

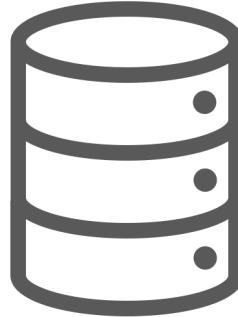
SPATIAL SCIENCE 101

Data Journalism Workshop 2020 | 23 February, 2020

Phannisa Nirattiwongsakorn

Plan and Policy Analyst at Office of the National
Economic and Social Development Council of Thailand

When Data Have Locations

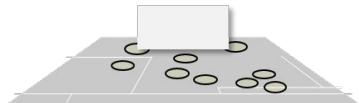


Geographic
reference

id	Name	Full Addr	City	State	Zip	Virtual_Tc	Claimed	Category	Rating	Reviews	Website	Phone	Lat	Long	A
443	8 Days a w	33 Khiang	Amphoe M	Chiang Mai	50200	No	Yes	Coffee shi	4.2	88		093 287 57	18.80149	98.9632	
671	94° Coffee	60, Sanam	Amphoe M	Chiang Mai	50100	No	No	Cafeteria	3.6	8	94coffee.(053 273 94		18.76955	98.96822	
679	a coffee	Tak Ok, Ba	Ban Tak Di	Chiang Mai	63120	Yes	No	Coffee shi	4.4	54		091 840 64	17.05067	99.07705	
48	A Day In C	107/1 Rag	Amphoe M	Chiang Mai	50100	No	No	Cafe	4.6	98			18.77658	98.99627	
315	ABCD : A E	1 Huaykae	Amphoe M	Chiang Mai	50200	No	No	Cafe	4.5	53	hipthailar	090 753 74	18.79635	98.97689	
724	About Cof	แยกไฟแดง	Amphoe M	Chiang Mai	15000	No	Yes	Cafe	4.4	107	business.	063 597 92	14.78917	100.6765	
610	AIYA Coffe	Suthep, M	Mueang C	Chiang Mai	50200	No	No	Cafe					18.80385	98.95231	
22	Akha Ama	9/1 หมู่ 1	Amphoe M	Chiang Mai	50300	No	Yes	Cafe	4.5	803	akhaamac	088 267 80	18.80325	98.98006	
12	Akha Ama	175/1 Rach	ตำบล	พระ Chiang Mai	50200	No	No	Cafe	4.5	656	akhaamac	088 267 80	18.78842	98.98329	

What can be Spatial?

Security Checks



Locations

CCTV Coverage

Land ownership

Road Networks

Census

Building Plans

Rivers & Canals

Emergency plans

Policy-holders

Terrain Data

Flood risk



The “real world”

GIS Explained

“Spatial
≠
physical”

Outline



Applications

International
Thailand



The Basics

Essentials of spatial
science
Shape of the earth
Map Projections
Types of spatial data
Spatial statistics
Map techniques
Tools



Data Hunting

Resources
Common
problems &
solutions



Exercise

ss

Walk Score
93

10453 is a Walker's Paradise

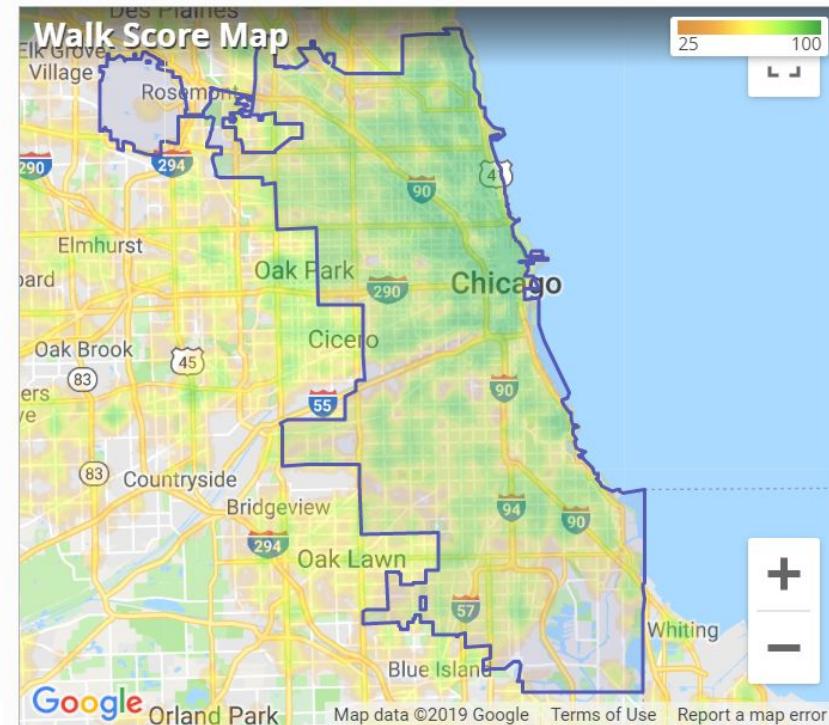
Daily errands do not require a car.



Walk Score
78

Chicago is Very Walkable

Most errands can be accomplished on foot.



Crime Reports

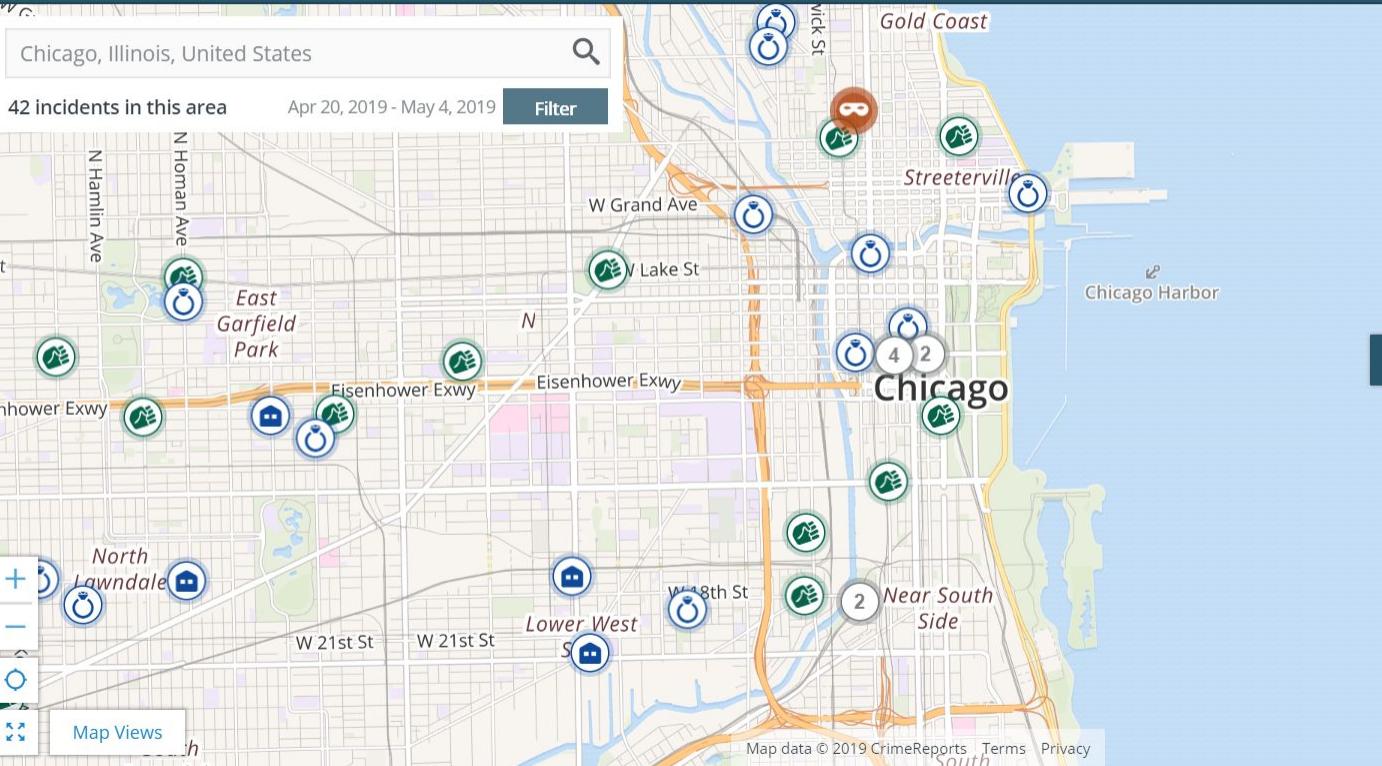
CityProtect

 CrimeReports™

Chicago, Illinois, United States

42 incidents in this area Apr 20, 2019 - May 4, 2019 [Filter](#)

Share Create an Alert Submit a Tip Register a Camera FAQ Sign In



Map Views

Map data © 2019 CrimeReports Terms Privacy

AGENCIES

Incident trends

Violent 16 Property 26 Quality Of Life 0

Robbery N WELLS ST ROBBERY STRONGARM - NO WEAPON Apr 23, 2019 around 10 AM

Description: ROBBERY STRONGARM - NO WEAPON

Location: CONVENIENCE STORE

Case No.: JC234931 Agency: Chicago Police Department

[Submit a Tip](#) [Share](#) [Center on Map](#)

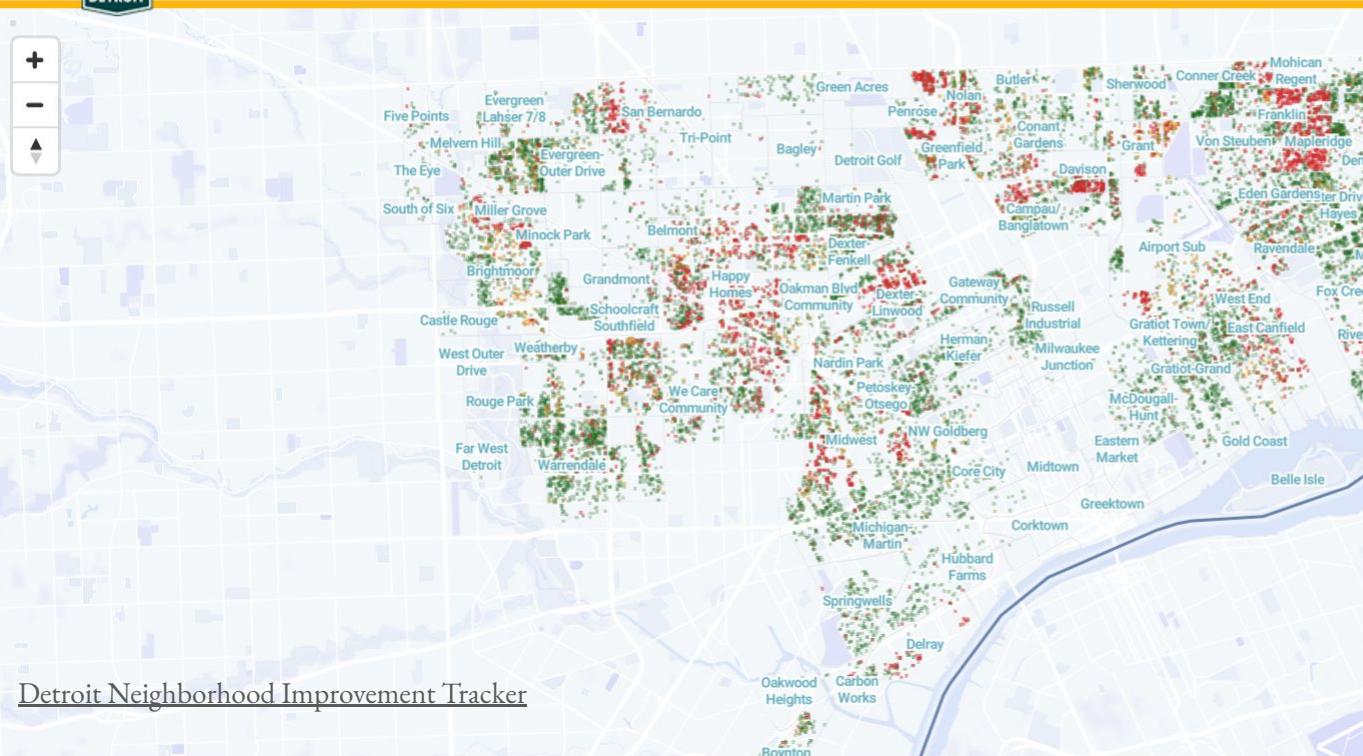
Theft 4100 Block W 16TH ST Apr 23, 2019 around 9 AM

DECEPTIVE PRACTICE

Detroit Neighborhood Improvement Tracker



Detroit Neighborhood Improvement Tracker



Neighborhood Improvement Tracker

Search for an address or intersection:

ex '8515 W Chicago', 'Van Dyke & Harper'

Residential Demolitions

-  Completed ([source](#))
 -  Contracted ([source](#))
 -  Pipeline ([source](#))

Commercial Demolitions

- ▲ Completed ([source](#))
 - ▲ Contracted ([source](#))
 - ▲ Pipeline ([source](#))

DI BA Sold Properties

- Partner & Project Sales ([source](#))
 - Own It Now ([source](#))
 - Closed Auctions ([source](#))
 - Side Lots ([source](#))
 - Currently for sale ([source](#))
 - DLBA Owned Structure ([source](#))

DJRA Owned Properties

- DLBA Owned Vacant Land ([source](#))
 - Side Lots For Sale ([source](#))

Detroit Neighborhood Improvement Tracker

USGS Invasive Species Report



NAS - Nonindigenous Aquatic Species

UGA13540

[Home](#)[Alert System](#)[Database & Queries](#)[Taxa Information](#)[Report a Sighting](#)

Map updated Sat May 04 2019. Data Disclaimer: Number of records does not imply species abundance. These maps represent collection records only and may not reflect the actual distribution of established populations. Recommended browsers are Firefox, Chrome, IE9 & above. These data are preliminary or provisional and are subject to revision. They are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the

NYC Street Tree Map

[NYC Street Tree Map](#)



New York City Street Tree Map

Explore and Care For NYC's Urban Forest

Home

My Trees

Learn

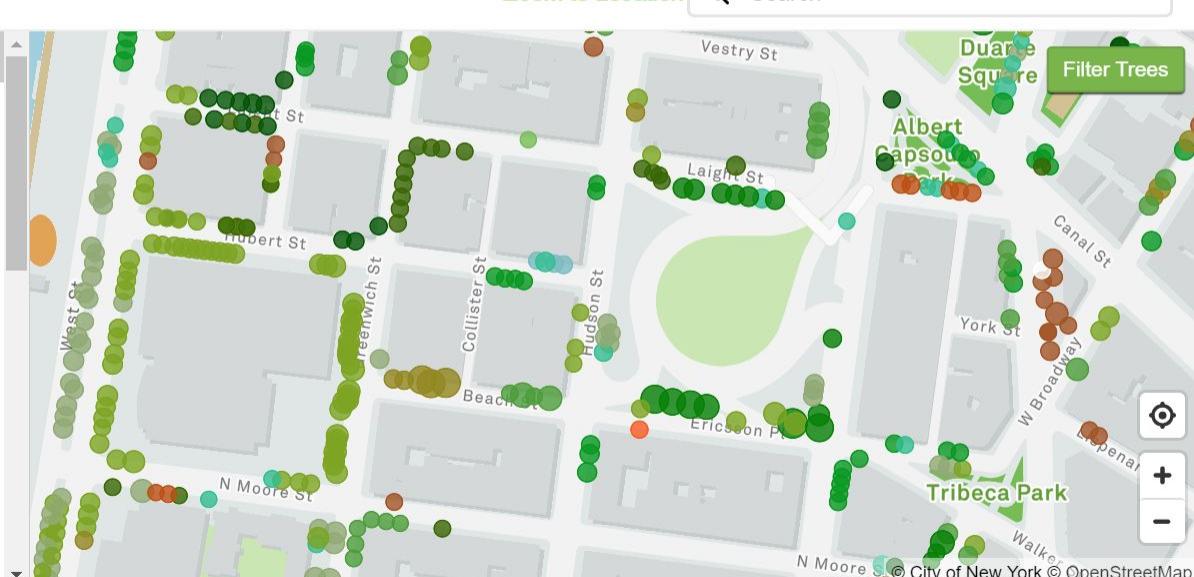
Groups

Log in or Register

Zoom to Location



Search



x

SoHo-TriBeCa-Civic Center-Little Italy Neighborhood Statistics

Trees on the
Map

2,344

Activities
Reported

1,234

Trees Favored

227

Number of
Species

72

Most Common Species

Thornless Honey locust

582 trees, 25% of SoHo-TriBeCa-Civic
Center-Little Italy trees on the map

Recent Tree Care Activities

Map Key: Tree marker color indicates species. Marker size indicates trunk diameter. Click on marker for full tree details.

[NYC Parks Main Website](#) | [About NYC Street Tree Map](#) | [Send Feedback](#) | [Developers](#) © City of New York All Rights Reserved. [Privacy Policy](#). [Terms of Use](#).

[Report a Missing Tree](#)

ESRI Story Map: Syria's Deepening Crisis

Syria's Deepening Crisis - A
story map presented by Esri

Syria's Deepening Crisis

A story map [f](#) [t](#)

The ongoing Syrian conflict has killed tens of thousands of people and brought suffering to millions. The world watches via social media despite occasional crackdowns by the Assad regime.



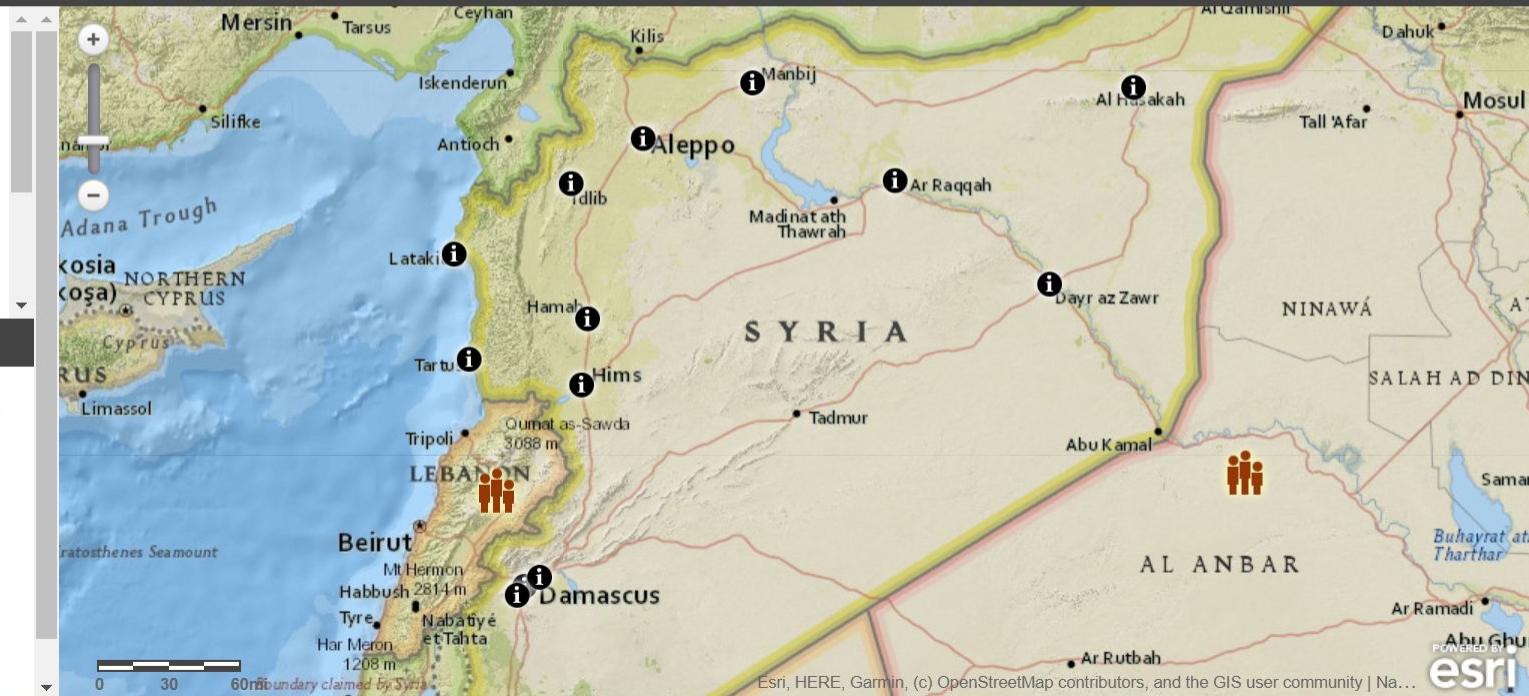
Syria's humanitarian crisis continues to deepen as the nation's civil conflict approaches its two-year anniversary. Some 60,000 people have died in the civil war; more than 600,000 people have fled the country, and an estimated two million have been internally displaced. The nation's rich cultural and archeological sites have been extensively damaged.

Places Social Media

Zoom out to explore city and refugee information. Zoom in for conflict areas, archeological sites, military installations, and more. Zoom further to explore Syria's tapestry of dense urban enclaves, irrigated farms, and desert reaches.

Cities

Refugees



ESRI Story Map: A World of Forests

A World of Forests: Atlas

A World of Forests: Atlas

A Story Map [Facebook](#) [Twitter](#) [Email](#)



Tree Cover

Woody Biomass

Tree Cover Types

Mangrove Forest

Tree Cover Loss

Tree Cover Gain

Drivers of Deforestation

More than one third of the planet is covered in forests, a natural resource that is vital for the survival of other plants, animals, and humans. This map of tree cover shows the distribution of trees around the world.

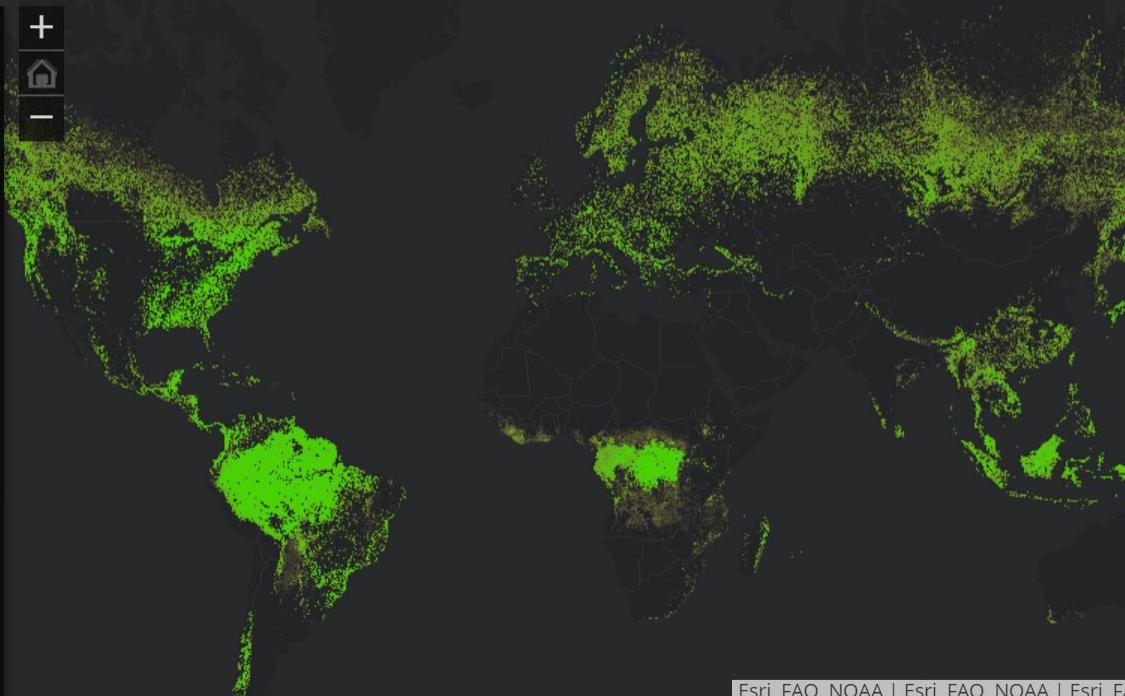
More trees

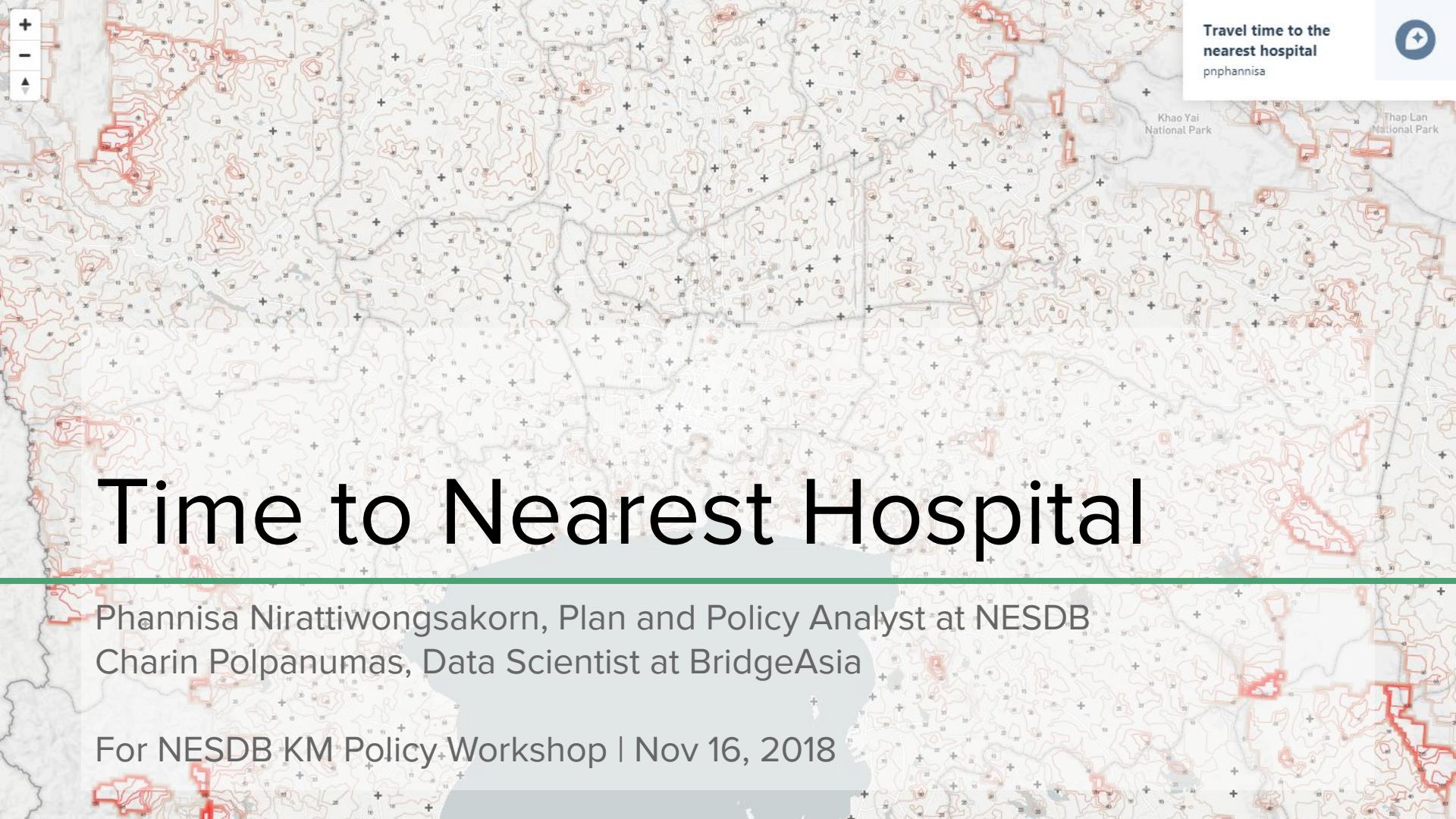
Fewer trees

[View Layer on ArcGIS Online](#)

[Learn more](#)

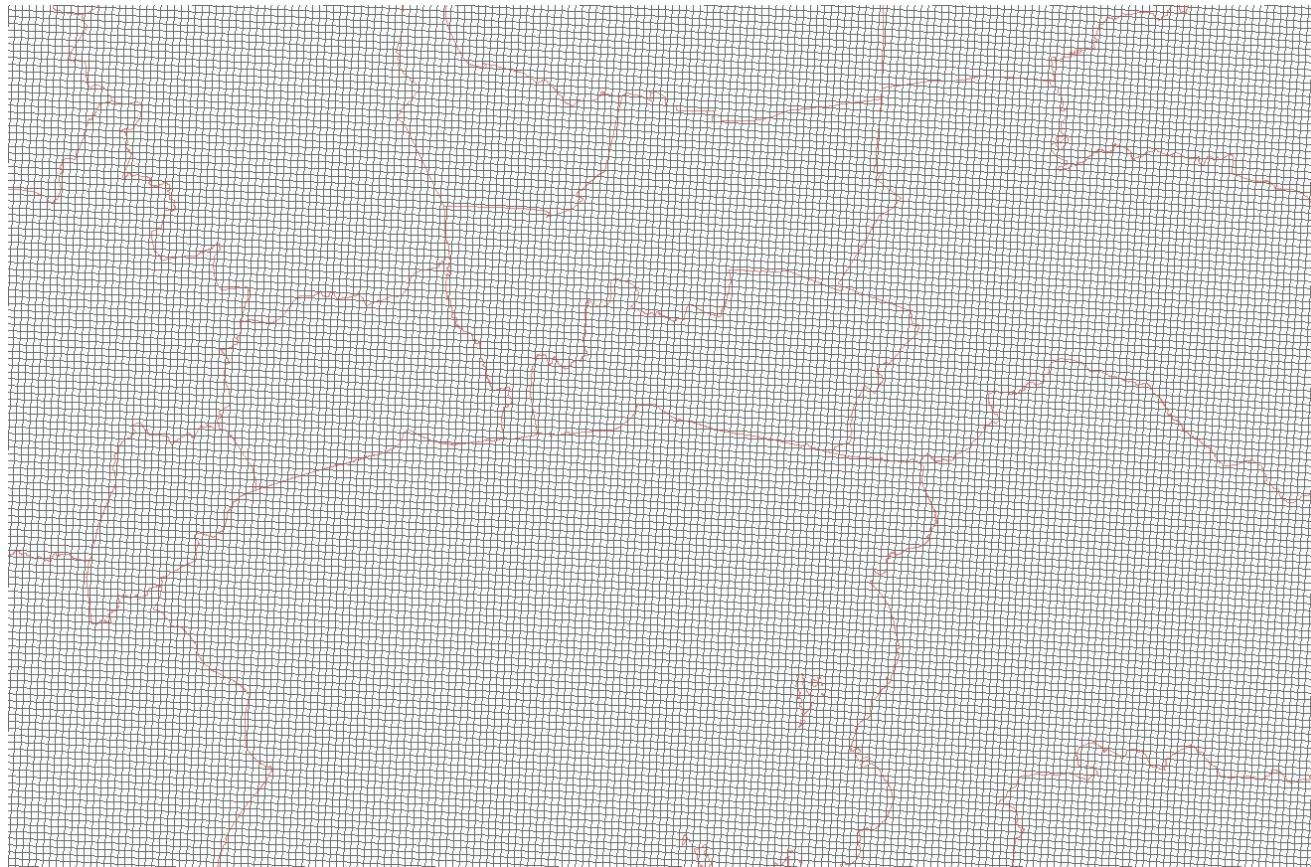
Source: Hansen, M.C., P.V. Potapov, R. Moore, M. Hancher, S.A. Turubanova, A. Tyukavina, D. Thau, S.V. Stehman, S.J. Goetz, T.R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C.O. Justice, and J.R.G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." *Science* 342 (15 November): 850-53. earthenginepartners.appspot.com/science-2013-global-forest. Accessed through Resource Watch.





Thai Healthcare Facility Database (27,045 locations)

Fishnet to create proxy locations (515,137 points)



Id	lat	lon
0	101.1412	5.61743
0	101.1333	5.627627
0	101.1418	5.627027
0	101.1502	5.626426
0	101.1338	5.637223
0	101.1423	5.636623
0	101.1508	5.636022
0	101.1592	5.63542
0	101.1259	5.647417
0	101.1343	5.646818
0	101.1428	5.646218
0	101.1513	5.645617
0	101.1598	5.645015
0	101.1682	5.644412
0	101.1264	5.657012
0	101.1349	5.656413
0	101.1433	5.655812
0	101.1518	5.655211
0	101.1603	5.654609
0	101.1688	5.654007
0	101.1772	5.653403
0	101.1857	5.652799
0	101.1942	5.652194
0	101.1269	5.666606
0	101.1354	5.666006
0	101.1439	5.665406
0	101.1523	5.664805
0	101.1608	5.664203
0	101.1693	5.663601
0	101.1778	5.662997
0	101.1862	5.662393
0	101.1947	5.661787

Open Street Map API to calculate shortest route

13.7528, 100.4848

Siriraj Hospital, Wang Lang Road, Wang Lang I

Car (OSRM)

Go

Reverse Directions

Directions

Distance: 1.0km. Time: 0:07.

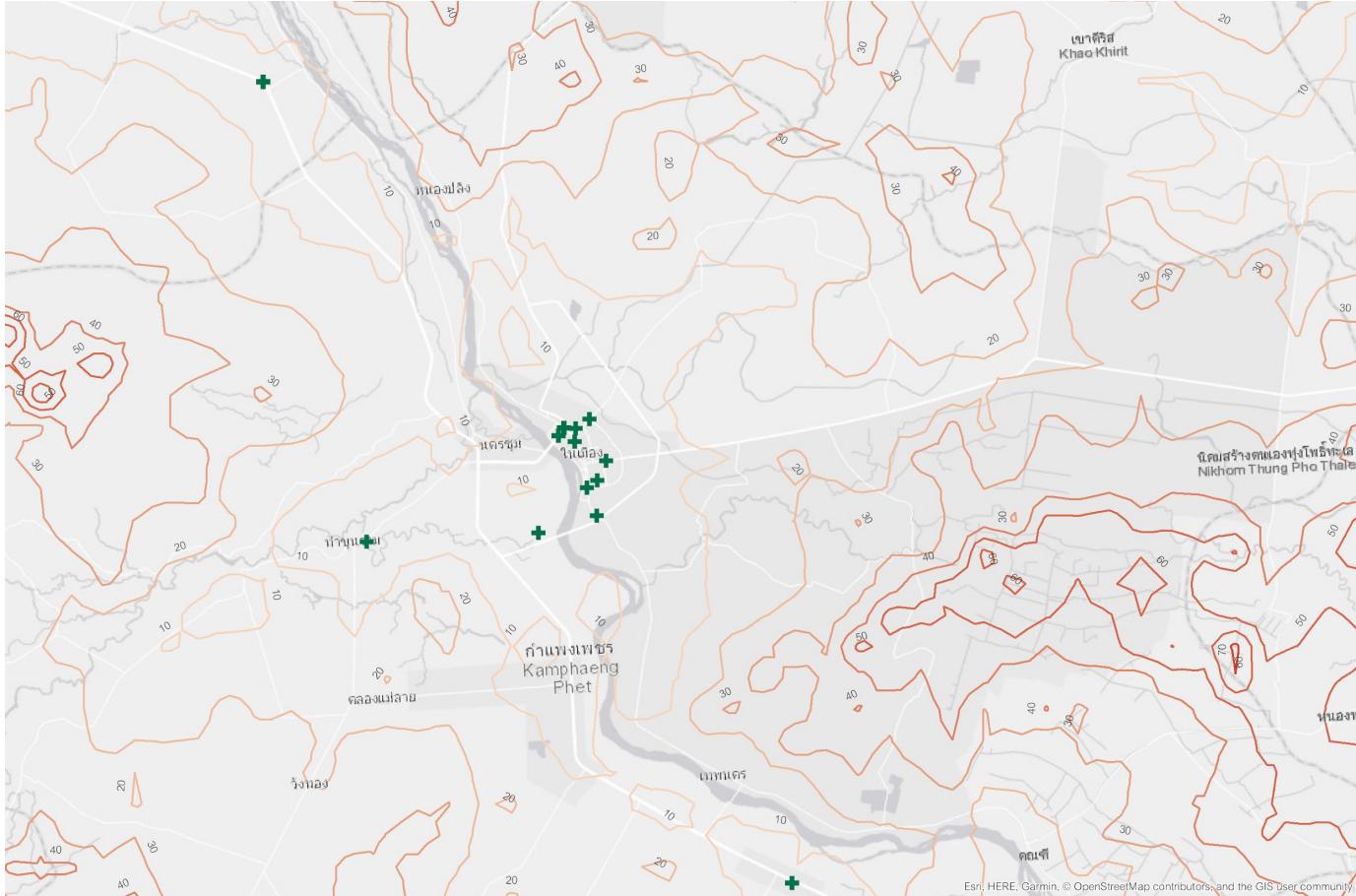
1. Start on unnamed road
2. Turn left onto unnamed road
3. At the end of the road turn right onto ถนน อดุลยเดชมหิด
4. Turn right onto ถนนนัมหลัง
5. Turn left onto unnamed road
6. Turn right onto unnamed road
7. Turn left onto unnamed road
8. Reach destination

Directions courtesy of OSRM

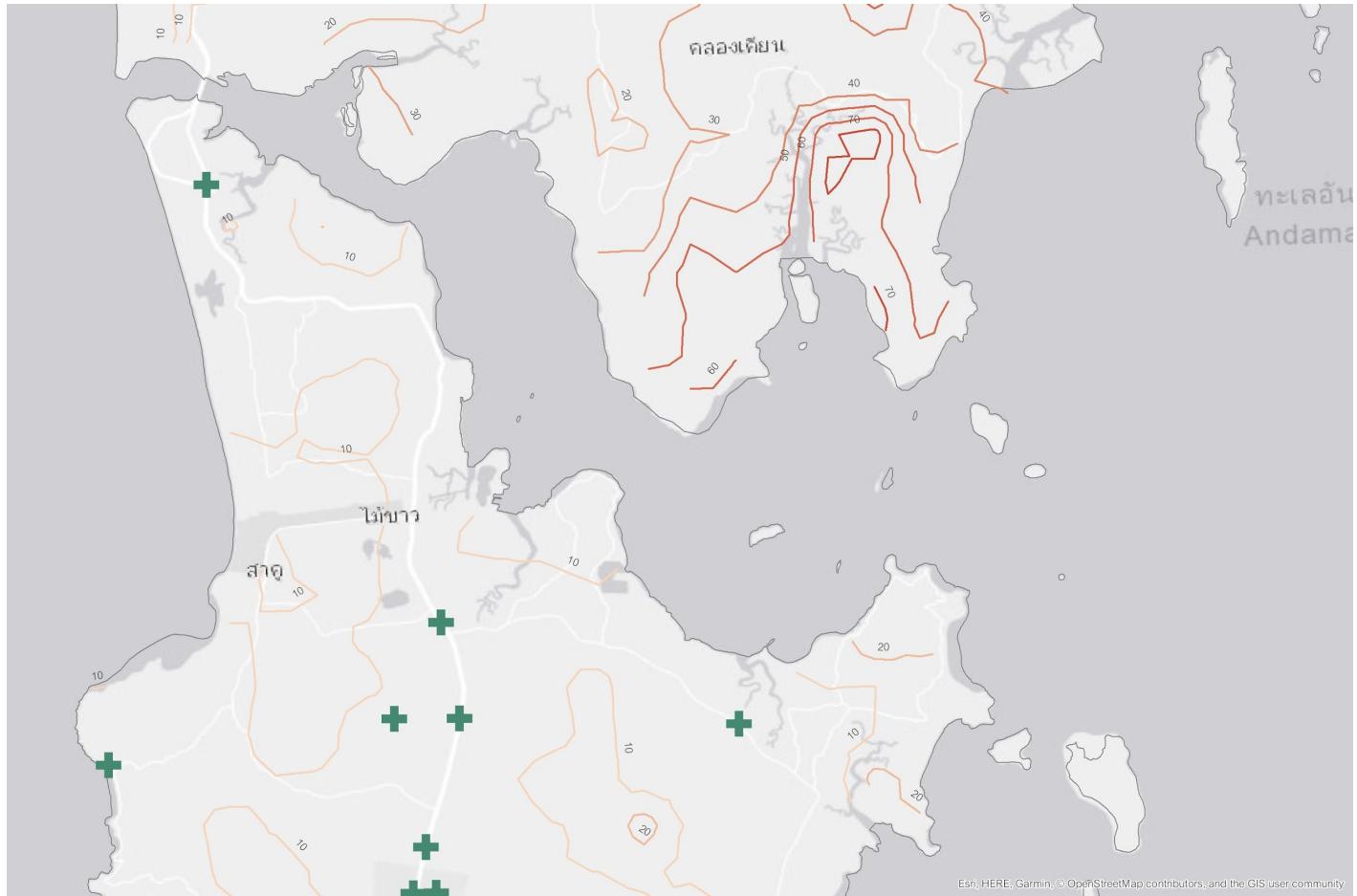
The map displays a complex urban area with a river running through it. Key features include:

- Starting Point:** Located near the Chao Phraya River, indicated by a green location pin.
- Destination:** Siriraj Hospital, marked with a red location pin.
- River and Bridges:** The Chao Phraya River is shown with several bridges, including the Southern Line Bridge and Trok Kai Chae.
- Landmarks:** Royal Thai Museum, Tha Chang Pier, and Seven Eleven convenience stores are visible.
- Neighborhoods:** The map covers areas like Wang Lang I, Wang Lang II, and parts of Bangkok.
- Grid System:** A grid system is used for street names, with 'ถนน' (Road) preceding the names.
- Scale:** A scale bar at the bottom left shows 200m and 500ft.
- Attribution:** The map is attributed to "OpenStreetMap contributors" and "Make a Donation".

Case: Kampaengphet



Case: Phuket vs Krabi





THE BASICS

Shape of the earth

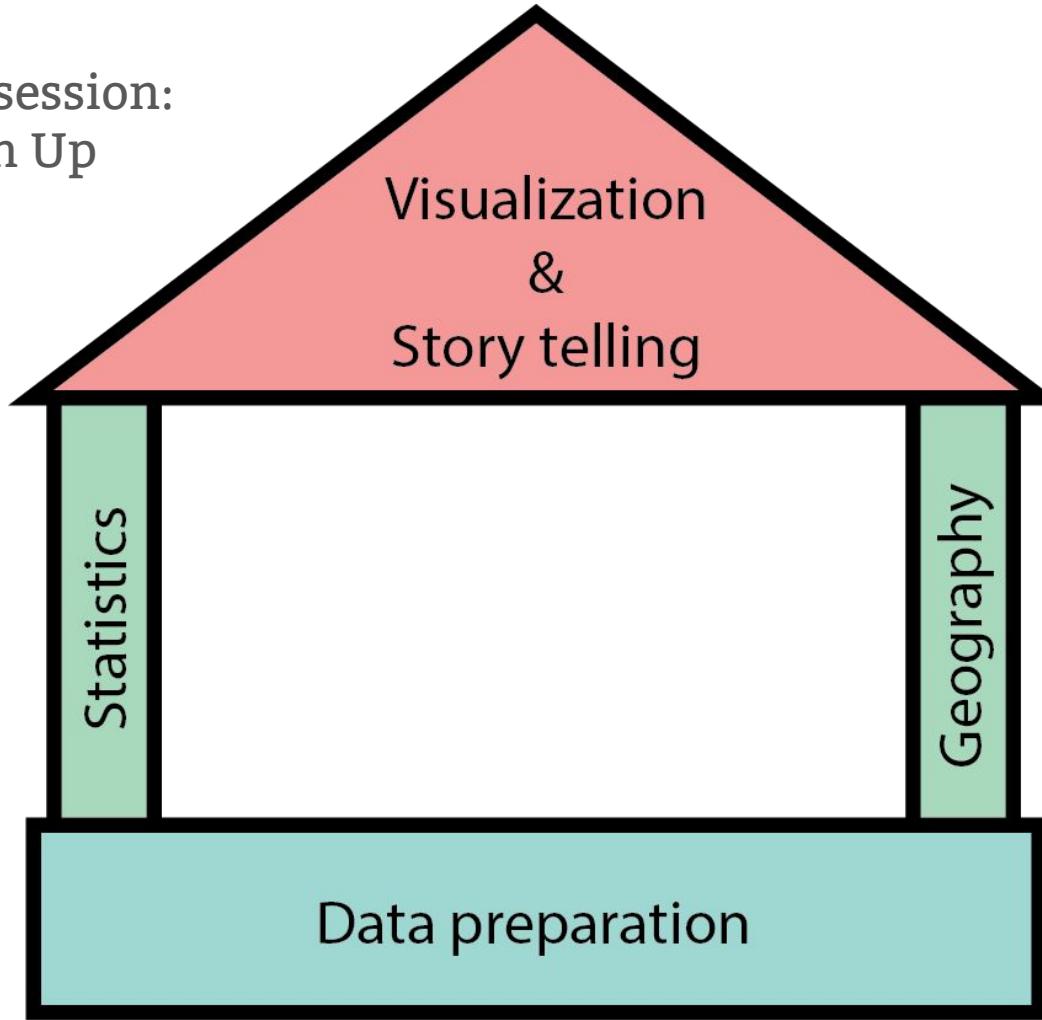
Map Projections

Types of spatial data

Spatial Statistics

Tools

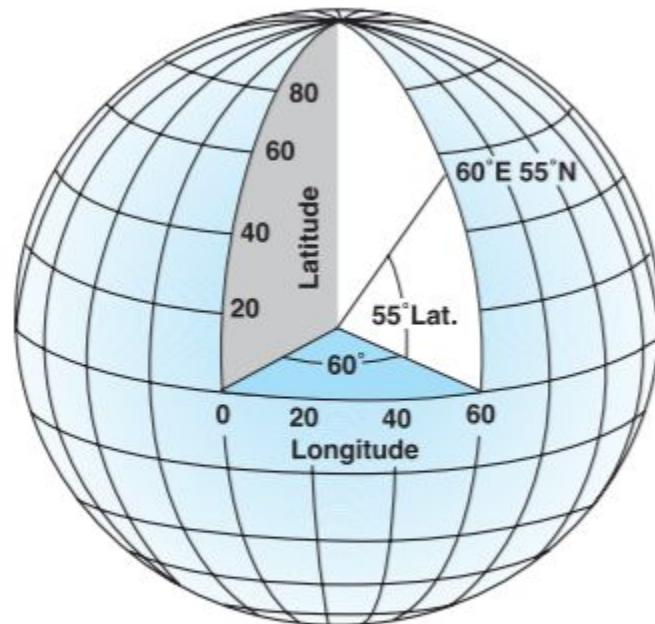
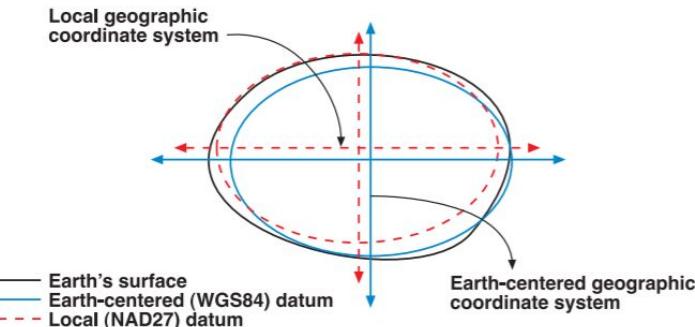
Next session:
Punch Up



Next session:
Aj Yas

Next session:
Inw Excel

Transforming Real World into Workspace

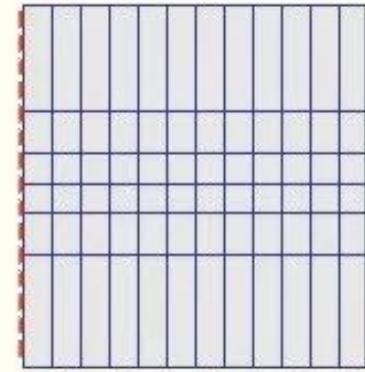
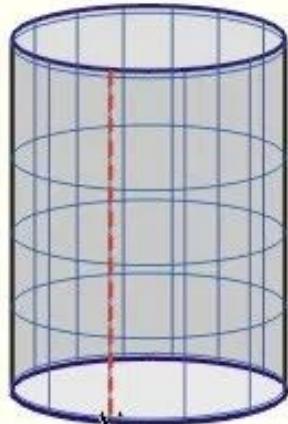
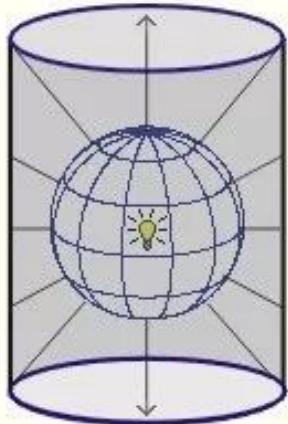


The world as a globe showing the longitude and latitude values.

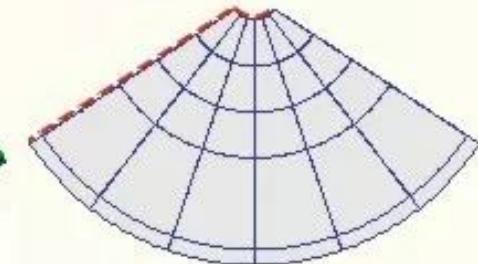
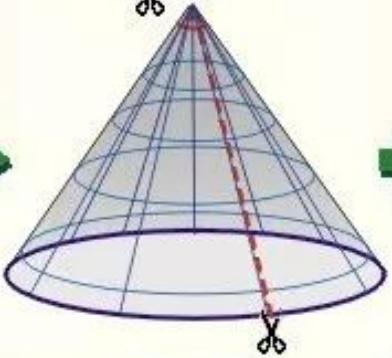
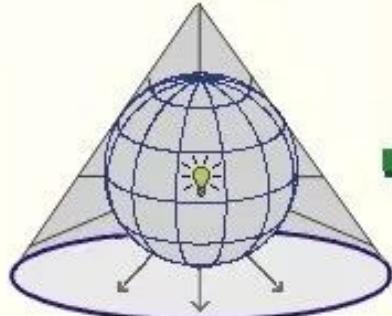
<http://www.auburn.edu/academic/classes/fory/7470/lab08/understanding%20map%20projections.pdf>

Map projection

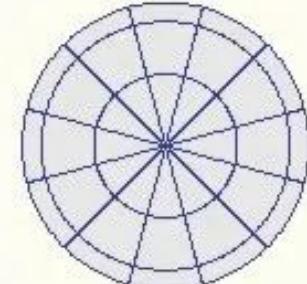
Cylindrical



Conical

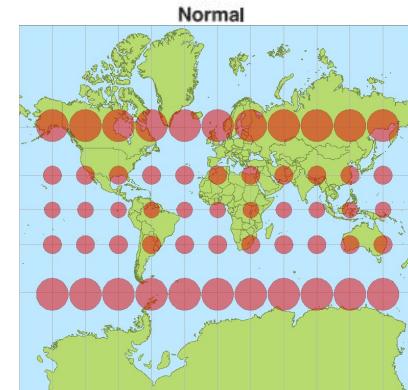
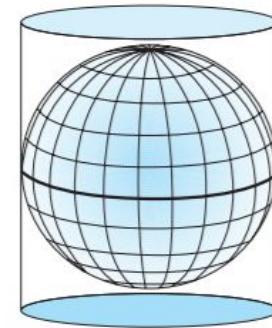
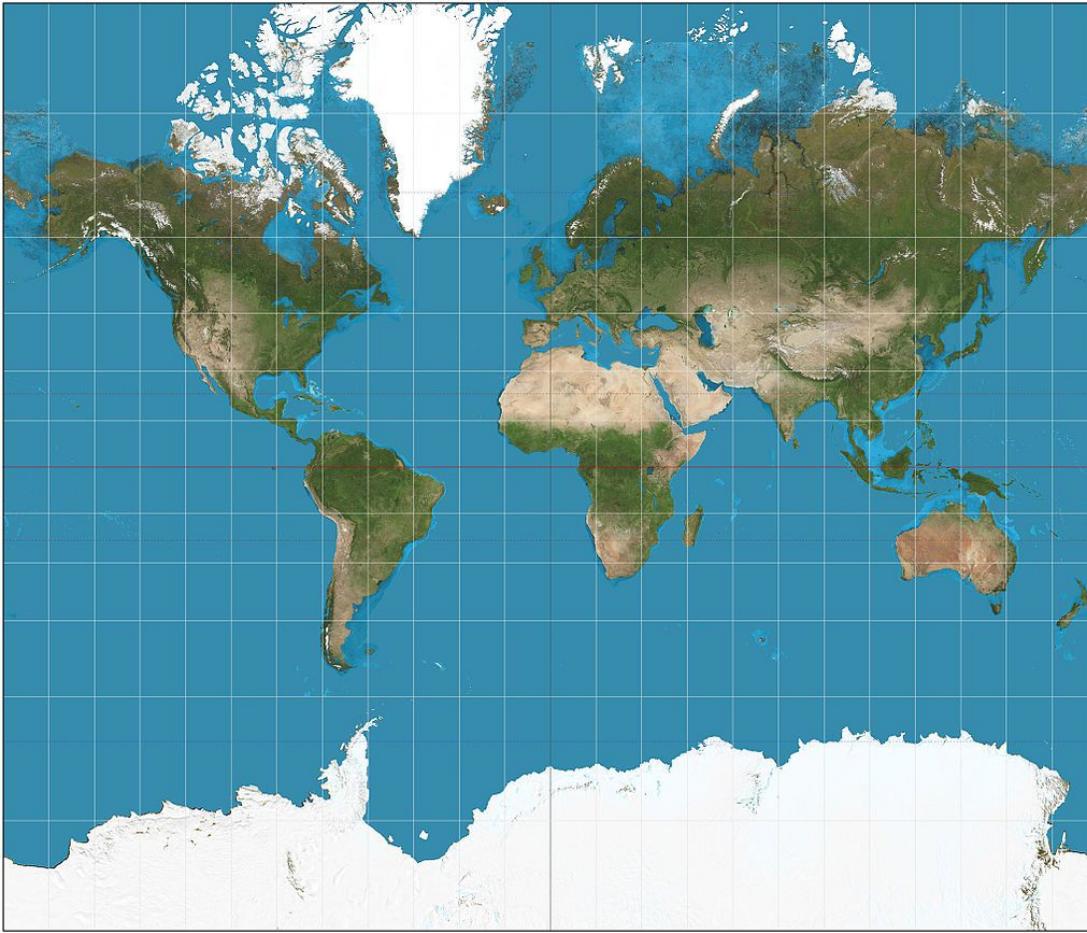


Planar



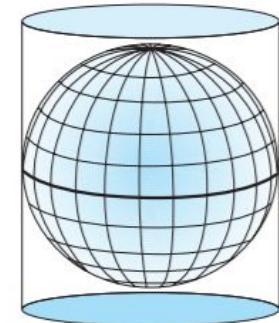
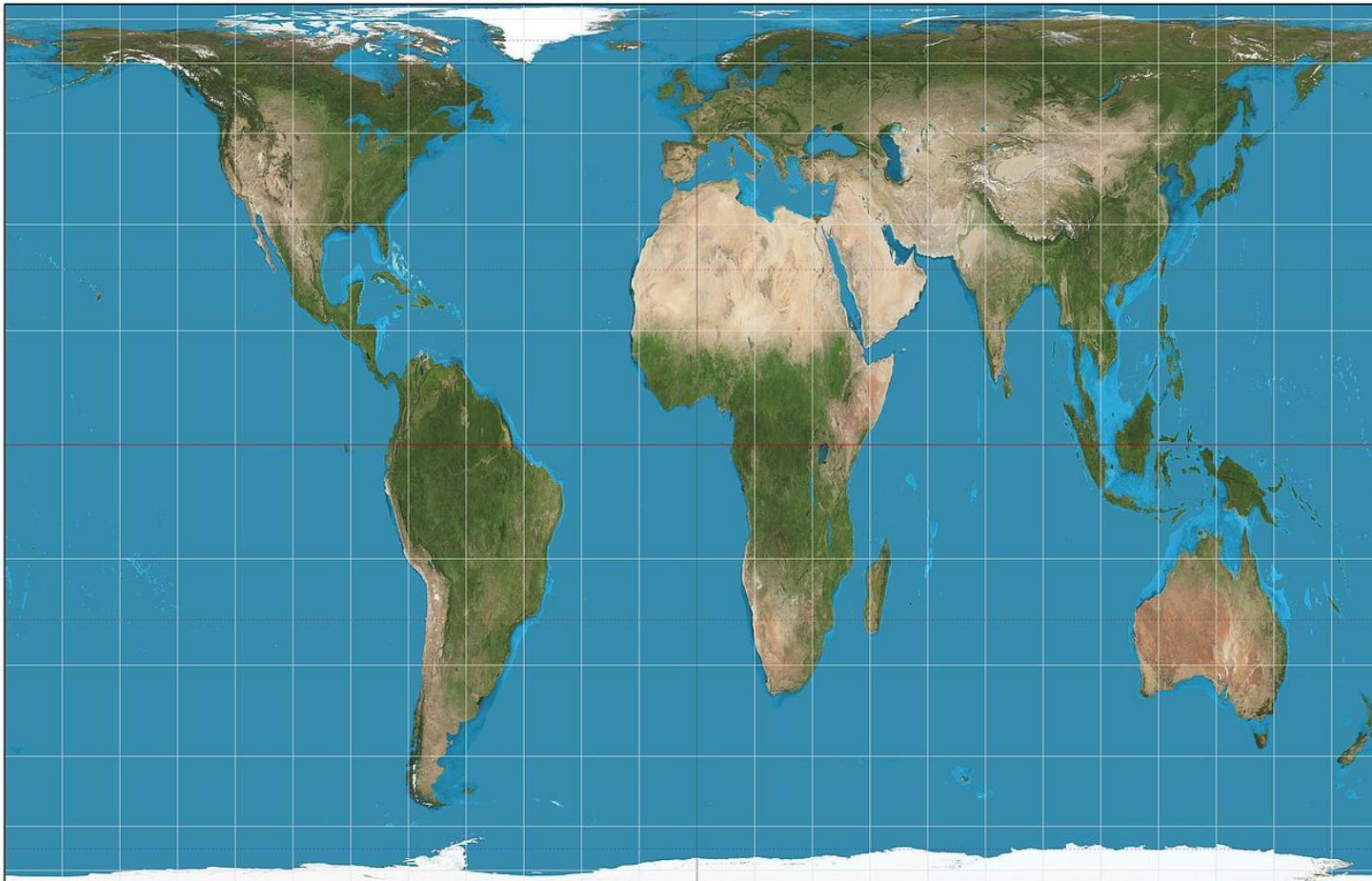
Projection Concepts
Perspective Examples

Map projection: Mercator (true direction)

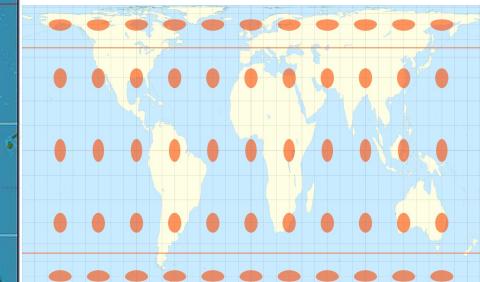


https://en.wikipedia.org/wiki/Mercator_projection#/media/File:Tissot_mercator.png

Map projection: Gall-Peters (correct size)

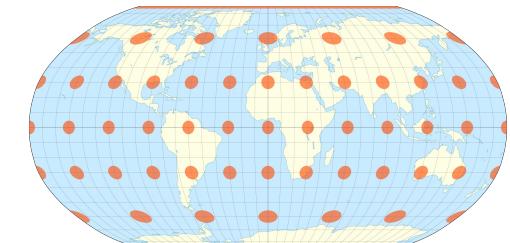
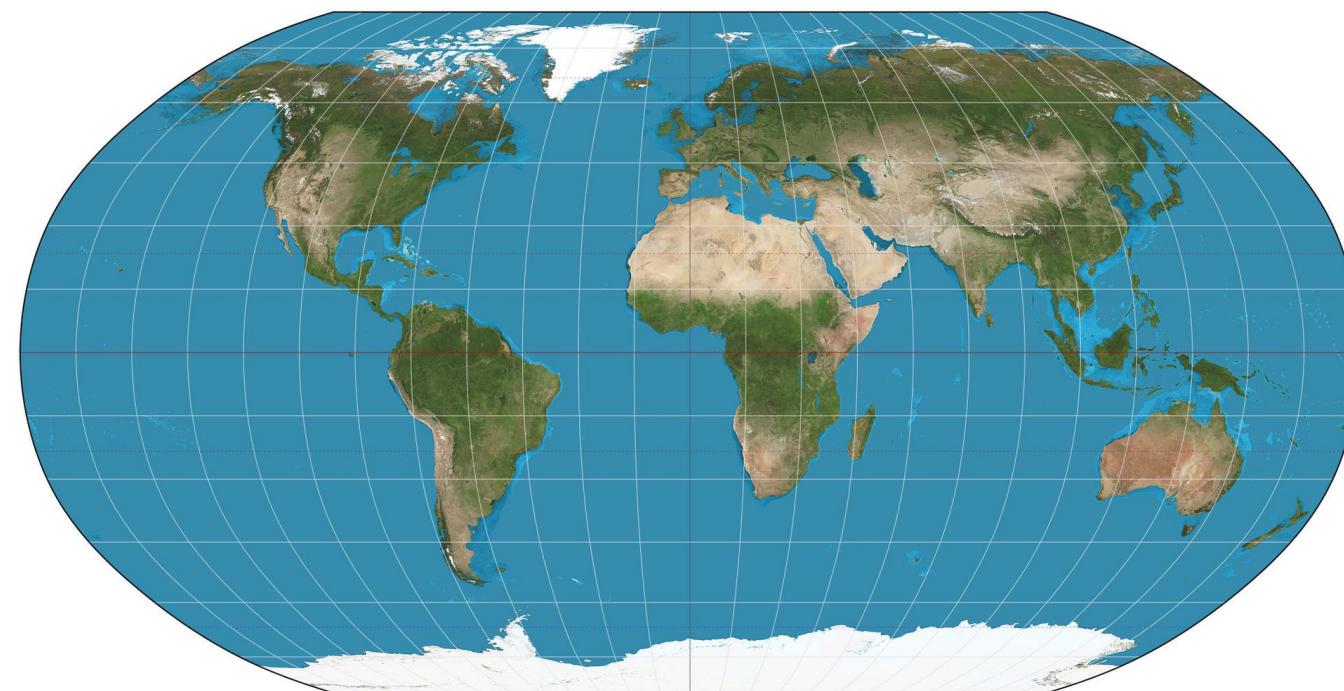


Normal



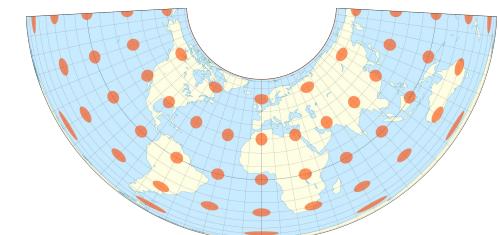
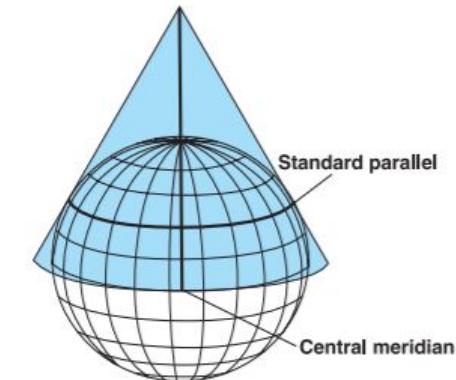
https://en.wikipedia.org/wiki/Gall%E2%80%93Peters_projection

Map projection: Robinson (conformal)



https://en.wikipedia.org/wiki/Robinson_projection#/media/File:Robinson_with_Tissot%27s_Indicatrices_of_Distortion.svg

Map projection: Albers (equal area)



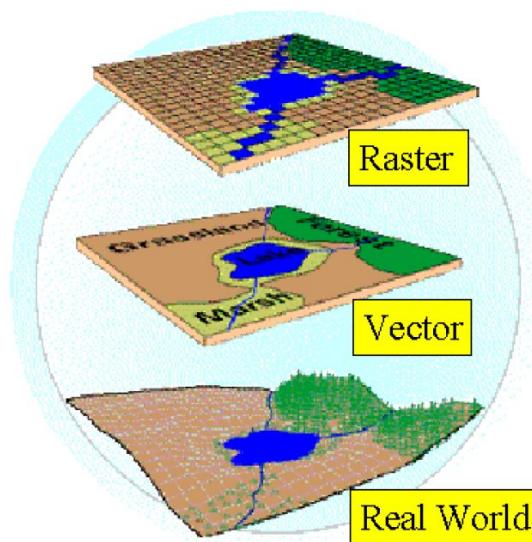
Spatial data types: Vector vs Raster



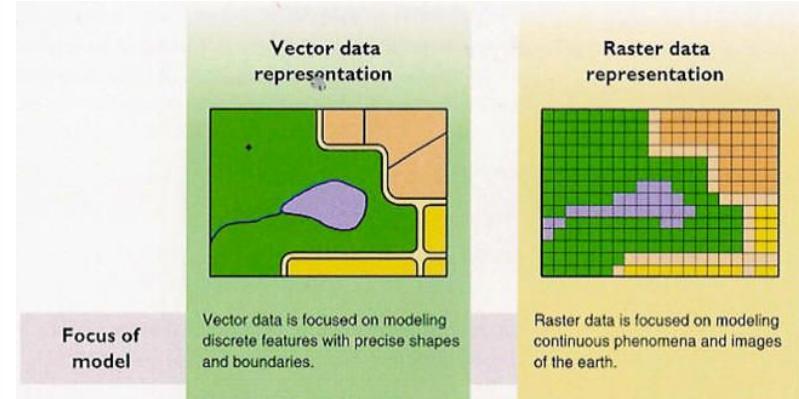
Spatial Analyst and Raster Analysis

Raster \ Vector Comparison

Raster-Vector Data Model



Copyright 2007 - 2009 – John Schaeffer/Juniper GIS

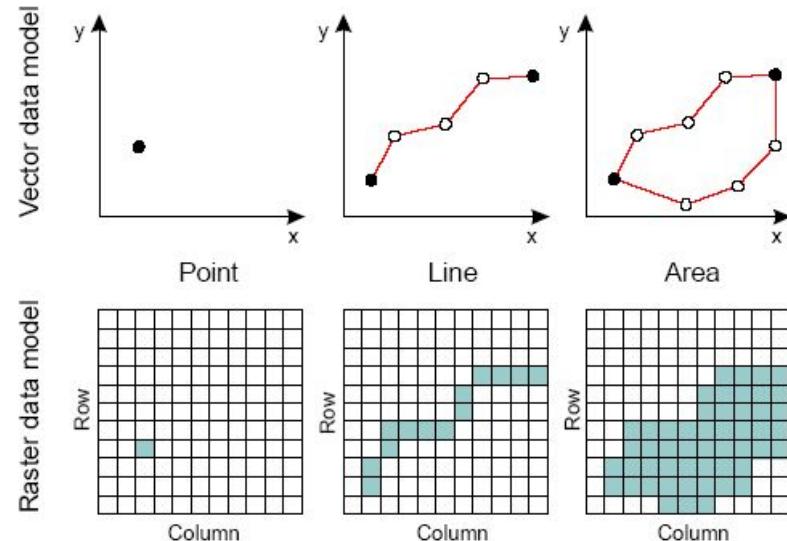


http://www.newdesignfile.com/post_raster-vs-vector-gis-tables_131059/



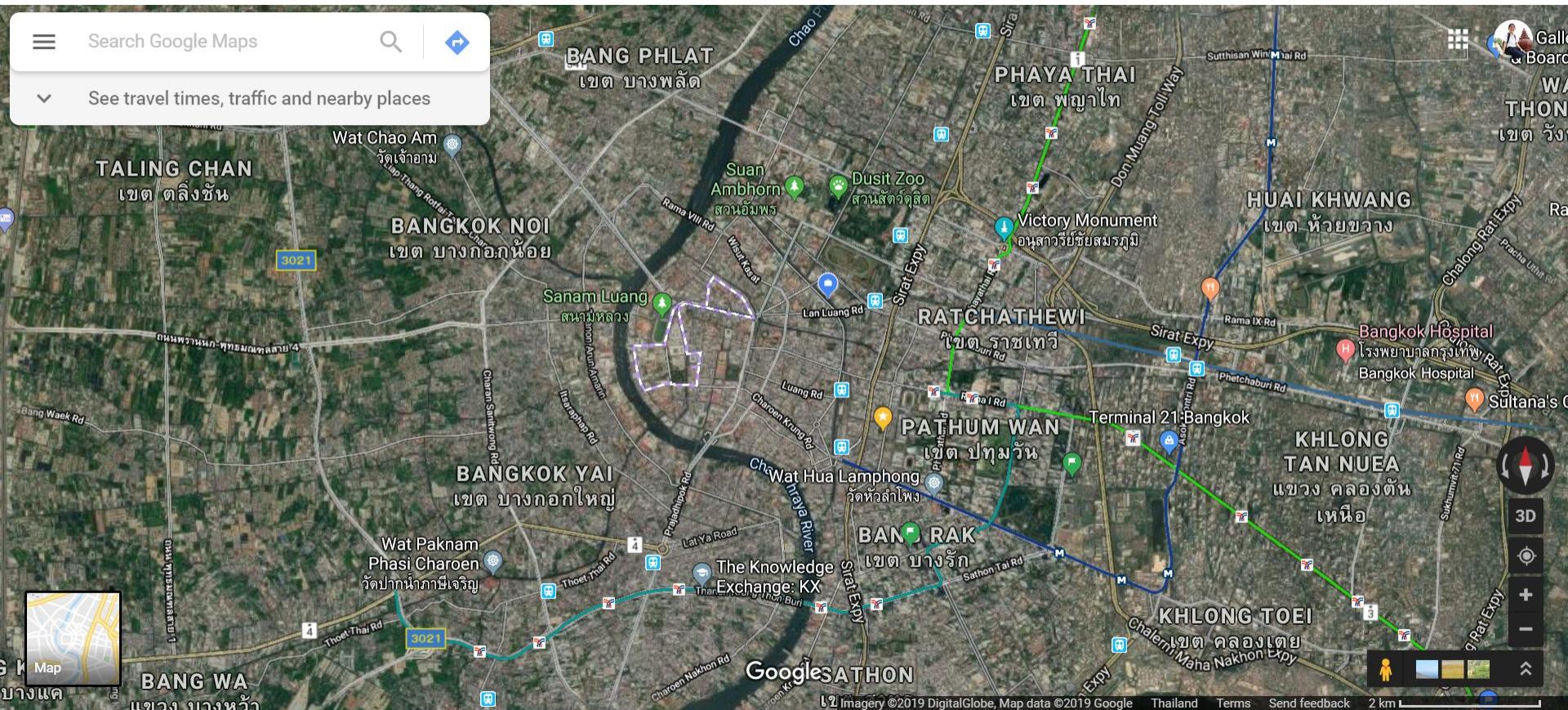
Spatial data types: Vector vs Raster

The raster view of the world	Happy Valley spatial entities	The vector view of the world
	Points: hotels	
	Lines: ski lifts	
	Areas: forest	
	Network: roads	
	Surface: elevation	

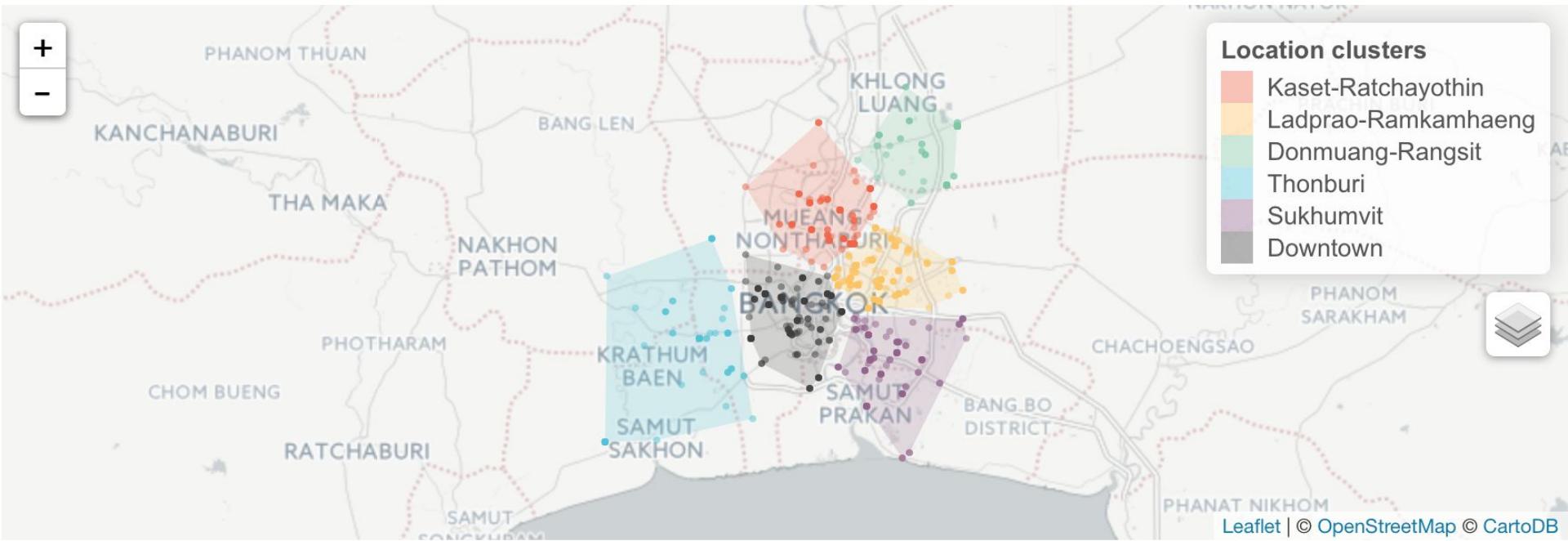


http://www.newdesignfile.com/post_raster-vs-vector-gis-tables_131059/

Spatial data types: Vector vs Raster



Statistics, with location



- Mean, median, mode
- Maximum - minimum
- Quartile - percentile
- Clustering
- Matrix
- Statistical model

Spatial Visualization: Maps

Reference maps

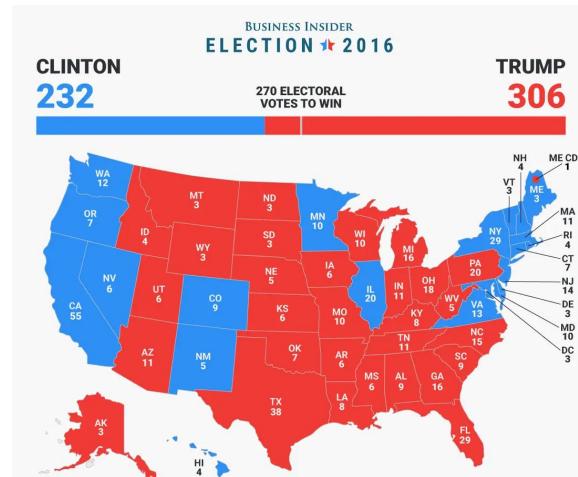
- Emphasis on locations
- Show variety of the world
- Primarily display objects



[National Geographic: United States Physical Wall Map - Laminated \(38.25 x 25.25 inches\) \(National Geographic Reference Map\)](#)

Thematic maps

- Emphasis on attribute
- Show one subject
- Primarily display one theme



Thematic Maps Techniques:

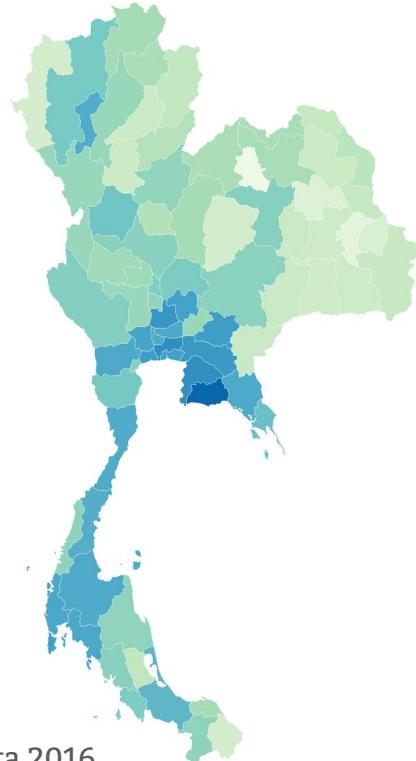
Univariate (ตัวแปรเดียว)

- Choropleth Maps
- Proportional Symbols
- Dot Density Maps
- Non-Contiguous Cartograms

Multivariate (หลายตัวแปร)

- Bivariate Choropleth
- Bivariate Proportional Symbols
- Bivariate Cartograms
- Value-By-Alpha Maps

Univariate Choropleth (ສີ ຕັວແປຣເດືອວ)



What is it?

- Present value by enumeration units (e.g., countries, provinces, amphoe, tambon)
- Most popular technique, easy to find data
- Classed and unclassed choropleth

What to know?

- Classification method (equal, quantile, natural breaks)
- Number of classes (3 - 7 classes)
- Color blindness

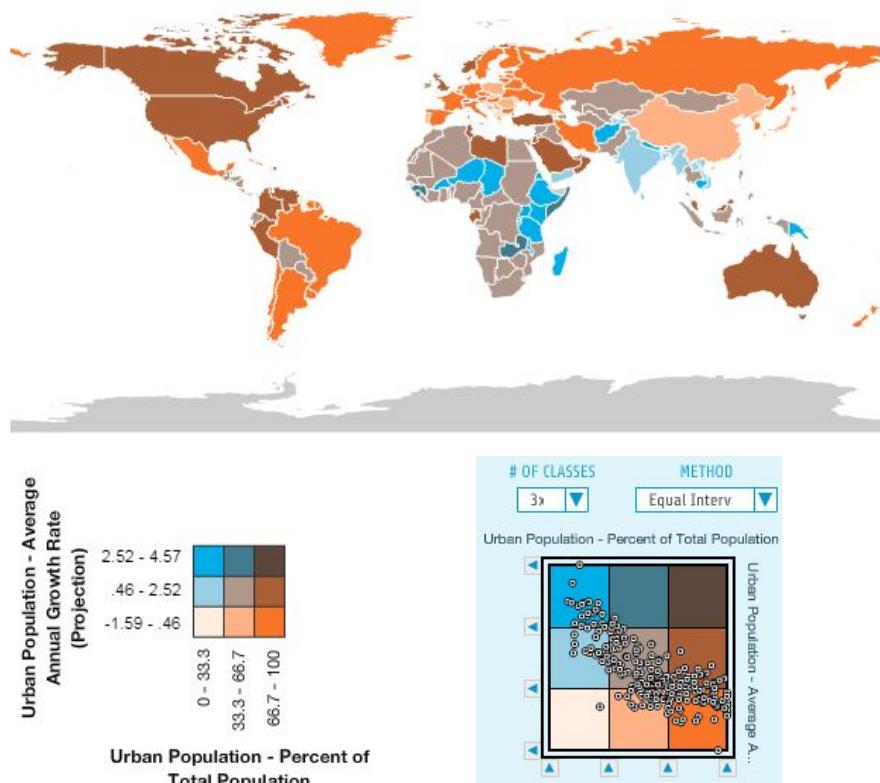
Limitations

- Too few classes can present less sense of quantity
- Too many classes can make it hard to read
- Very hard to estimate values or get specific number

Examples

- Tax rate by country
- Children per female
- % of population under 18 years old

Bivariate Choropleth (ສໍາ 2 ຕົວແປ່ງ)



What is it?

- Combine two values into a single map

What to know?

- Purpose of presentation
- Data classification
- Color scheme

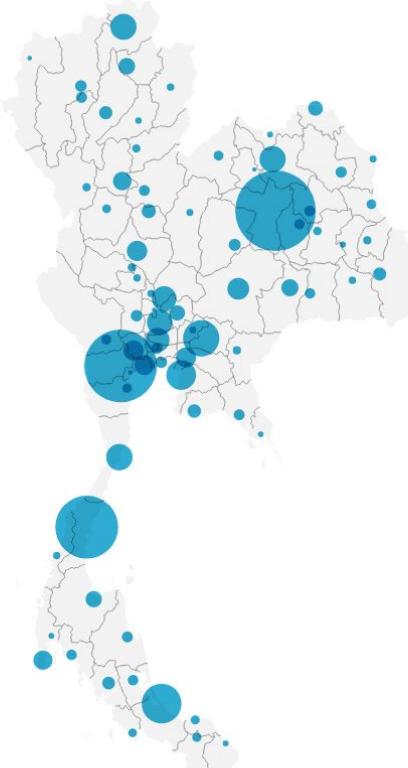
Limitations

- Difficult to read
- Less versatility

Examples

- Medicaid cuts & % vote for Trump
- Food security & obesity
- Density of trees & ecosystem diversity

Proportional Symbol (ขนาด ตัวแปรเดียว)



Waste water in cubic meter
(กรมส่งเสริมการปกครองท้องถิ่น)

What is it?

- Size of symbol represents value
- Single-Variable Proportional Symbol and Multi-Variable Proportional Symbol
- Versatile
- B&W presentation & color-blind friendly

What to know?

- Classification method (equal, quantile, natural breaks)
- Scale of the symbol (classed or graduated)

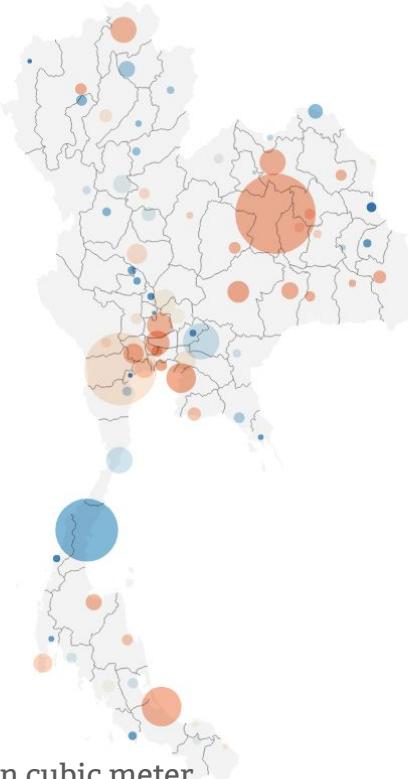
Limitations

- Too many symbols - overlapping
- Underestimation grows worse the bigger the differences between map symbols

Examples

- Population of cities in Thailand
- Number of earthquakes 1980 - 2020

Bivariate Proportional Symbol (ขนาด-สี 2 ตัวแปร)



What is it?

- Presents 2 values by size and color of symbol

What to know?

- Classification method (equal, quantile, natural breaks)
- Scale of the symbol (classed or graduated)
- Color scheme

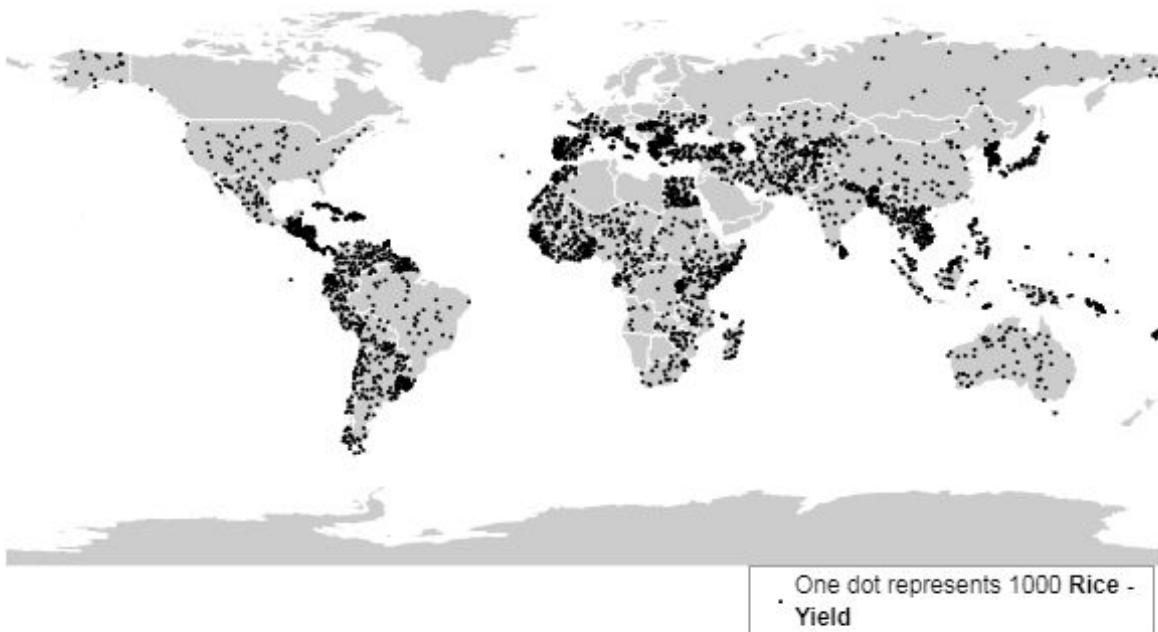
Limitations

- Too many symbols - overlapping
- Underestimation grows worse the bigger the differences between map symbols

Examples

- Number of jobs & types of jobs
- Population & population density
- Population & unemployment

Dot Density (จุด)



Rice Yield 2016 (Hectograms per Hectare, FAO)

What is it?

- Dot represents value
- Data need not be tied to enumeration units
- 1:1 dot density maps and 1: many dot density
- Popular and intuitive
- B&W presentation & color-blind friendly

What to know?

- Dot size and dot value
- Dot density

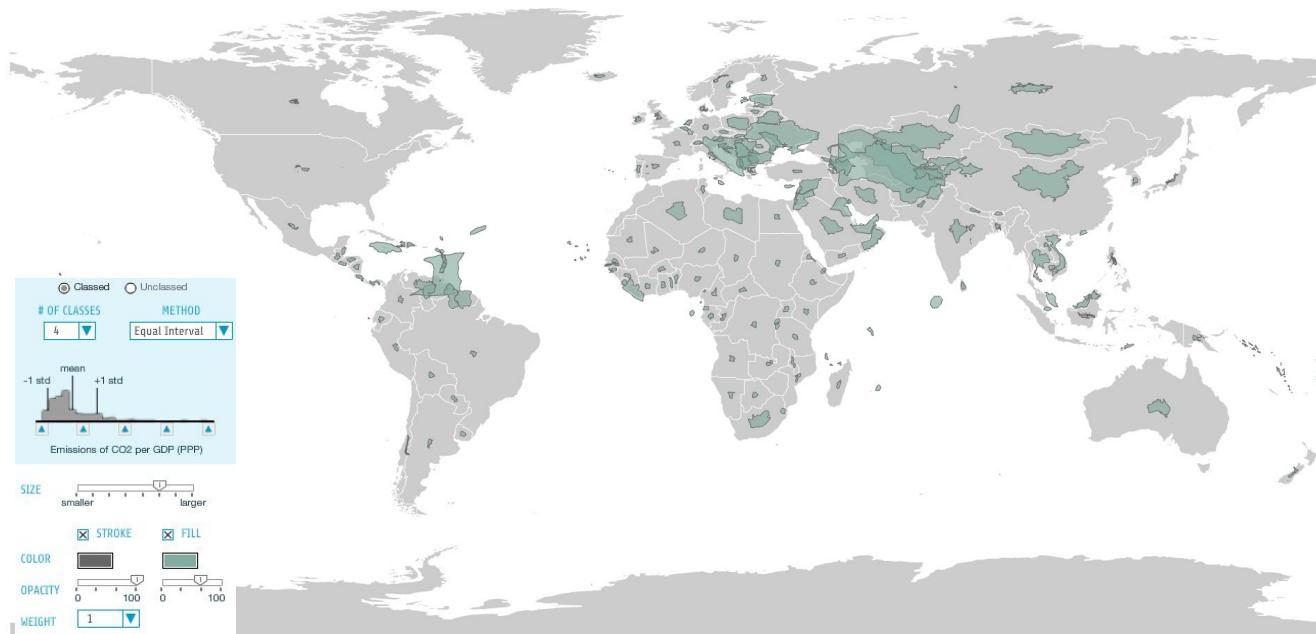
Limitations

- Dot doesn't represents its exact location
- Difficult to understand the exact number

Examples

- Population by Tambon (1 dot = 1,000 people)
- Locations of earthquake
- Density of trees
- Density of livestocks - rice paddies

Non Contiguous Cartogram



Unit area is a function of **Emissions of CO2 per GDP (PPP)**

Emissions of CO2 per GDP 2006
(kg CO2 per \$1 GDP, World Bank)

What is it?

- Value-by-area
- Size of unit is scaled proportionally to the data value attached to that location
- Classed versus Unclassed Area Cartograms
- Good with aggregated data
- Wants to present the true value of something instead of geographical size

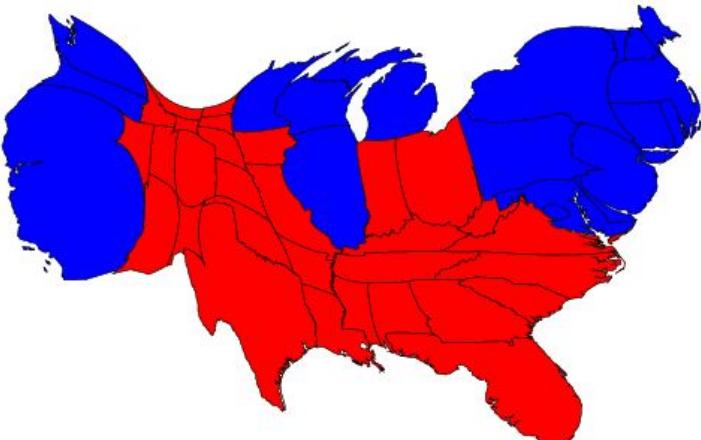
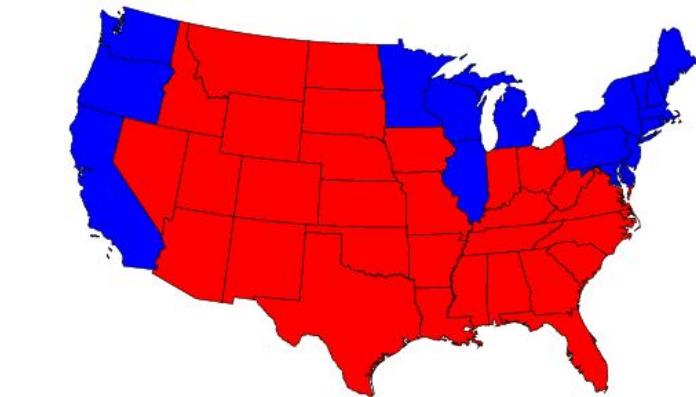
Limitations

- Looks distorted
- Difficult to estimate the size

Examples

- Proportion of population
- Number of representatives by state

Bivariate Cartogram



What is it?

- Presents 2 values by size and color of area
- Size of unit is scaled proportionally to the data value attached to that location
- Classed versus Unclassed Area Cartograms
- Good with aggregated data
- Wants to present the true value of something instead of geographical size

What to know?

- XXX

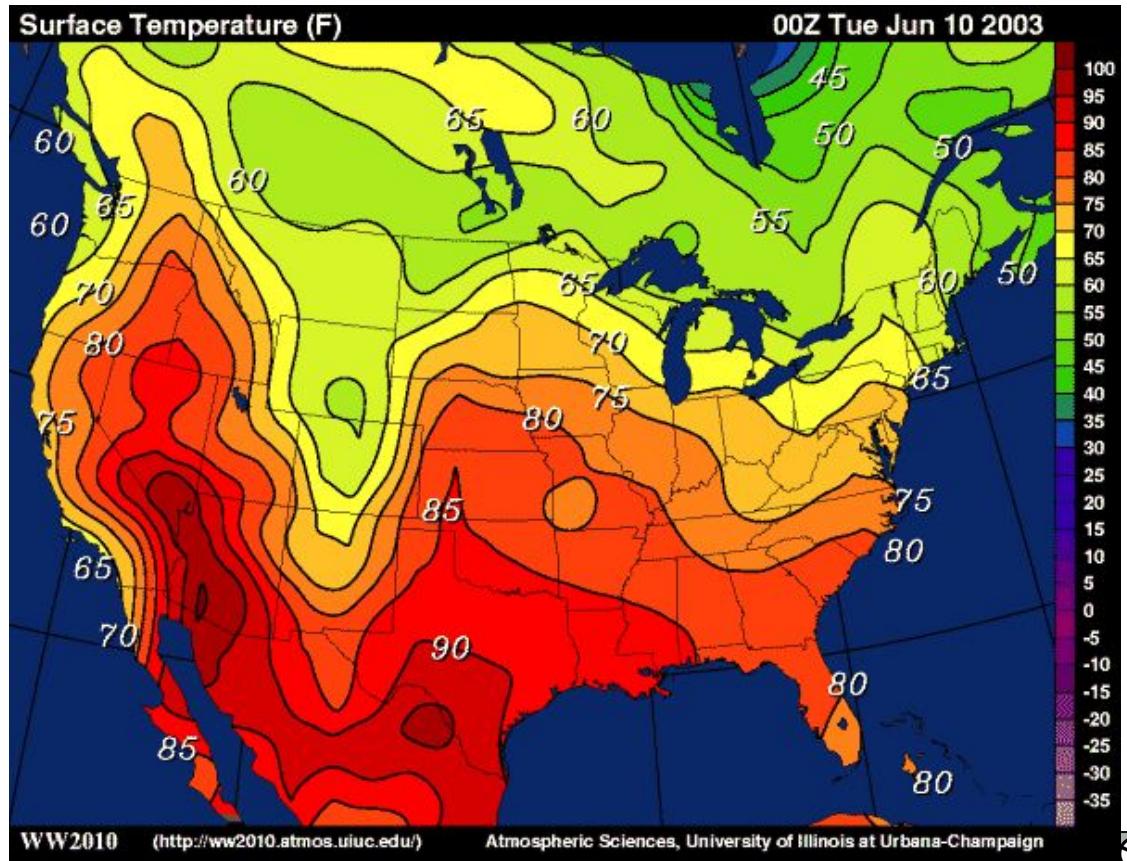
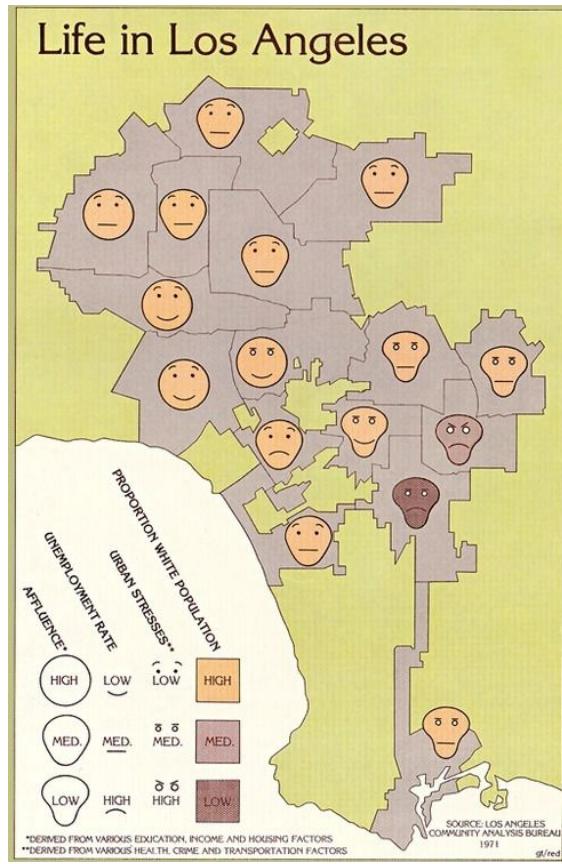
Limitations

- Looks distorted
- Difficult to estimate the size
- Less versatile

Examples

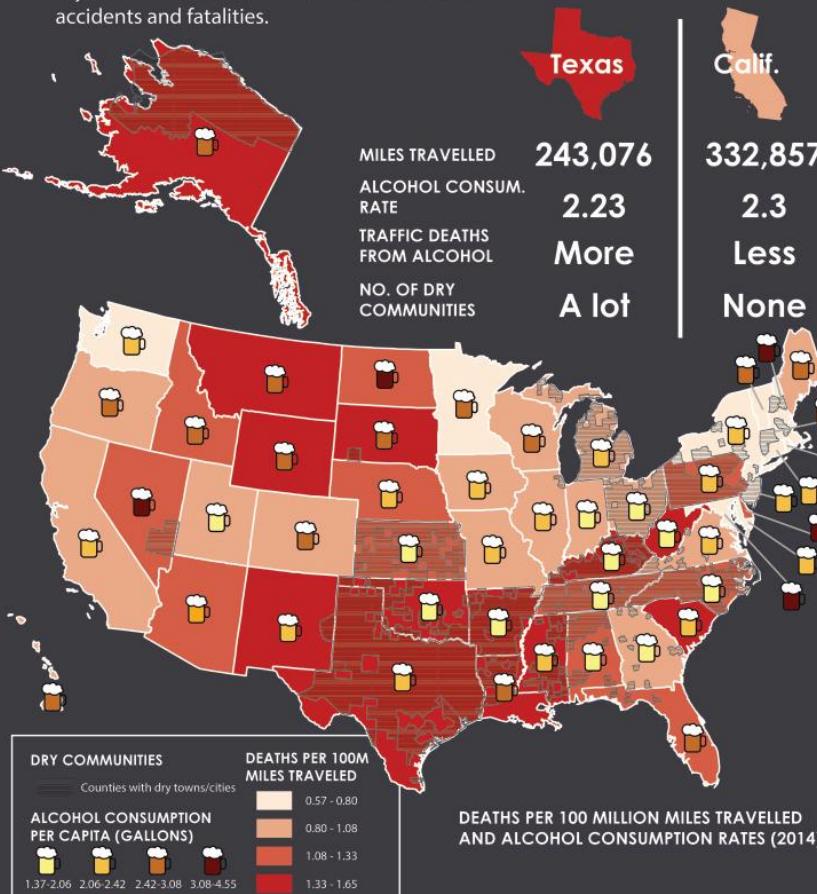
- Population & election result

Map Visualization Techniques: Others



ALCOHOL CONSUMPTIONS VS DRY COMMUNITIES

A study (Gary, S., 2013) found that the existence of dry counties increases alcohol-related automotive accidents and fatalities.



โจทย์

- Format: long-form infographic
- Question: การดีมแผลกอหัวร์ จะทำให้เกิดอุบัติเหตุบนท้องถนน จริงหรือไม่

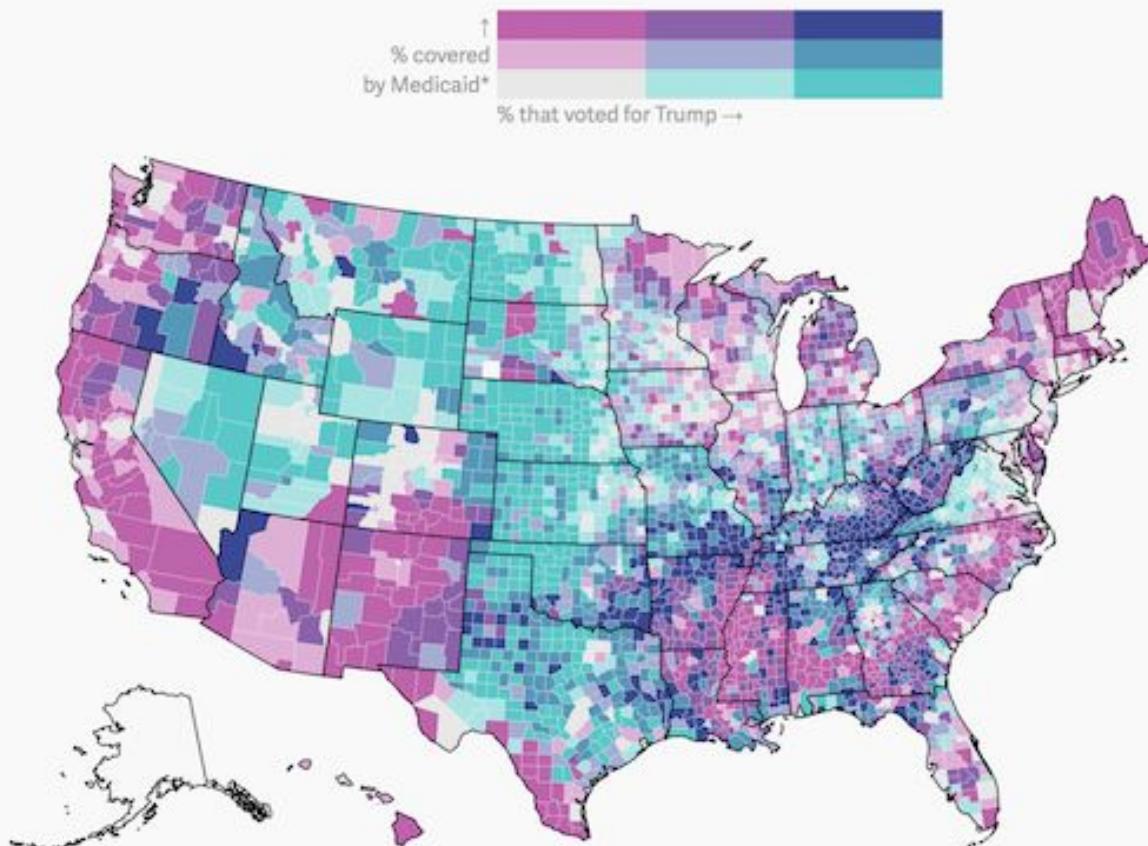
วิเคราะห์

- Variables:
 - ปริมาณแอลกอฮอล์ที่บริโภคต่อคนต่อปี (แกลลอน)
 - จำนวนผู้เสียชีวิตบนถนนต่อความยาวถนน (คน /100 ไมล์)
 - พื้นที่ที่เป็น Dry Communities
- Result: ปริมาณการบริโภคแอลกอฮอล์ต่อคน ไม่เกี่ยวกับอัตราการเกิดอุบัติเหตุบนท้องถนน (เมามากเป็นตัวงบบรถ) แต่เกี่ยวกับกฎหมายห้ามขายแอลกอฮอล์ในชุมชน-เขต (Dry Communities)

นำเสนอด้วย

- ปริมาณแอลกอฮอล์ที่บริโภคต่อคนต่อปี สัญลักษณ์แก้วเบียร์
- จำนวนผู้เสียชีวิตบนถนนต่อความยาวถนน Univariate Chloropleth
- พื้นที่ที่เป็น Dry Communities Area Overlay

Where Medicaid cuts would hit Trump supporters hardest



Data are from the US Election Atlas and US Census Bureau pooled estimates of Medicaid coverage for 2011-2015. Coverage estimates may also include other low-income public health programs. Data are incomplete for Alaska and a handful of other counties.

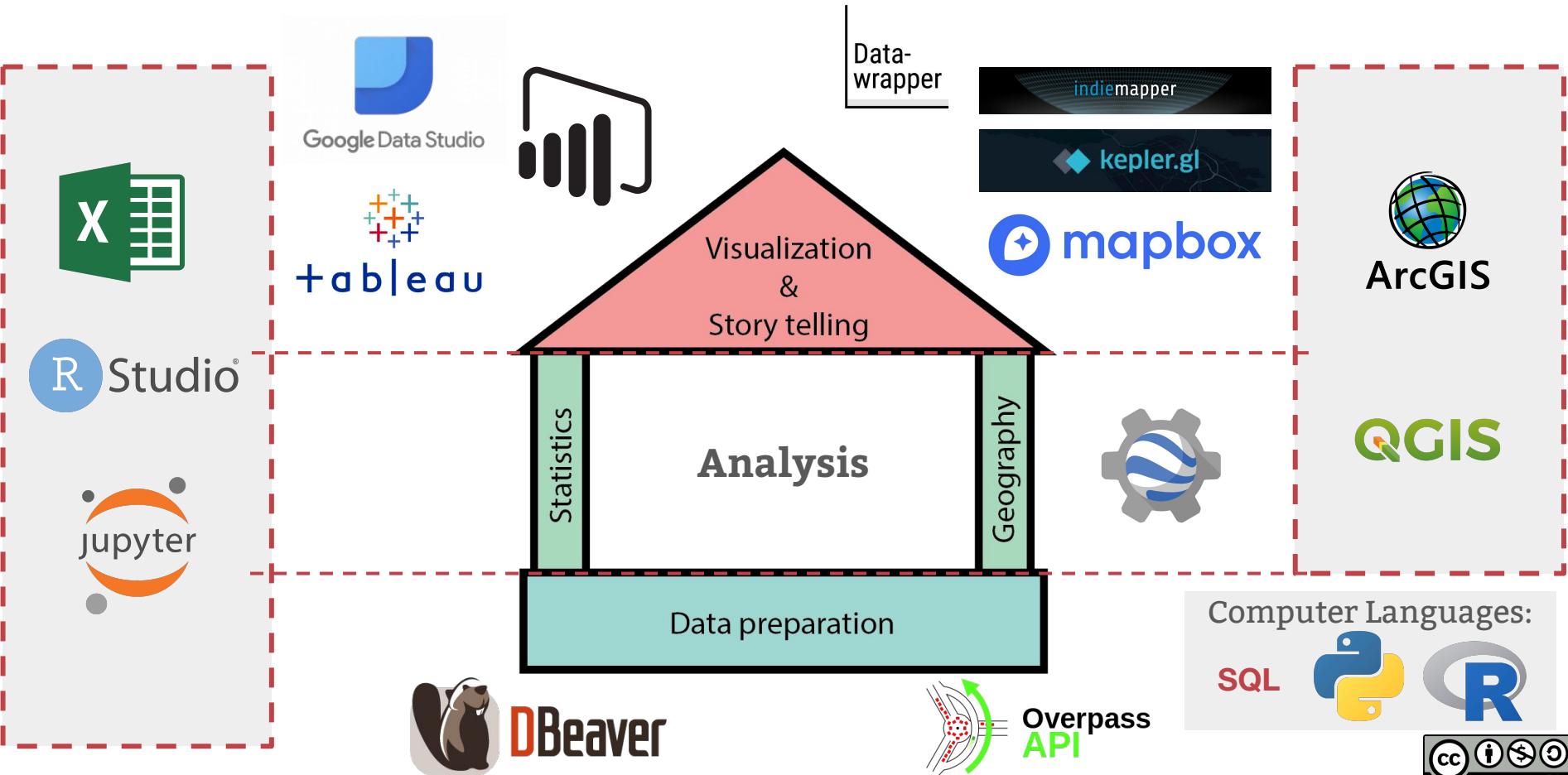
โจทย์

1. Format: map, US, county level
2. Story: การตัดงบรักษาพยาบาลของรัฐบาลที่กับใจคนมากที่สุด
3. ต้องรู้:
 - a. ฐานเสียงทั้งปี คนขาว เพศชาย อายุ 40+ ชนชั้นกลางขึ้นไป ไม่เห็นด้วยกับรัฐสวัสดิการ
 - b. การเลือกตั้งเป็นสิทธิไม่ใช่หน้าที่ (turnout 55.7%)
 - c. Medicaid vs Medicare (Medicaid เป็นโครงการระดับรัฐ ประชาชนไม่ต้องจ่ายส่วนต่าง ไม่กำหนดรายได้ขั้นต่ำ เหมาะกับคนท้อง ผู้พิการ และผู้มีรายได้น้อย)

นำเสนอด้วย

1. 3X3 Bivariate Chloropleth
2. สีเข้มพู พื้นที่ที่มีประชาชนร่วมโครงการ Medicaid
3. สีเขียว สัดส่วนประชากรที่เลือกทั้งปีเป็นปวน.

Tools



HOW TO LIE WITH STATISTICS

Darrell Huff

Illustrated by Irving Geis



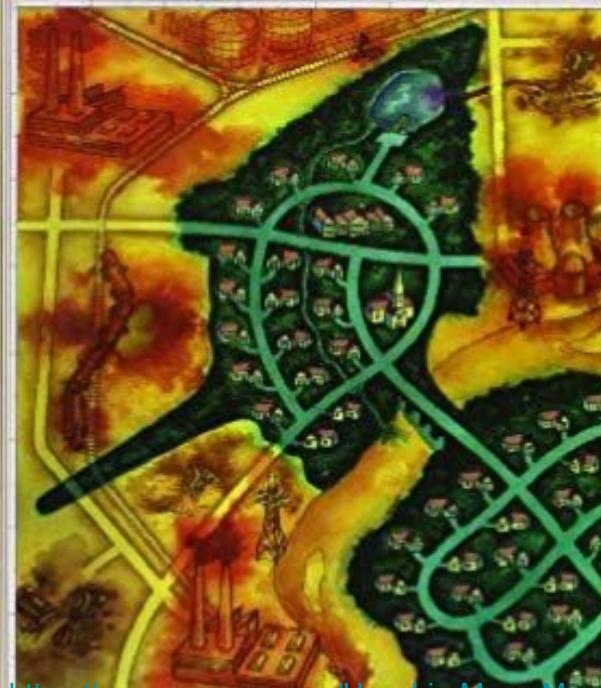
Over Half a Million Copies Sold—

<https://www.barnesandnoble.com/w/how-to-lie-with-statistics-darrell-huff/1122048199>

Mark Monmonier

How to Lie with Maps

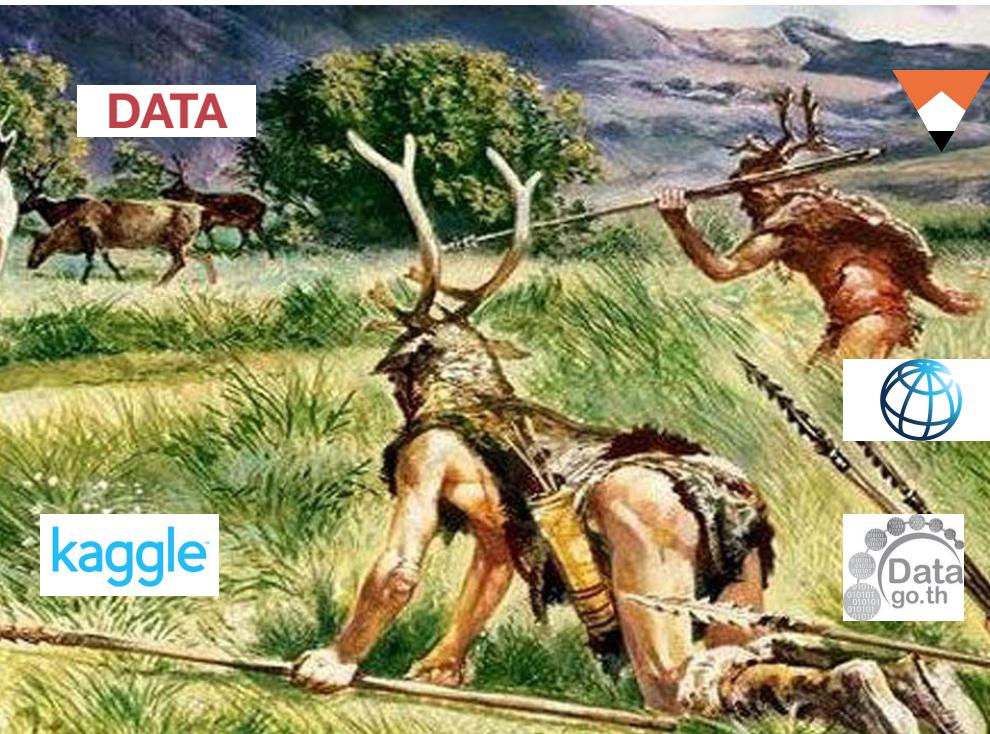
Second Edition



<https://www.amazon.com/How-Lie-Maps-Mark-Monmonier/dp/0226534219>

Illustrations by H. J. de Blij





DATA HUNTING

How to find data?

How do deal with them?

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We're sharing the data and code behind some of our articles and graphics.

We hope you'll use it to check our work and to create stories and visualizations of your own.

• UPDATING

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45



Demographics of Academy Awards (Oscars) Winners

Felix Mejia

5 days

20 KB

9.4

1 File (CSV)



31

Open Tasks

Top 50 Spotify Songs - previous years

1 Submission · In Top 50 Spotify Songs - 2019

What to watch on Netflix ?

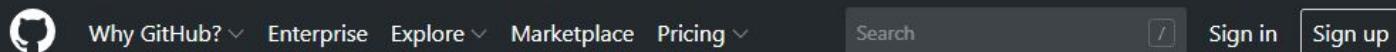
2 Submissions · In Netflix Movies and TV Sh...

Visualize US Accidents Dataset

6 Submissions · In US Accidents (3.0 million ...)

Github

[awesomedata/awesome-public-datasets: A topic-centric list of HQ open datasets. PR](#)
[PR](#)



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A topic-centric list of HQ open datasets. PR <https://github.com/awesomedata/apd-core>

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684 commits 2 branches 0 packages 1 release 148 contributors MIT

Branch: master ▾ [New pull request](#)

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	caesar0301 Update README from APD2: 1ebd4ae446edf1671617e858890763d64fed50b3	Latest commit 3c107c1 5 days ago
	Datasets Add titanic dataset	5 years ago
	LICENSE Update license copyright info.	5 years ago
	README.rst Update README from APD2: 1ebd4ae446edf1671617e858890763d64fed50b3	5 days ago

README.rst

Thailand Open Data



ค้นหาชุดข้อมูล...



หน้าแรก ชุดข้อมูล แอปพลิเคชัน เอกสารเผยแพร่ ข่าวสารและประกาศ แผนที่

ชุดข้อมูลที่มีการเรียกดูมากสุด

สังคมและสวัสดิการ

รายได้เฉลี่ยต่อเดือนต่อครัวเรือน จำแนกตามภาค และจังหวัด พ.ศ. 2541...

แผนที่

ข้อมูลพิกัด LAT/LONG ที่ตั้งตำบล

คุณภาพ และโซเชียลมีเดีย

จำนวนรถจักรยานยนต์ (สะสม) ณ วันที่ 29 กุมภาพันธ์ 2559

สังคมและสวัสดิการ

รายได้เฉลี่ยต่อปีของคนและครัวเรือน (รายจังหวัด) จากข้อมูล จปสธ ปี 2558

เศรษฐกิจ การเงิน และ...

ข้อมูลการจดทะเบียนนิติบุคคล พ.ศ. 2558 รายชื่อนิติบุคคลจัดตั้งใหม่ เดือน...

ข่าวสารและประกาศ

11 ตุลาคม 2562

เอกสารการจัดสรรงบประมาณรายจ่าย ประจำปีงบประมาณ 2563

18 พฤษภาคม 2560

Thailand is ranked #51 in the 2016 Global Open Data Index.

17 ตุลาคม 2559

ประกาศผลการแข่งขัน Emergency Disaster Mitigation Hackathon

5 ตุลาคม 2559

Emergency Disaster Mitigation Hackathon

6 กันยายน 2559

Asia Pacific Open Data Summit 2016 & PRAGMA31

ดูเพิ่มเติม

ดูเพิ่มเติม



Waiting for data.go.th...

ถาม-ตอบ เรื่องไข้และหอตกลง ความเป็นส่วนตัว เกี่ยวกับเรา

สงวนลิขสิทธิ์ พ.ศ. 2559 ตามพระราชบัญญัติลิขสิทธิ์ 2537 สํานักงานพัฒนาธุร不做ดิจิทัล (องค์การมหาชน) (สพธ.)

Assorted Institutions



THE WORLD BANK



ສຳພັກງານສະກິດແກ່ງເມານາ



GISTDA

Open Street Map & Overpass Turbo

Run Share Export Wizard Save Load Settings Help overpass turbo ↗

```
1 /**
2  This has been generated by the overpass-turbo wizard.
3  The original search was:
4  "museum in bangkok"
5 */
6 [out:json][timeout:25];
7 // fetch area "bangkok" to search in
8 {{geocodeArea:bangkok}}>.searchArea;
9 // gather results
10 {
11   // query part for: "museum"
12   node["tourism"="museum"]>(area.searchArea);
13   way["tourism"="museum"]>(area.searchArea);
14   relation["tourism"="museum"]>(area.searchArea);
15 };
16 // print results
17 out body;
18 >;
19 out skel qt;
```

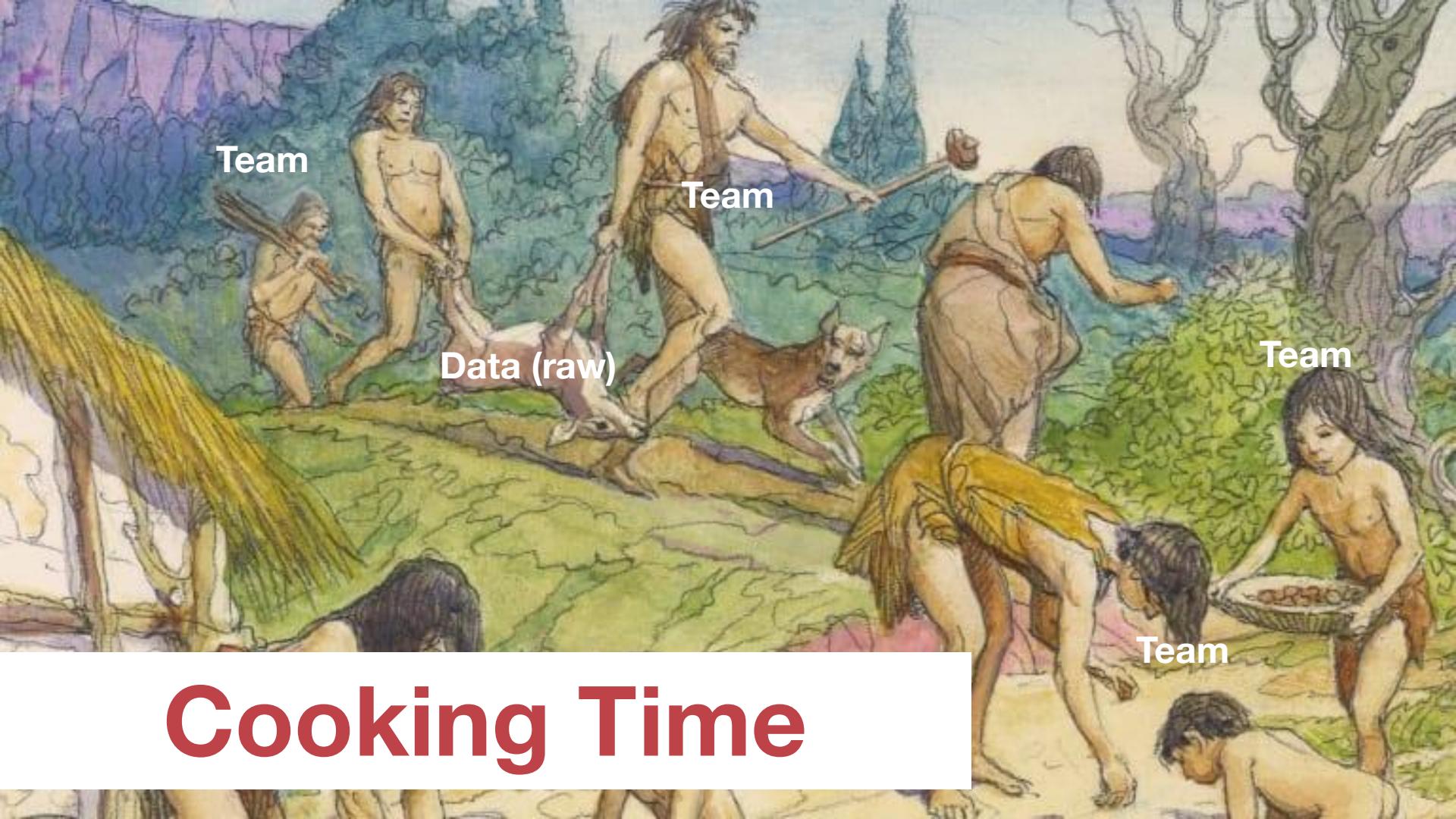
<img alt="A screenshot of the Overpass Turbo interface showing a map of Bangkok, Thailand. The map displays a dense network of roads and highways, with various layers of traffic data overlaid in different colors (blue, red, yellow, green). Numerous road segments are labeled with IDs such as u.2.06, u.2.10, u.2.09, u.2.07, u.2.08, u.2.07, u.2.06, u.2.05, u.2.01, u.2.09, u.2.04, u.2.03, u.2.11, u.2.12, u.2.02, u.2.01, u.2.13, u.2.14, u.2.04, u.2.05, u.2.06, u.3.01, u.3.04, u.3.01, u.3.02, u.3.03, u.3.04, u.3.05, u.3.06, u.3.07, u.3.08, u.3.09, u.3.10, u.3.11, u.3.12, u.3.13, u.3.14, u.3.15, u.3.16, u.3.17, u.3.18, u.3.19, u.3.20, u.3.21, u.3.22, u.3.23, u.3.24, u.3.25, u.3.26, u.3.27, u.3.28, u.3.29, u.3.30, u.3.31, u.3.32, u.3.33, u.3.34, u.3.35, u.3.36, u.3.37, u.3.38, u.3.39, u.3.40, u.3.41, u.3.42, u.3.43, u.3.44, u.3.45, u.3.46, u.3.47, u.3.48, u.3.49, u.3.50, u.3.51, u.3.52, u.3.53, u.3.54, u.3.55, u.3.56, u.3.57, u.3.58, u.3.59, u.3.60, u.3.61, u.3.62, u.3.63, u.3.64, u.3.65, u.3.66, u.3.67, u.3.68, u.3.69, u.3.70, u.3.71, u.3.72, u.3.73, u.3.74, u.3.75, u.3.76, u.3.77, u.3.78, u.3.79, u.3.80, u.3.81, u.3.82, u.3.83, u.3.84, u.3.85, u.3.86, u.3.87, u.3.88, u.3.89, u.3.90, u.3.91, u.3.92, u.3.93, u.3.94, u.3.95, u.3.96, u.3.97, u.3.98, u.3.99, u.3.100, u.3.101, u.3.102, u.3.103, u.3.104, u.3.105, u.3.106, u.3.107, u.3.108, u.3.109, u.3.110, u.3.111, u.3.112, u.3.113, u.3.114, u.3.115, u.3.116, u.3.117, u.3.118, u.3.119, u.3.120, u.3.121, u.3.122, u.3.123, u.3.124, u.3.125, u.3.126, u.3.127, u.3.128, u.3.129, u.3.130, u.3.131, u.3.132, u.3.133, u.3.134, u.3.135, u.3.136, u.3.137, u.3.138, u.3.139, u.3.140, u.3.141, u.3.142, u.3.143, u.3.144, u.3.145, u.3.146, u.3.147, u.3.148, u.3.149, u.3.150, u.3.151, u.3.152, u.3.153, u.3.154, u.3.155, u.3.156, u.3.157, u.3.158, u.3.159, u.3.160, u.3.161, u.3.162, u.3.163, u.3.164, u.3.165, u.3.166, u.3.167, u.3.168, u.3.169, u.3.170, u.3.171, u.3.172, u.3.173, u.3.174, u.3.175, u.3.176, u.3.177, u.3.178, u.3.179, u.3.180, u.3.181, u.3.182, u.3.183, u.3.184, u.3.185, u.3.186, u.3.187, u.3.188, u.3.189, u.3.190, u.3.191, u.3.192, u.3.193, u.3.194, u.3.195, u.3.196, u.3.197, u.3.198, u.3.199, u.3.200, u.3.201, u.3.202, u.3.203, u.3.204, u.3.205, u.3.206, 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Data Licenses



http://wiki.ubc.ca/images/thumb/a/a5/CC_License_Free_dom_Scale_Chart.png/600px-CC_License_Freedom_Scale_Chart.png





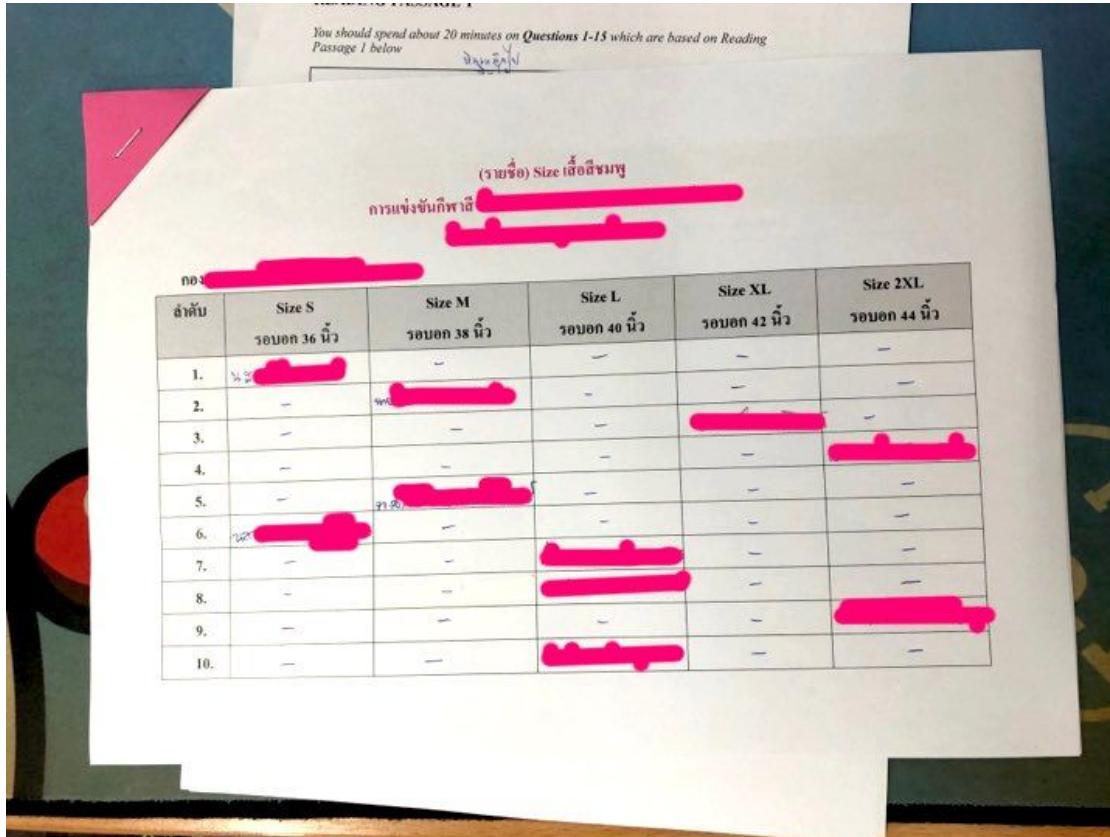
Cooking Time

Very Raw Data

ตารางคาดการณ์ภาวะเศรษฐกิจครึ่งหลังของปี ตลอด ทั้งปี 2555 และคาดการณ์ปี 2556

รายการ	หน่วย	2554	2555	2556Q2 F	2556H1F	2556F (น.พ.-56)	2556F (ก.ค.-56)
ภาคการค้าต่างประเทศ							
คุณบัญชีเดินสะพัด	ล้าน US \$	5,888.60	2,727.98			2,917.0	-975.80
	% GDP					0.7	-0.2
คุณการท่องเที่ยว	ล้าน US \$	16,988.76	8,336.91	401.71	-2,820.60	5114.1	2,144.20
	% GDP					1.2	0.5
การส่งออก	ล้าน US \$	219,118.4	226,155.9	57,231.4	110,461.1	244,737.8	235,425.9
	%	14.3	3.2	0.98	2.67	8.2	4.1
การนำเข้า	ล้าน US \$	202,129.7	217,818.9	56,829.69	113,281.7	239,623.7	233,281.7
	%	24.9	7.8	2.91	4.99	10.0	7.1
อัตราแลกเปลี่ยน	บาท/ US \$	30.5	31.1	29.84	29.82	29.3	30.3
อัตราเงินเฟ้อ	%	3.8	3.0	2.3	2.7	3.5	2.5

Raw and Rawer



No locations - Use Google API

39 lines (34 sloc) | 1.08 KB

[Raw](#) [Blame](#) [History](#)

```
1  import re
2  import html
3  import numpy as np
4  import pandas as pd
5  import dill as pickle
6  from collections import Counter
7  from bs4 import BeautifulSoup
8  import urllib
9
10 DATA_PATH='../../data/'
11 RAW_PATH = '../../data/raw/'
12
13 #utils
14 def location_str(i):
15     l = f'{hosad.iloc[i,1]}-{hosad.iloc[i,9].split("-")[1]}-{hosad.iloc[i,8].split("-")[1]}'
16     return(l)
17
18 hosad = pd.read_csv(f'{RAW_PATH}hospital_address.csv')
19 hosad['lat'] = None
20 hosad['lon'] = None
21 hosad.head()
22
23 #loop
24 for i in range(hosad.shape[0]):
25     if i % 100 ==0: print(i)
26     location = location_str(i)
27     GoogleAPIKey = 'YOUR KEY HERE'
28     from geopy.geocoders import GoogleV3
29     geolocator = GoogleV3(api_key=GoogleAPIKey)
30     result = geolocator.geocode(query=location, language='th', exactly_one=False, timeout=5)
31     if result is None:
32         print(f'{i} Cannot geocode')
33         lat, lon = None, None
34     else:
35         lat,lon = result[0][1]
36         hosad.iloc[i,hosad.columns.get_loc('lat')] = lat
37         hosad.iloc[i,hosad.columns.get_loc('lon')] = lon
38         hosad.to_csv(f'{DATA_PATH}hospital_lation.csv',index=False)
```



No locations - Use Google API

The image consists of two main parts. On the left is a screenshot of a mobile browser displaying a Google search result for "บ้านชั่งคลินิกการพยาบาลและการ". The page shows a thumbnail image of a building, the clinic's name, and its address: 192 1 Tambon Ban Chung, Amphoe Nakhon Luang, Chang Wat Phra Nakhon Si Ayutthaya 13260. Below the address are four blue location icons with white symbols: a pin, a person, a car, and a checkmark. At the bottom are buttons for "SAVE", "NEARBY", "SEND TO YOUR PHONE", and "SHARE". On the right is a Google Map showing the area around Ban Chang. A red marker indicates the location of the clinic at the intersection of roads 329 and 3005. The map also shows the river "Ban Chung" and several other roads labeled 329, 3005, and 3008. A "Satellite" view button is visible at the bottom left of the map.

บ้านชั่งคลินิกการพยาบาลและการ
พดุงครรภ์
Health

บ้านชั่งคลินิกการพยาบาลและการ
พดุงครรภ์
Health

Directions

SAVE NEARBY SEND TO YOUR PHONE SHARE

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Satellite

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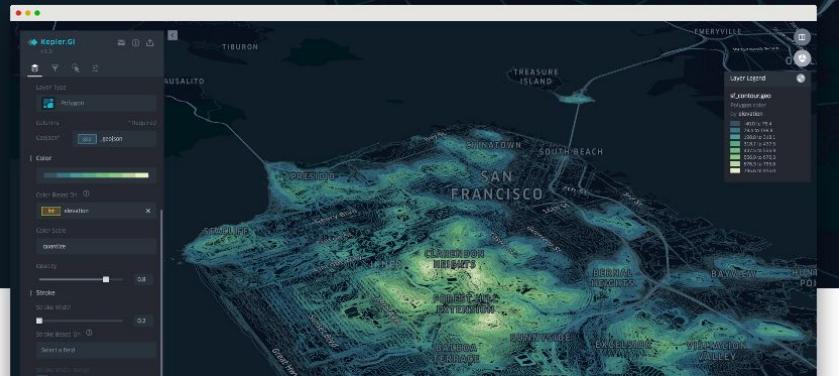
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Kepler.gl is a powerful **open source** geospatial analysis tool for **large-scale** data sets.

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EXERCISE

Novel Corona Virus 2019 Dataset using Kepler.gl

Dataset

WA Centroid

AZ Centroid

Novel Corona Virus 2019 Dataset

Day level information on 2019-nCoV affected cases

SRK • updated 38 minutes ago (Version 11)

Data Tasks Kernels (82) Discussion (20) Activity Metadata Download (115 KB) New Notebook

Usability 10.0 License CC0: Public Domain Tags health, time series, law, public health, computer security

Description

Context

From [World Health Organization](#) - On 31 December 2019, WHO was alerted to several cases of pneumonia in Wuhan City, Hubei Province of China. The virus did not match any other known virus. This raised concern because when a virus is new, we do not know how it affects people.

So daily level information on the affected people can give some interesting insights when it is made available to the broader data science community.

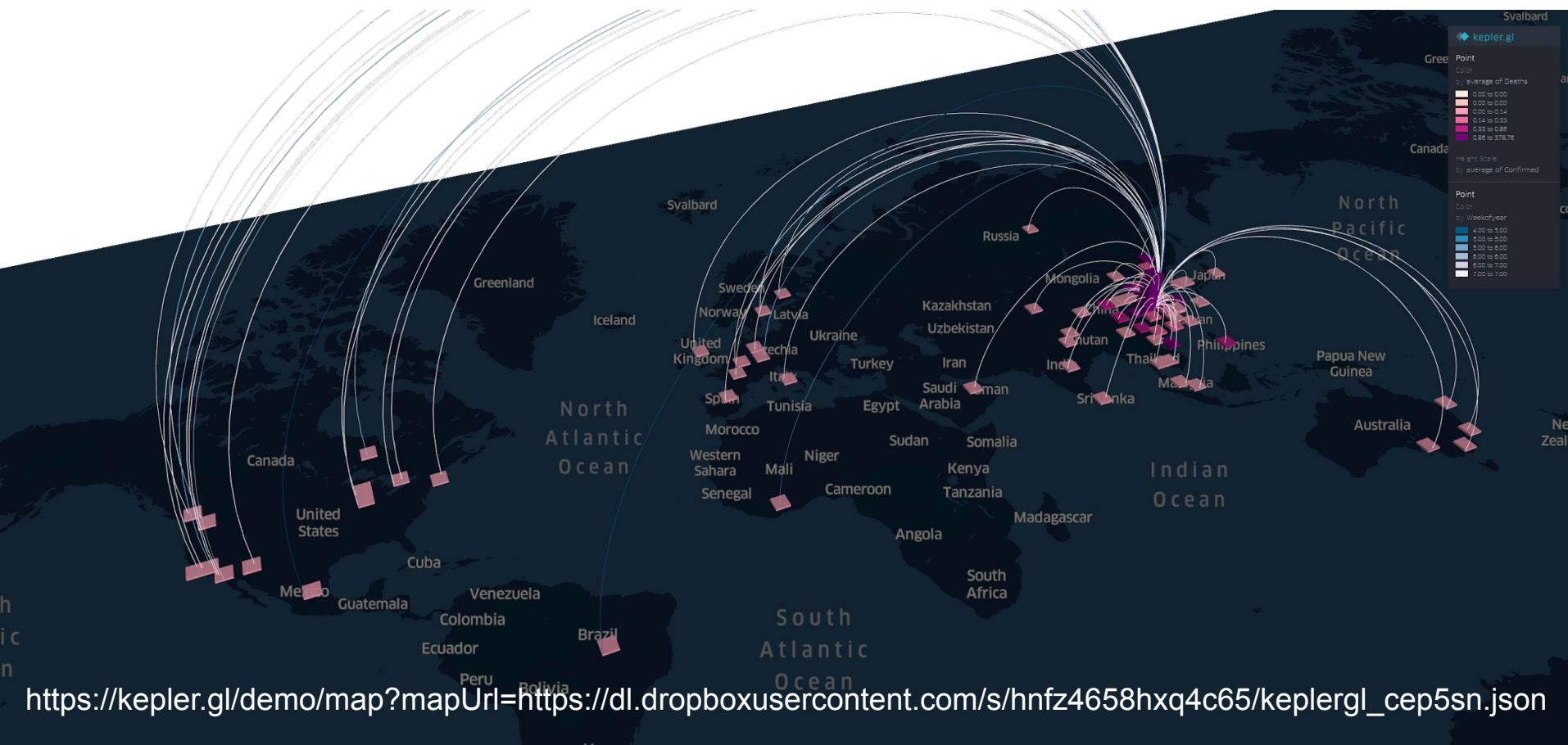
Johns Hopkins University has made an excellent dashboard using the affected cases data. This data is extracted from that dashboard and made available in csv format.

https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset/version/11#time-series_2019_ncov_confirmed.csv

Sno	Date	Weekofye	Province/	Country	lat	lon	Last Update	Confirmed	Deaths	Recovered	Province_	lat0	lon0
1	1/22/2020	4	Anhui	China	31.82571	117.2264	1/22/2020 12:00	1	0	0	Wuhan	30.5928	114.3055
2	1/22/2020	4	Beijing	China	40.18238	116.4142	1/22/2020 12:00	14	0	0	Wuhan	30.5928	114.3055
3	1/22/2020	4	Chongqing	China	30.05718	107.874	1/22/2020 12:00	6	0	0	Wuhan	30.5928	114.3055
4	1/22/2020	4	Fujian	China	26.07783	117.9895	1/22/2020 12:00	1	0	0	Wuhan	30.5928	114.3055
5	1/22/2020	4	Gansu	China	36.0611	103.8343	1/22/2020 12:00	0	0	0	Wuhan	30.5928	114.3055
6	1/22/2020	4	Guangdong	China	23.33841	113.422	1/22/2020 12:00	26	0	0	Wuhan	30.5928	114.3055
7	1/22/2020	4	Guangxi	China	23.82908	108.7881	1/22/2020 12:00	2	0	0	Wuhan	30.5928	114.3055
8	1/22/2020	4	Guizhou	China	26.81536	106.8748	1/22/2020 12:00	1	0	0	Wuhan	30.5928	114.3055
9	1/22/2020	4	Hainan	China	19.19673	109.7455	1/22/2020 12:00	4	0	0	Wuhan	30.5928	114.3055
10	1/22/2020	4	Hebei	China	38.0428	114.5149	1/22/2020 12:00	1	0	0	Wuhan	30.5928	114.3055
11	1/22/2020	4	Heilongjiang	China	47.862	127.7622	1/22/2020 12:00	0	0	0	Wuhan	30.5928	114.3055
12	1/22/2020	4	Henan	China	33.88202	113.614	1/22/2020 12:00	5	0	0	Wuhan	30.5928	114.3055
13	1/22/2020	4	Hong Kong	China	22.3193	114.1694	1/22/2020 12:00	0	0	0	Wuhan	30.5928	114.3055
14	1/22/2020	4	Hubei	China	30.97564	112.2707	1/22/2020 12:00	444	0	0	Wuhan	30.5928	114.3055
15	1/22/2020	4	Hunan	China	27.61041	111.7088	1/22/2020 12:00	4	0	0	Wuhan	30.5928	114.3055
16	1/22/2020	4	Inner Mongolia	China	44.09448	113.9456	1/22/2020 12:00	0	0	0	Wuhan	30.5928	114.3055
17	1/22/2020	4	Jiangsu	China	32.97027	119.464	1/22/2020 12:00	1	0	0	Wuhan	30.5928	114.3055
18	1/22/2020	4	Jiangxi	China	27.61401	115.7221	1/22/2020 12:00	2	0	0	Wuhan	30.5928	114.3055
19	1/22/2020	4	Jilin	China	43.66657	126.1917	1/22/2020 12:00	0	0	0	Wuhan	30.5928	114.3055
20	1/22/2020	4	Liaoning	China	41.29284	122.6086	1/22/2020 12:00	2	0	0	Wuhan	30.5928	114.3055
21	1/22/2020	4	Macau	China	22.1987	113.5439	1/22/2020 12:00	1	0	0	Wuhan	30.5928	114.3055

https://github.com/pnphannisa/Corona_Virus_latlon





Free Resources

Screenshot of a GitHub profile page for user pnphannisa, highlighting popular repositories.

The GitHub interface includes:

- Header: Search bar, Pull requests, Issues, Marketplace, Explore, Notifications, and Profile picture.
- User Information: Set status, Overview tab (selected), Repositories (4), Projects (0), Packages (0), Stars (0), Followers (2), Following (0).
- Profile Details: Phannisa N, pnphannisa, Edit profile, Urban Planner, GIS Developer and Architect, phannisan.wordpress.com.
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 - [awesome-thai-gis](#): Resources for GIS in Thailand, 1 star.
 - [thailand_spatial_resources](#)
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 - [beaglebear](#): A business website for BEAGLE & BEAR, 1 star (HTML).
 - [Corona_Virus_lation](#): Corona Virus dataset with geographic references for practice.
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