Create a Map of Public Art in Nashville

Mary van Valkenburg

Nashville Analytics Summit
August 21, 2018

Kaggle kernel - a hosted Jupyter notebook

- ***1st - create a kaggle account at https://www.kaggle.com/***
- ***2nd - go to http://bit.ly/nash-pub-art***
- ***3rd - Fork Notebook***

1. Open data
2. Location
3. DataFrames and GeoDataFrames
4. Geometry
5. Coordinate Reference Systems
6. Spatial Joins
7. Plotting points within polygons
8. Adding context with a street map
9. Wrap up!

Open data

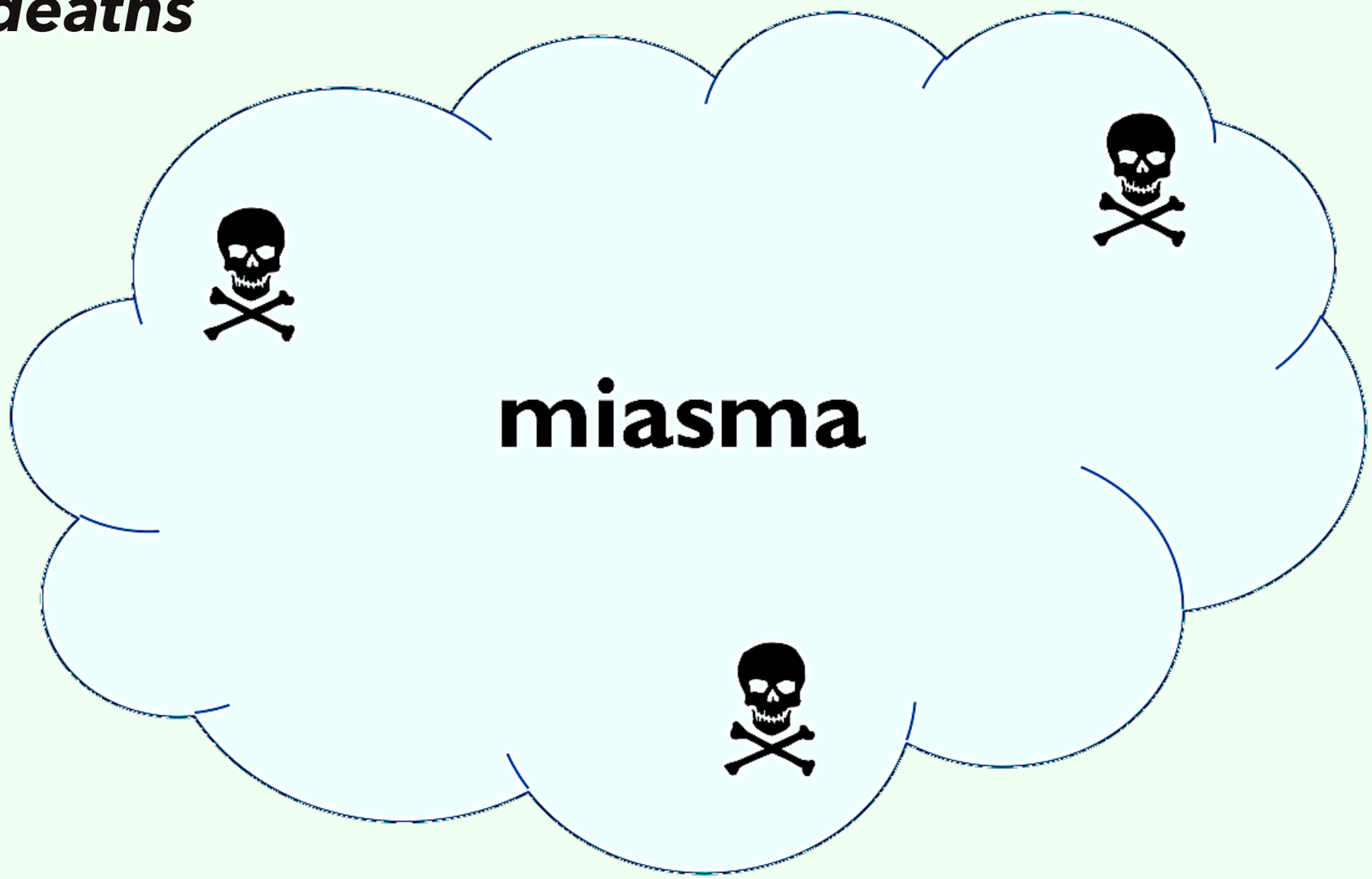
Public art in Nashville

https://data.nashville.gov

Location

first, a bit of history….

- ***London cholera epidemic - 1854***
- ***600+ deaths***



John Snow

MILLIES PL
MILLIES ST
POLAND STREET
D'ARBLAY ST
BERWICK STREET
WARDOUR STREET
DEAN STREET
MARLBOROUGH STREET
GREAT
Soho
Carnaby
Street
KINGLY STREET
BROAD STREET
LEXINGTON STREET
HOPKINS ST
PETER ST
Coll
GREAT PULTENEY STREET
BEAK STREET
GOLDEN
BRIDLE LANE
GREAT
Sch
RUPERT
Pol
Sta

DataFrames and GeoDataFrames

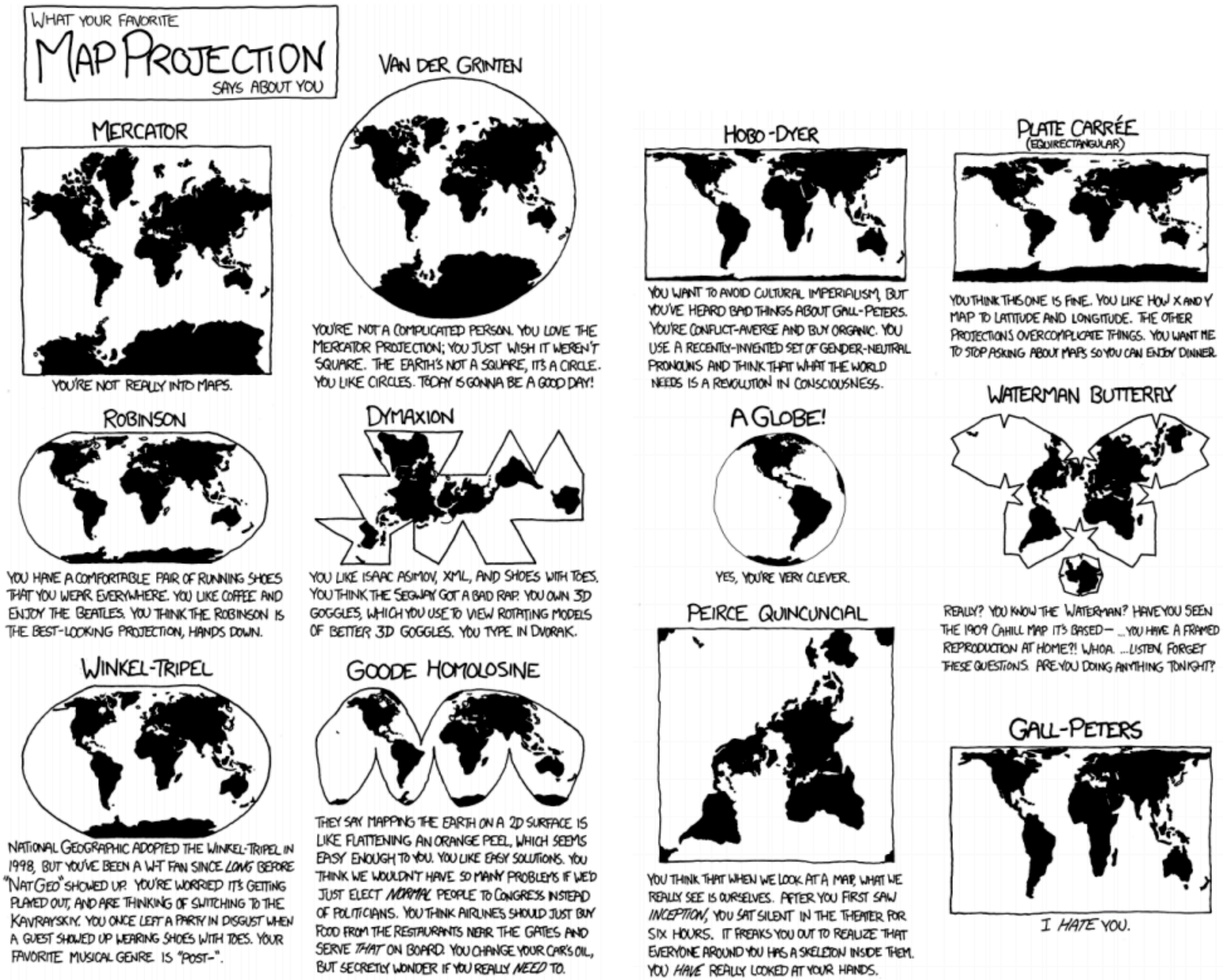
"A DataFrame is a 2-dimensional labeled data structure with columns of potentially different types. You can think of it like a spreadsheet or a SQL table or a dict of Series objects."

https://pandas.pydata.org/pandas-docs/stable/dsintro.html

Geometry

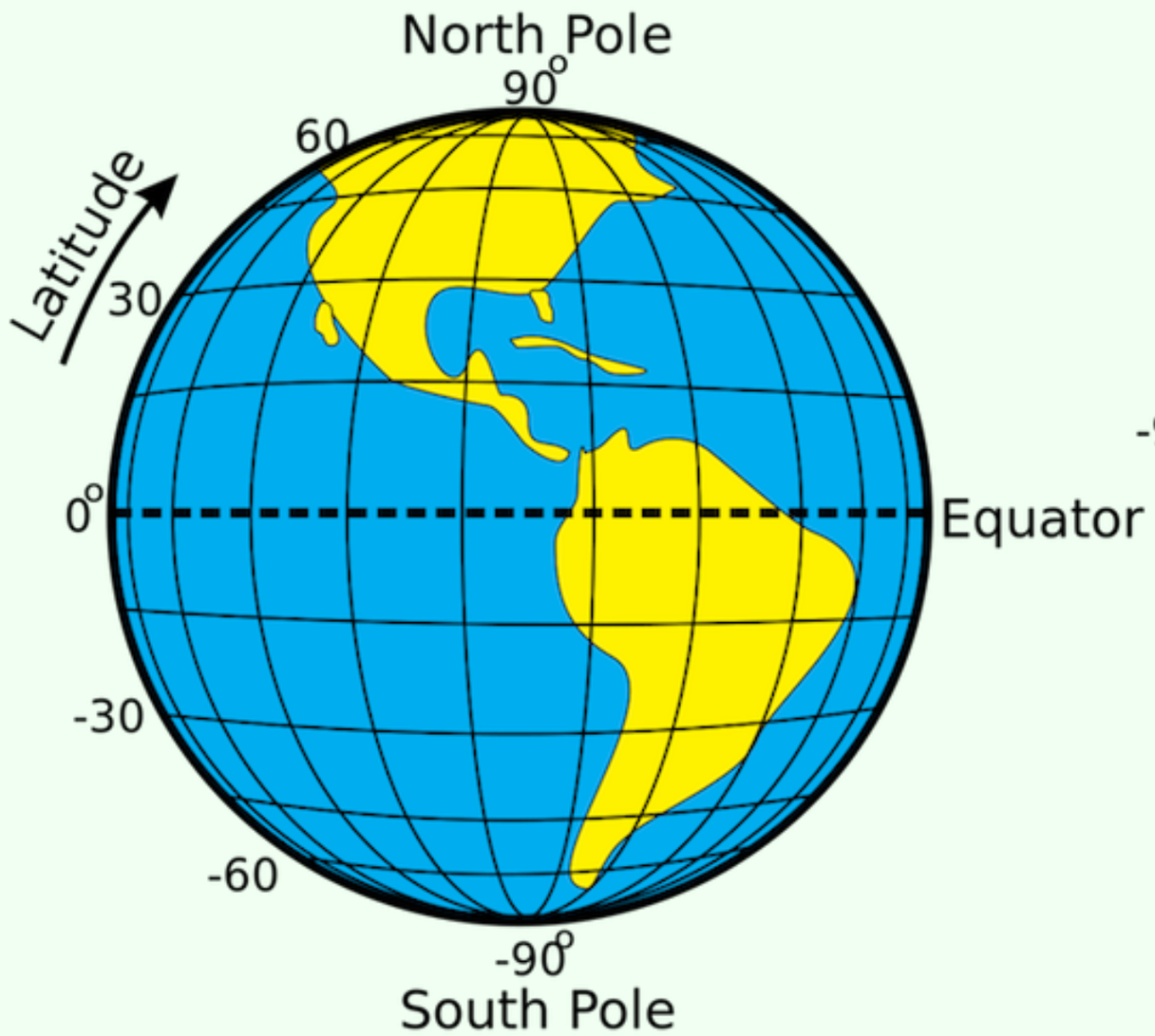
Point
Line
Polygon

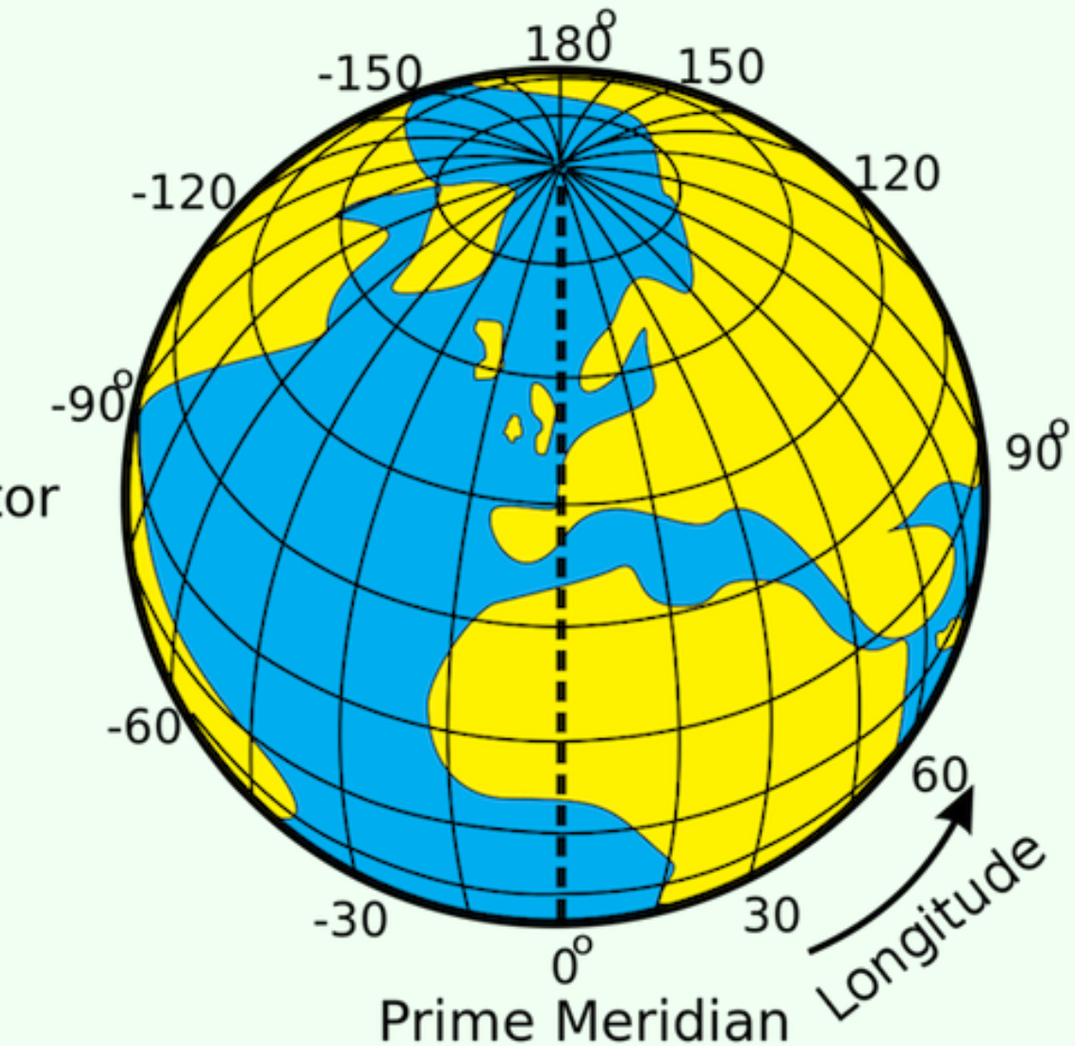
Coordinate Reference Systems



*What's that? You think I don't like the Peters map because I'm uncomfortable with having my cultural assumptions challenged? Are you sure you're not... ::puts on sunglasses:: ... **projecting**?*

http://xkcd.com/977/ - http://bit.ly/explainxkcd-977





Projection

- ***Web Mercator/WGS 84***

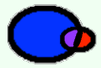
Coordinate Reference System (use the WGS 84 projection)

- ***Google Maps - EPSG:3857***
- ***Google Earth - EPSG:4326***

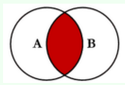
Spatial Joins

gpd.sjoin(gdfA, gdfB, op = 'within)

op (stands for operation)

- *within*
- *intersects* 
- *contains*

by (which type of join)

- *inner (the default)* 

- *left*

- *right*

https://www.codeproject.com/Articles/33052/Visual-Representation-of-SQL-Joins

Plotting points within polygons

- plot the polygons
- add a plot of points

Adding context with a street map

Folium

- python package built on the leaflet javascript library
- create interactive maps
- markers
- easy to customize popups

Wrap up!

To continue exploring open data:

- ***install anaconda (includes many packages)***
- ***launch jupyter notebook (GUI available)***
- ***install geopandas to work with geojson or shapefiles***
- ***get some data***
- ***learn and have fun!***

Questions?

@MaryLvV

https://github.com/MaryLvV/Nashville-Public-Art

http://nashvillesoftwareschool.com/
marylvv@nashvillesoftwareschool.com