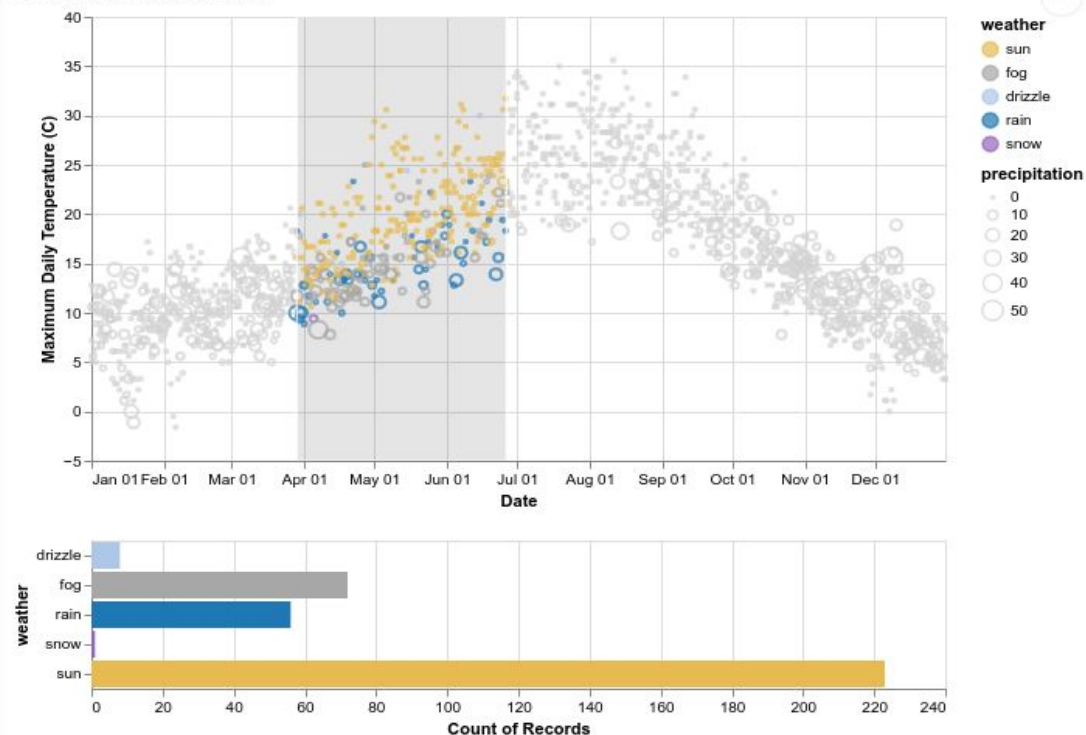
This is an example of using an interval selection to control the color of points across multiple panels.



Seattle Weather Interactive

This chart provides an interactive exploration of Seattle weather over the course of the year. It includes a one-axis brush selection to easily see the distribution of weather types in a particular date range.

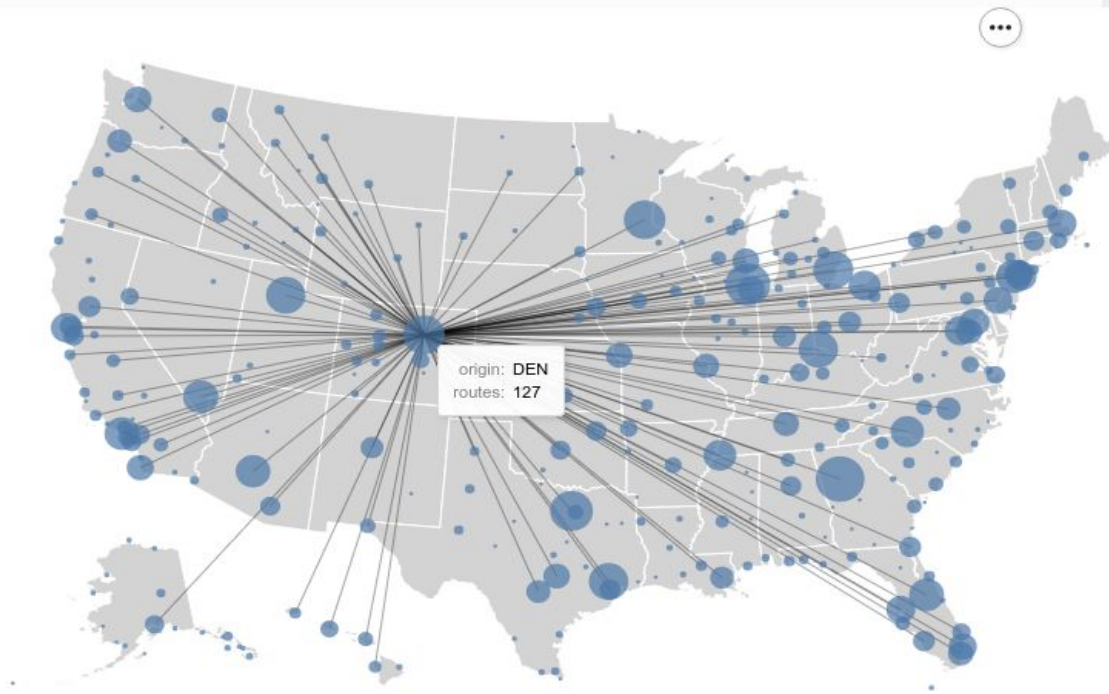
Seattle Weather: 2012-2015



https://altair-viz.github.io/gallery/seattle_weather_interactive.html

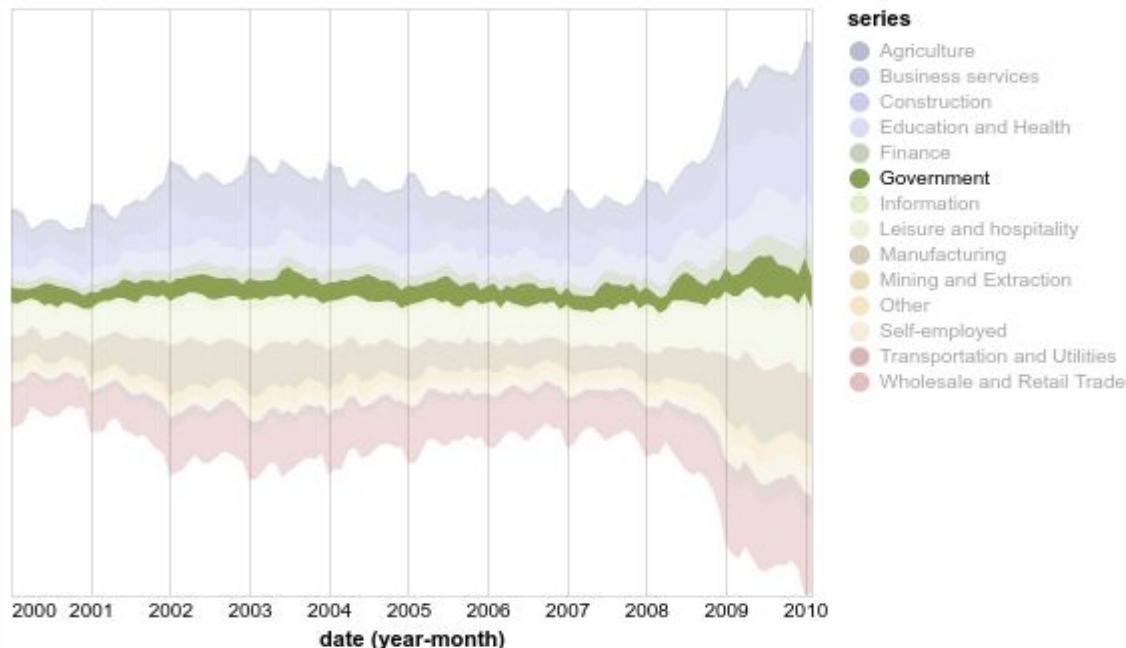
Connections Among U.S. Airports Interactive

This example shows all the connections between major U.S. airports. Lookup transformations are used to find the coordinates of each airport and connecting airports. Connections are displayed on mouseover via a single selection.



Interactive Legend

The following shows how to create a chart with an interactive legend, by binding the selection to "legend". Such a binding only works with `selection_single` or `selection_multi` when projected over a single field or encoding.



PARABLE OF THE POLYGONS

A PLAYABLE POST ON THE SHAPE OF SOCIETY

by vi hart + nicky_case

[español](#) | [deutsch](#) | [français](#) | [português](#) | [日本語](#) | [中文](#) | [italiano](#)
[magyar](#) | [nederlands](#) | [हिन्दी](#) | [čeština](#) | [Русский](#) | [العربية](#) | [Українська](#) | [עברית](#)



This is a story of how harmless choices can make a harmful world.

Why use
dashboards?

1. Quicker exploration than with coding
2. Can enable people without programming skills to explore and understand data better.
3. Can engage users more than static viz
4. Can lead to more engaging storytelling in data journalism.
5. When there is too much data, interactivity can allow us to look at subsets.
6. People can be interested in different things when they look at the same data.

How to design an
effective dashboard?

1. Understand the data
2. Identify the use case and target audience of the dashboard.
3. Speak with the target audience to find out exactly what they want.
4. Test the dashboard

1. Choose appropriate visualizations.
2. Identify the story for your default app state.
3. Show only relevant info, not everything possible.
4. Place global widgets together and local widgets close to the plots they control.
5. Think about the flow you want the end customer to follow
6. Include some key numbers on cards.
7. Design about your app in a grid layout.
8. Think about the text formatting.
9. Use style sheets with premade css template
10. Contact info, link to source code, link to raw data, last updated.

How NOT to design an
effective dashboard?



OUR NEW
DASHBOARD
HAS ALL OF
THE DIFFERENT
KPI'S WE CAN
TRACK NOW.



WHAT'S
THAT KPI
TRENDING
TO ZERO?



IT MEASURES
HOW WELL WE
UNDERSTAND
THEM ALL.



TOM
FISH
BURNÉ

A few examples

Total Cases

 **56,632**

Laboratory Diagnosed **56,131** Epi-Linked **501**

Currently Hospitalized

 **358**

Total to Date: 3,165

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Confirmed Deaths

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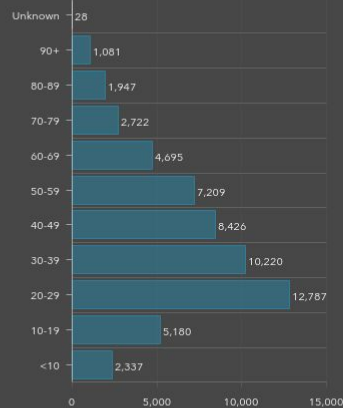
Recovered

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Last Update

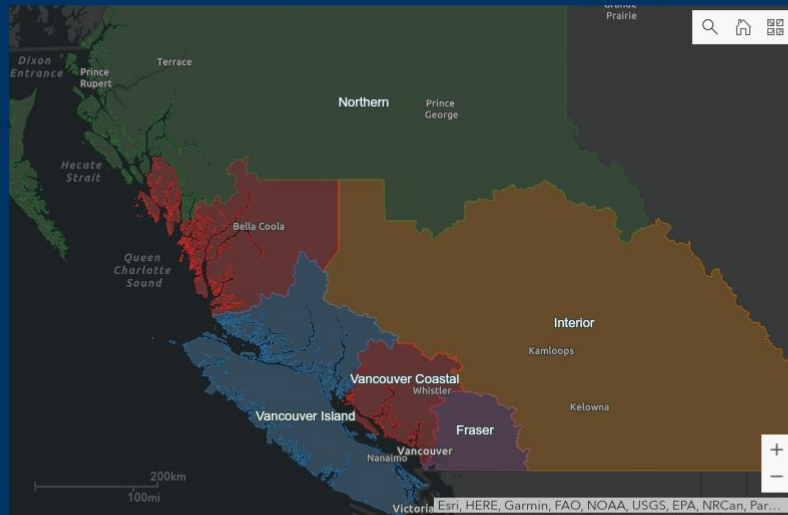
1/8/2021, 4:30 PM

Distribution by Age



Age

Sex



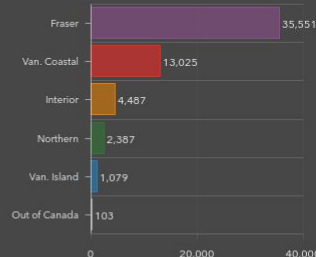
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Active Cases

 **6,118**

Total Cases Reported by Health Authority



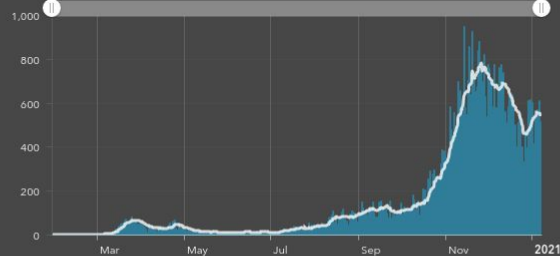
Cases

New

Active

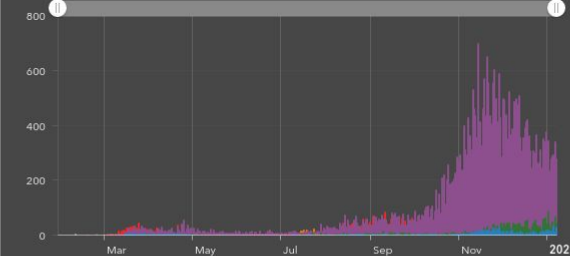
List

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Note: Y-axis varies between graphs.

Health Authority Cases Reported to Public Health



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to

2021-01-09

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☐ Custom Groups

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Download graph

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<http://www.bccdc.ca/health-info/diseases-conditions/covid-19/data>



BC Centre for Disease Control
Provincial Health Services Authority



Provincial Health Services Authority
Province-wide solutions.
Better health.

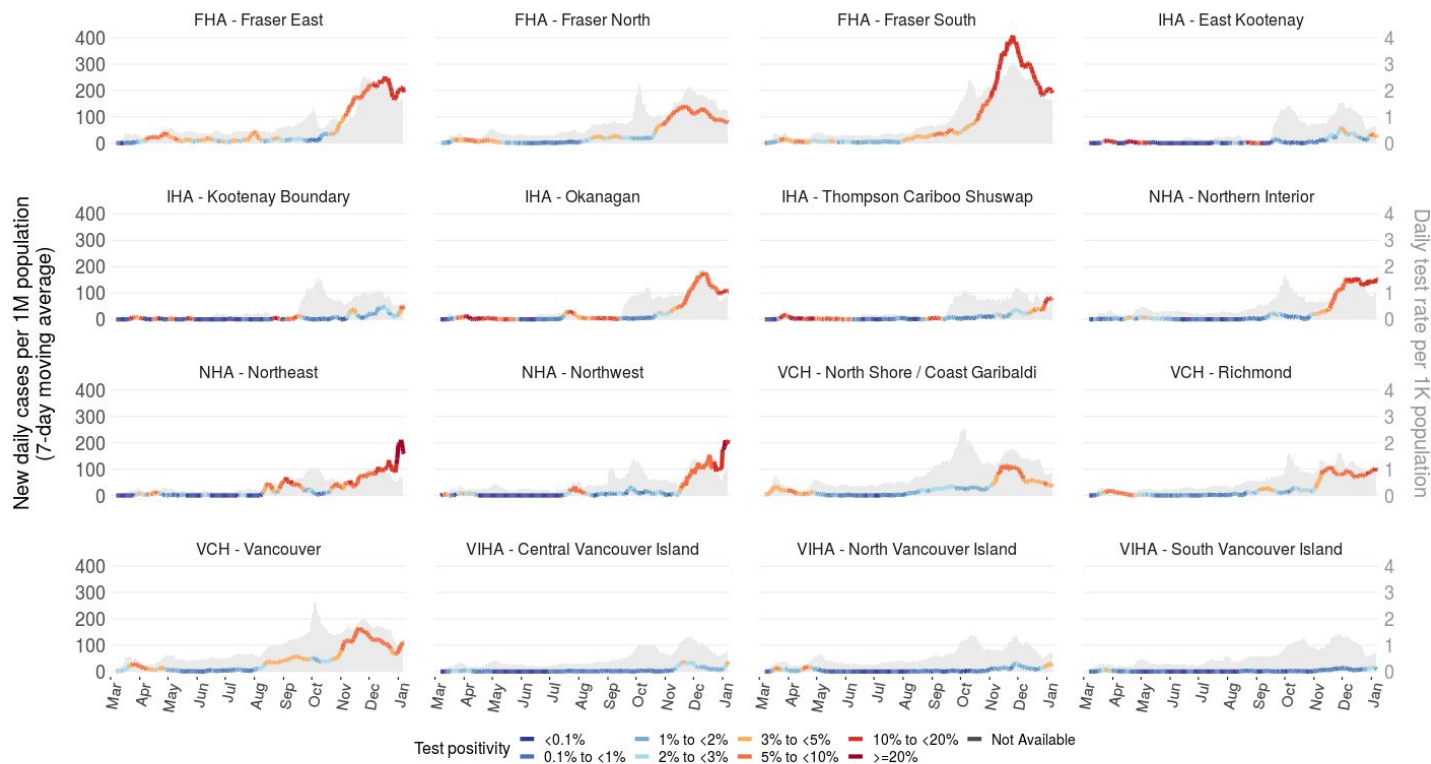
Cases and testing - panel view

Cases and deaths - panel view

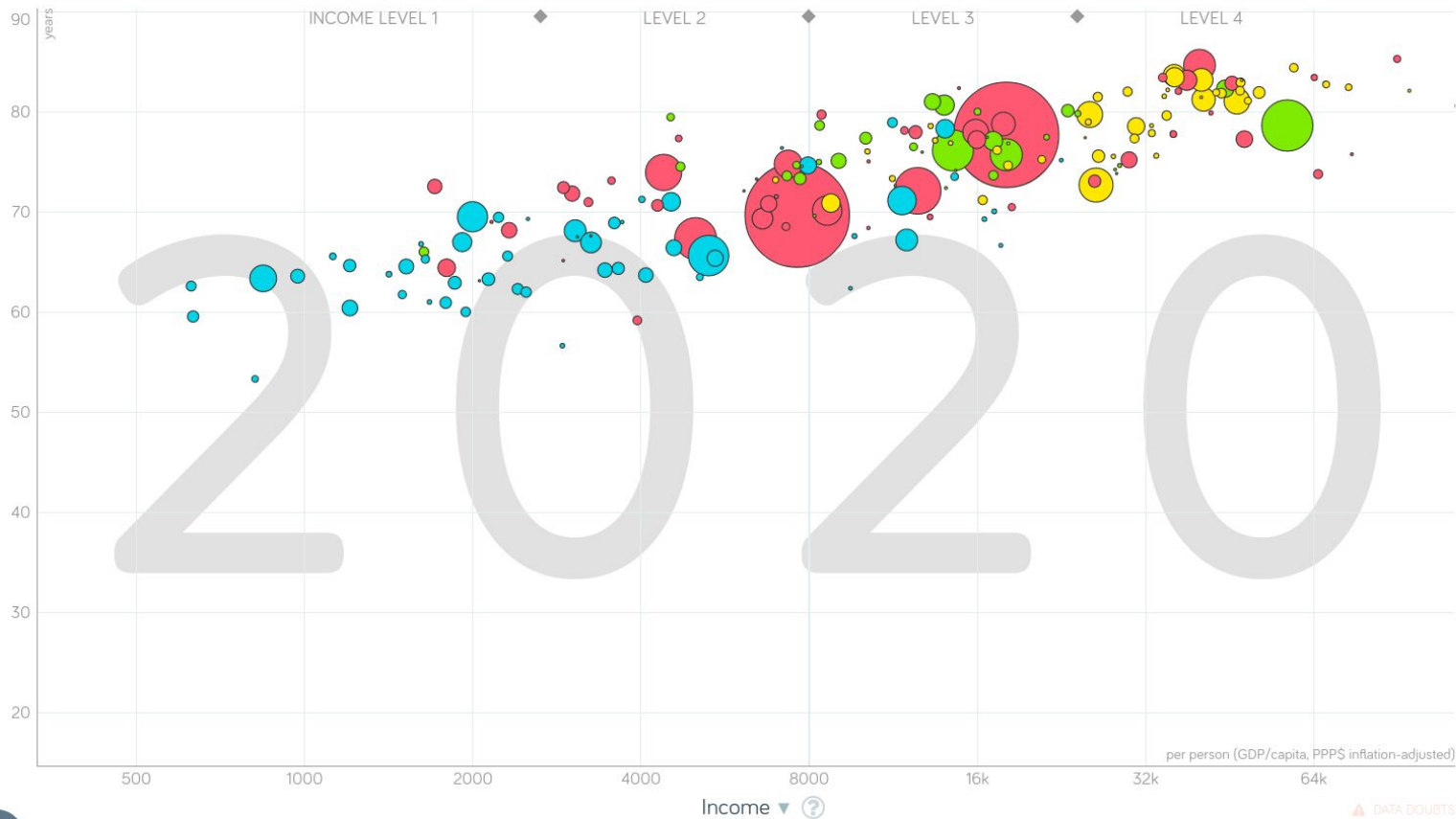
Cases and deaths - single plot view

Data notes

How to read this graph?



Data up to 2021-01-07



Color World Regions ▼



Select Search...

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

Size Population ▼ ?

Zoom 🔍 🔍 🔍 🔍 100%

⚙️ 📄 🔄
OPTIONS PRESENT EXPAND



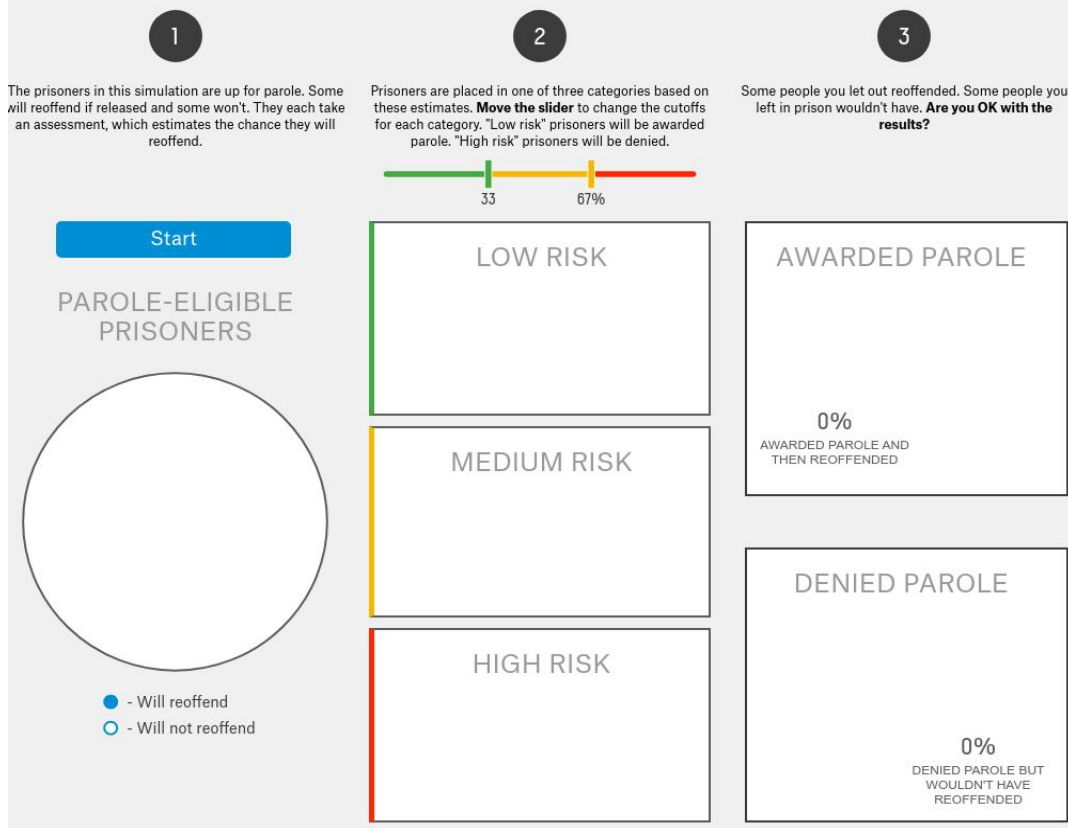
1800

1900

2000

Who Should Get Parole?

Even the best risk assessments yield probabilities, not certainties. That means they label as "high risk" some people who won't commit another crime and label as "low risk" some people who will. This simulation lets you sort offenders into risk categories based on the results of an assessment. Think we should rarely lock up anyone who wouldn't reoffend? Set the "low risk" threshold high and the "high risk" threshold even higher. Have little tolerance for recidivism? Try the opposite. In the real world, policymakers have to strike a balance. [Read more »](#)



Executive Insights

1

■ Total Profit
□ Total Quantity
□ Total Revenue

2

Product Category

All

Order Type

All

?

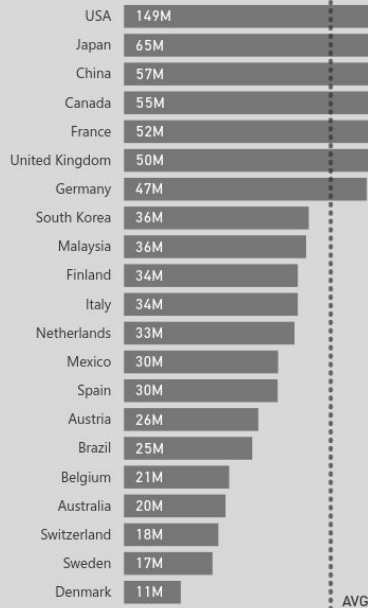
What is driving performance?

Select a measure:

Select a perspective:



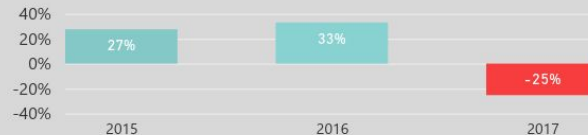
How is our Total Profit distributed geographically?



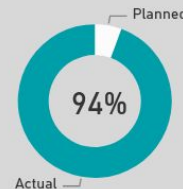
⊕ Hover to view details

Decisive Data
insights for decisions

What is our YoY% change in Total Profit?



How close are we to our planned Total Profit?



What is my Running Total by Total Profit?



What are my Top 5 products by Total Profit?



Top 5



Filter

Nutrimap

This dashboard facilitates comparisons of nutrient composition between common food items to give an overview of which foods are high and low in what nutrients. I think colors are more efficient at presenting overviews than tables with numbers, so I chose to present this information as heatmaps. The data is from USDA, who don't yet collect phytonutrients, which are generally abundant in plant-based foods. Eventually I want to add more options computing the RDI, but for now, the RDI is based on a 70 kg male in his 30s. This is a minor issue since the dashboard mainly use RDI to provide a reference value for coloring the heatmap rather than recommending how much of a certain food item one should eat. For the latter, I highly recommend [Cronometer](#).

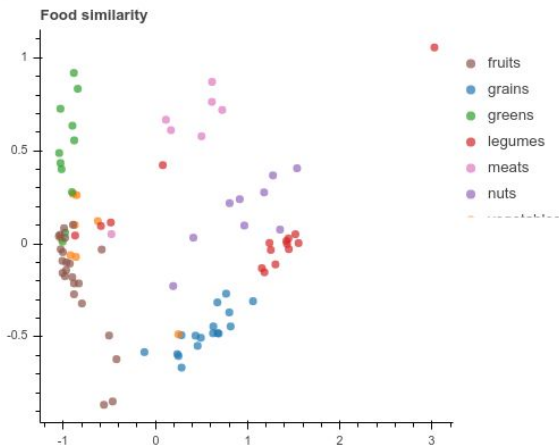
Selection tools

Pick nutrients and food groups to visualize using the lists or select individual food items in the food similarity scatter plot by dragging with the mouse or clicking to select. Ctrl and shift can be used to select multiple items.

macros
macros_details
minerals
vitamins
aas
carotenoids

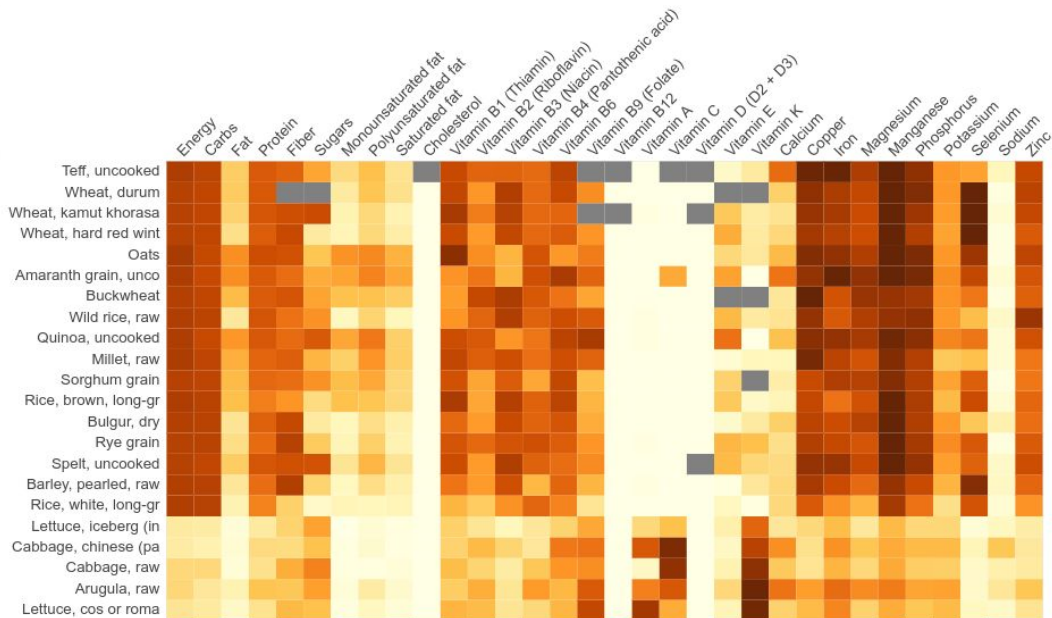
grains
vegetables
greens
legumes
nuts
fruits
meats

☒ Normalize to RDI
☒ Cap at 100% RDI
Sort by ▼



Nutrient visualization

The nutrients for 100g of each food are shown (dry weight for grains and legumes, wet weight for everything else). The colors are normalized to RDI and capped at 100% by default.



Examples from MDS
previous years

World Wide Arms and Ammunition Movement and GDP Effects

This app is designed to explore how the movement of weapons globally has changed over the last 30 years, and how imports and exports of arms and ammunition relate to a country's GDP.

Choose statistic:

☒ Import

☐ Export

Choose country:

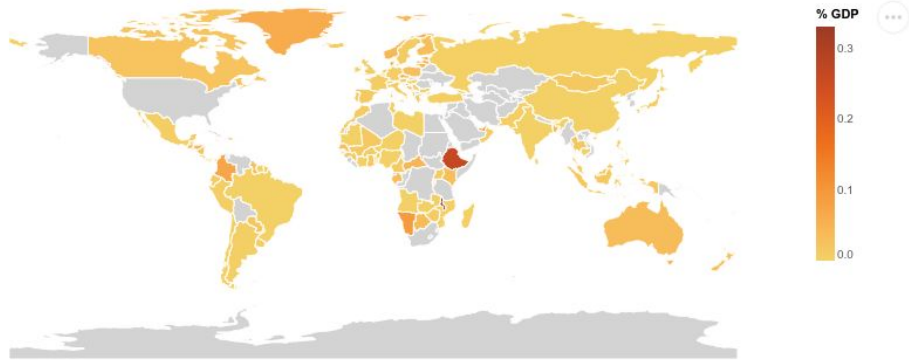
Togo

Explore changes through time of a single country using the lowermost visualizations.

☐ Include USA

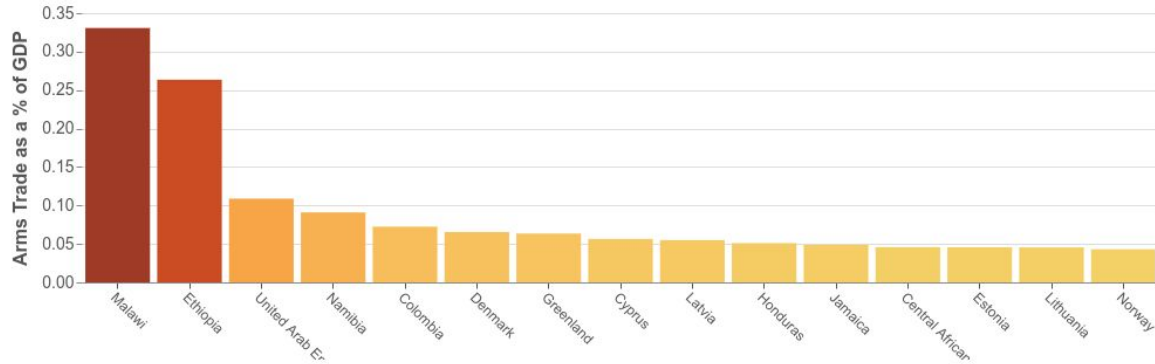
Remove the outlier USA to better visualize differences between other nations.

☐ % of GDP



1990 1995 2000 2005 2010 2015 2018

Arms Trade as a Percentage of GDP for Major Importers in 2007



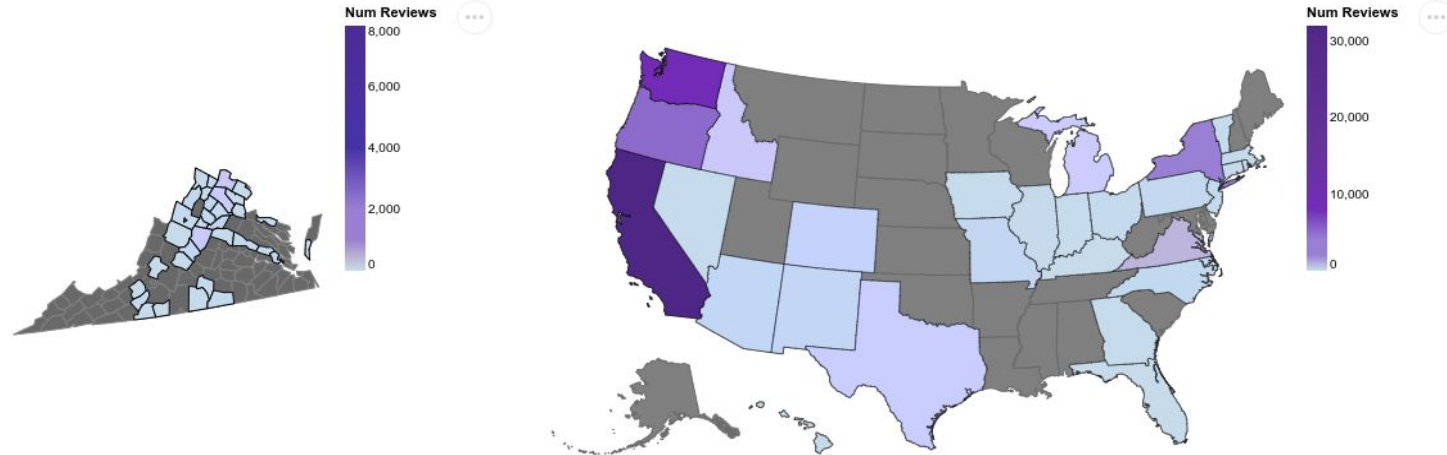
WINE REVIEWS BY GEOGRAPHIC LOCATION

See how wine is distributed across the U.S. Hover over a particular state or county to see some summary information for things like average price, points, or value rating. Use the dropdown menu to take a closer look at a particular state, where you can see a breakdown by county. Hover over a county to get more summary information. In no time at all you'll be an expert on where you can find the best wine's at the best prices in America.

TOTAL NUMBER OF REVIEWS

CHOOSE A STATE

Virginia



Select the Cities: ▾

Select your desired year
range:

Dashboard

Description



TOTAL REPORTED CRIMES

359524



AVERAGE NUMBER OF CRIMES

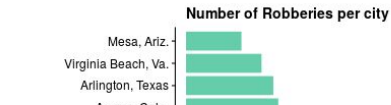
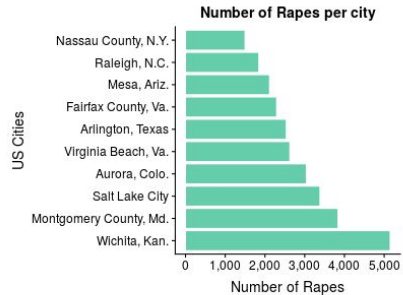
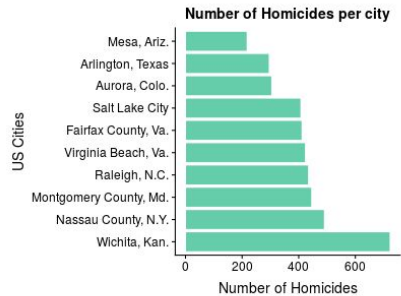
35952



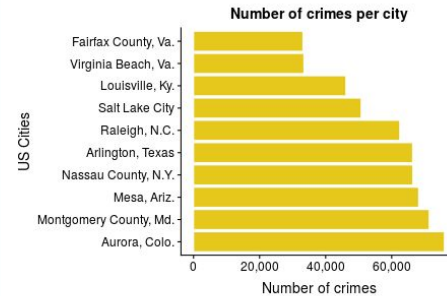
SAFEST CITY OVER SELECTED TIME FRAME

Virginia Beach, Va.

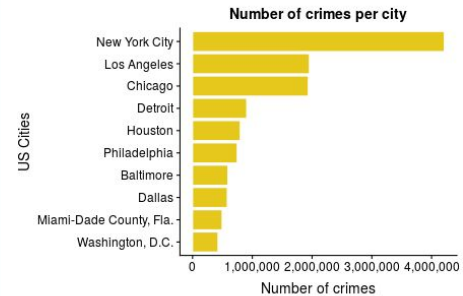
Compare your choice of cities



Top ten cities with minimum crimes



Top ten cities with maximum crimes



World Wine Explorer

This application will help you explore the world of wine!

*Reviews are only published for wines rated 80+ points

Rating range

80 100

Price range (\$USD).

(\$11 - \$30) Popular

Country

Canada

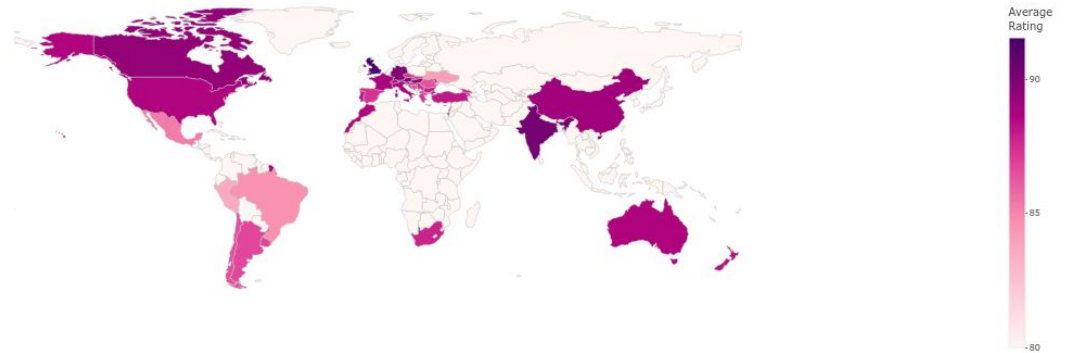
Region

Nothing selected

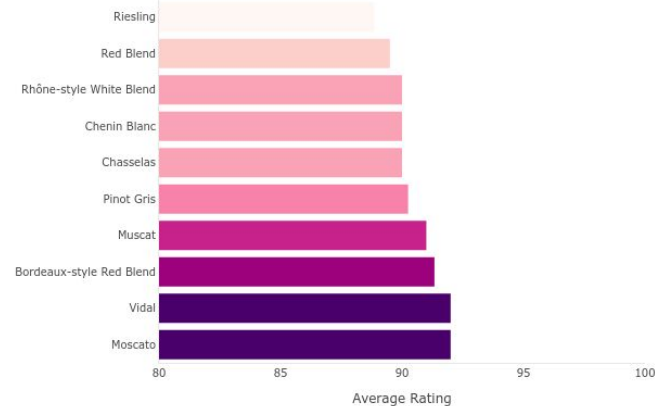
Vintage

Nothing selected

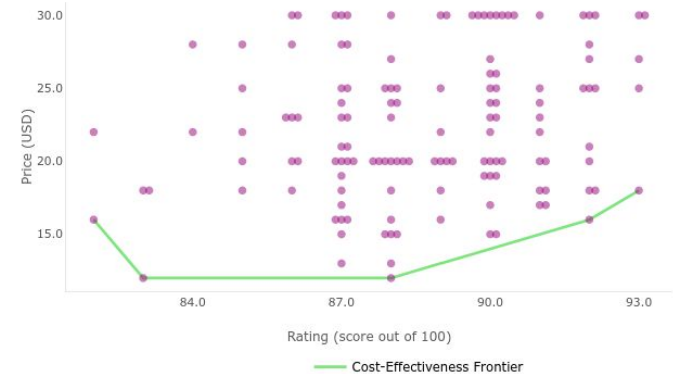
Average Wine Ratings by Country



Which Varieties have the highest ratings?



Price vs. Ratings



More MDS examples

<https://dsci-532-group203-maintenance.herokuapp.com/>

https://panntingg.shinyapps.io/mental_health_app_3_0/

https://hfboyce.shinyapps.io/dsci_532-boston-crime-rate/

<https://adityashrm21.shinyapps.io/us-police-shootings-analysis/>

<https://g105-milestone3.herokuapp.com/>

<https://dsci-532-l02-gr212-milestone3.herokuapp.com/>

<https://dsci532group114milestone3.herokuapp.com/>

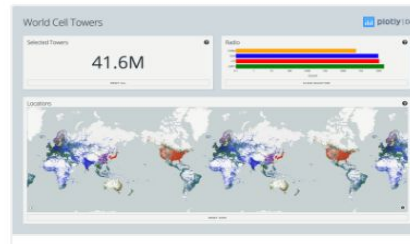
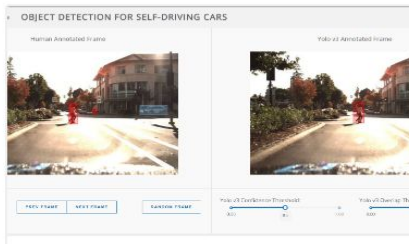
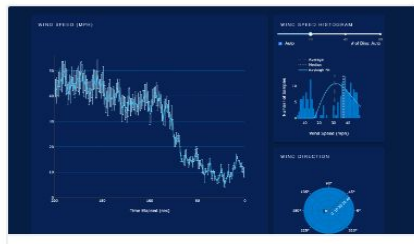
Dash Enterprise App Gallery

This public instance of the 🧩 [Dash Enterprise](#) 🧩 [app manager](#) runs >60 Dash apps for 100s of concurrent users on Azure Kubernetes Service. Click on a Dash app's name below for more info and links to [Python & R source code](#) on GitHub.

[Aerospace](#) | [Automotive](#) | [Energy](#) | [Finance](#) | [Manufacturing](#) | [Medical Imaging](#) | [Pharma](#) | [Retail](#)

All Apps (92)

Search applications...



Support Vector Machine (SVM) Explorer

Select Dataset:
Moons

Sample Size:
100 200 300 400 500

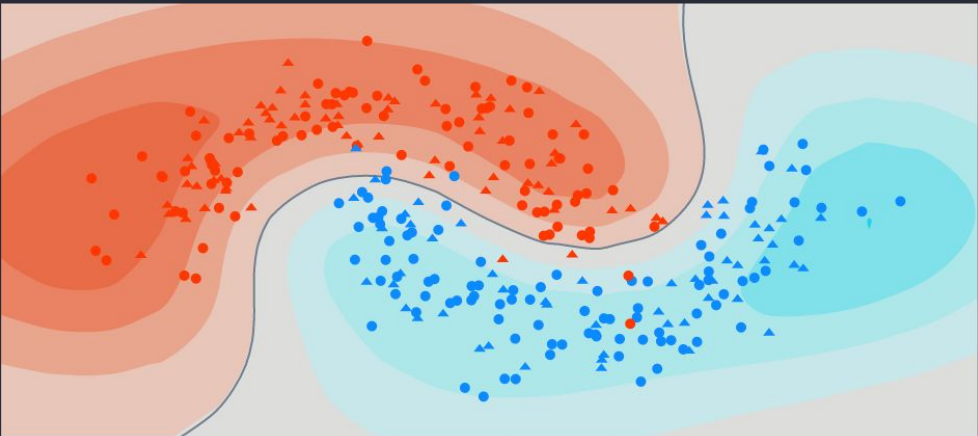
Noise Level:
0.2 0.4 0.6 0.8

Threshold:
0.013

RESET THRESHOLD

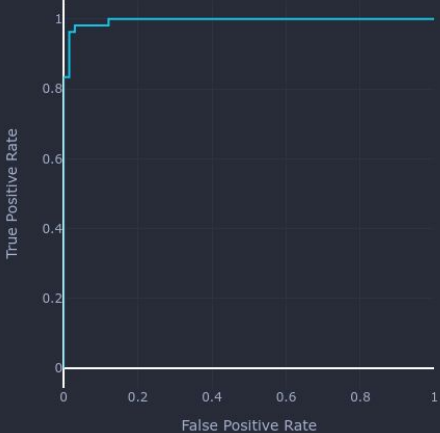
Kernel:
Radial basis function (RBF)

Cost (C):
0.01 0.1 1 10 100 1000 10000
1 3 5 7 9

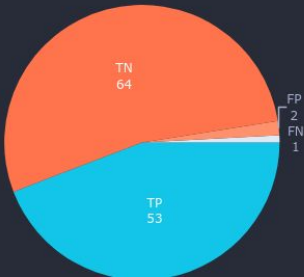


— Threshold (0.013) ● Training Data (accuracy=0.961) ▲ Test Data (accuracy=0.942)

ROC Curve (AUC = 0.995)



Confusion Matrix



Human Annotated Frame



Yolo v3 Annotated Frame



Find a frame containing:
pedestrian

PREV FRAME

NEXT FRAME

RANDOM FRAME

Yolo v3 Confidence Threshold:



Yolo v3 Overlap Threshold:

