

# Mapping Equity: Using GIS and Maps to Make Invisible Realities Visible

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# Learning objectives

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UNDERSTAND WHY THEMATIC MAPS ARE USEFUL FOR BRINGING HIDDEN REALITIES RELATED TO EQUITY TO VISIBLE PATTERNS



UNDERSTAND A FEW BASIC GIS CONCEPTS: ATTRIBUTE TABLE, JOIN



UNDERSTAND THE BASIC STEPS OF MAKING A CHOROPLETH MAP



UNDERSTAND A FEW BASIC CARTOGRAPHY PRINCIPLES, SUCH AS SYMBOLIZATION, NORMALIZATION, COLOR SCHEME, ETC.

# Reference Maps vs. Thematic Maps

The primary purpose of a reference map is to deliver **location information** to the map user

# Reference Maps vs. Thematic Maps

Thematic maps are concerned with a **particular theme** or topic of interest, which are often **abstract concepts.**

# Why thematic maps?

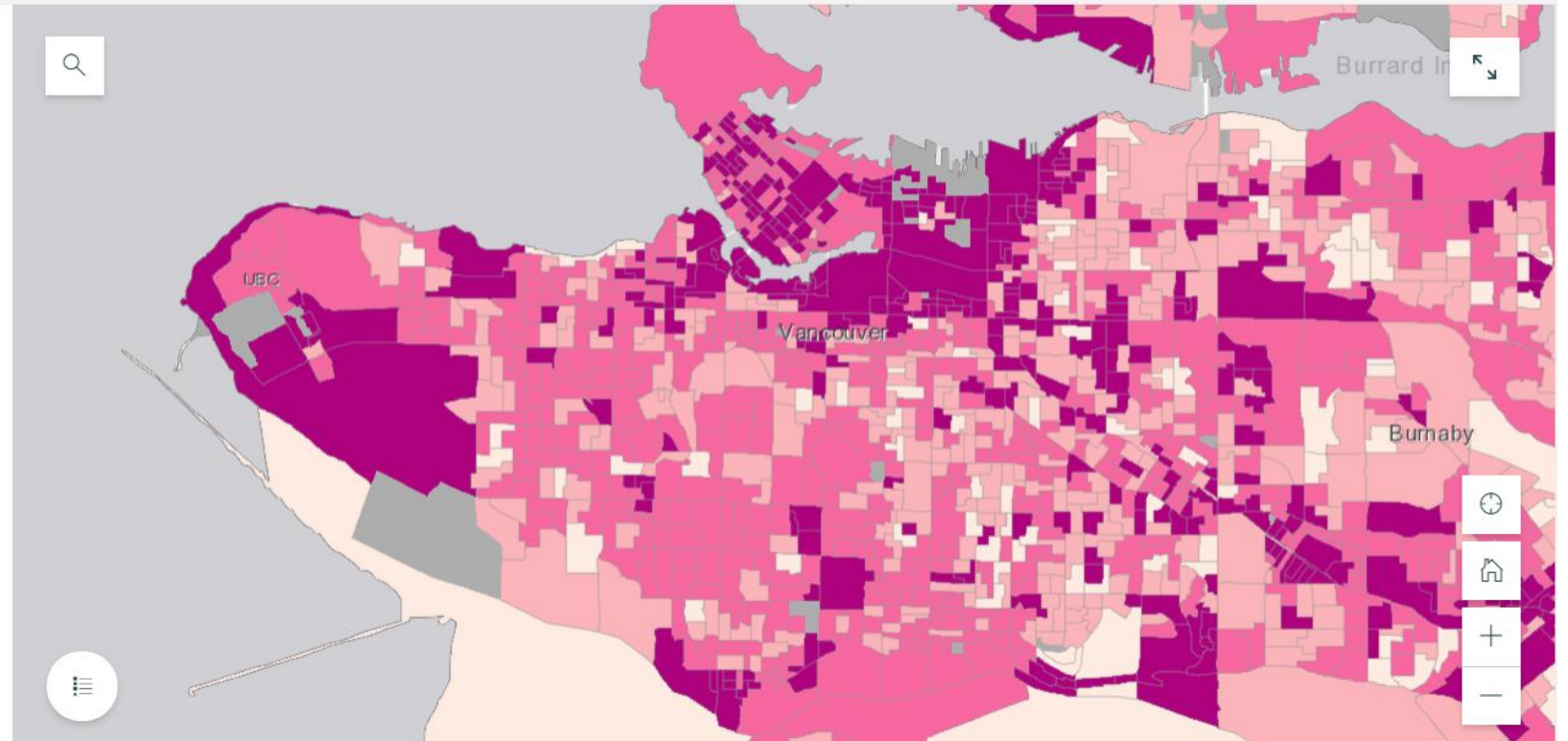
at by clicking on the box. To return to the full model, click on the box again. Note that white areas on the map indicate areas outside of the population ecumene (*inhabited area*).

Housing Insecurity

*Includes: percent of tenants in subsidized housing, and; percent of households spending 30% or more of their income on housing.*

Job Insecurity

*Includes: unemployment rate, percent of*



Source: [Mapping the COVID-19 pandemic's secondary health impacts Exploring contributing factors across British Columbia's neighbourhoods](#)



# Can you answer these questions with a spreadsheet instead?

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- 1) Which neighborhoods are affected by housing insecurity most severely?
- 2) Where are these neighborhoods in relation to each other?
- 3) Are these neighborhoods clustered or dispersed?
- 4) Are there some neighborhoods that are near each other but are very different in the level of housing insecurity?

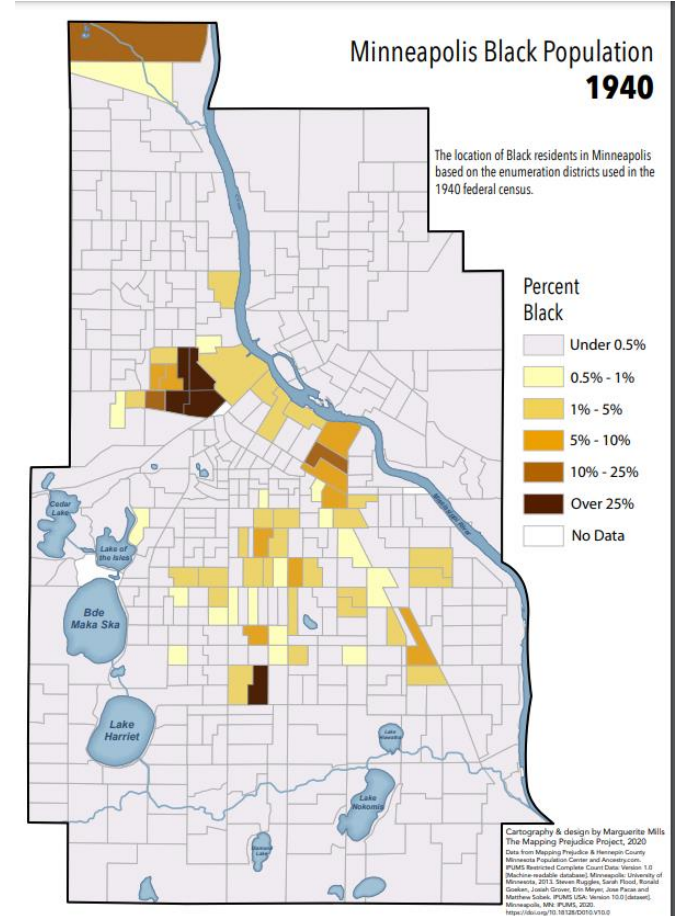
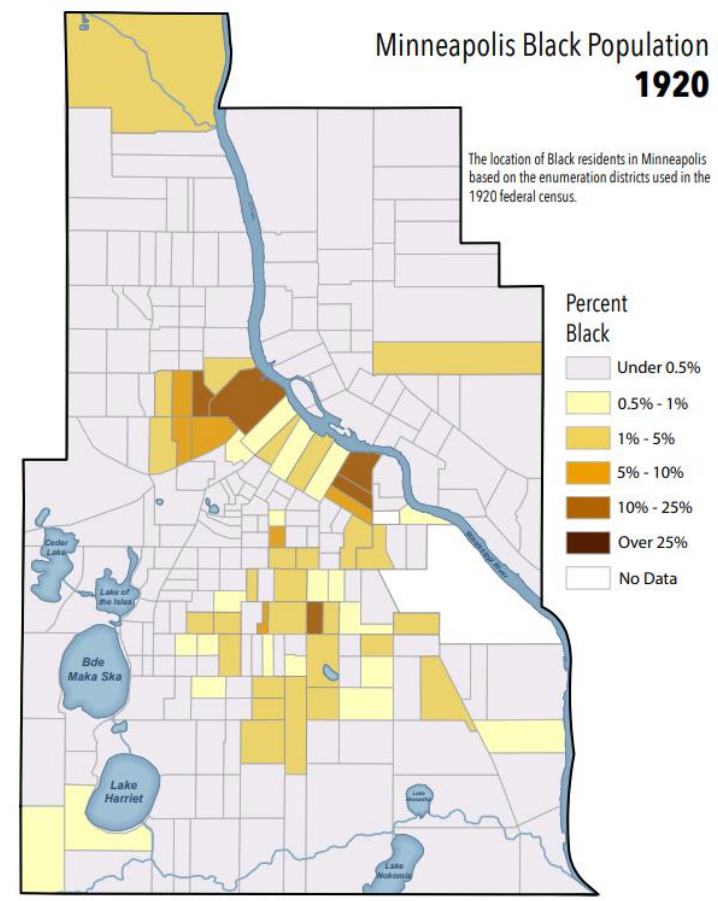
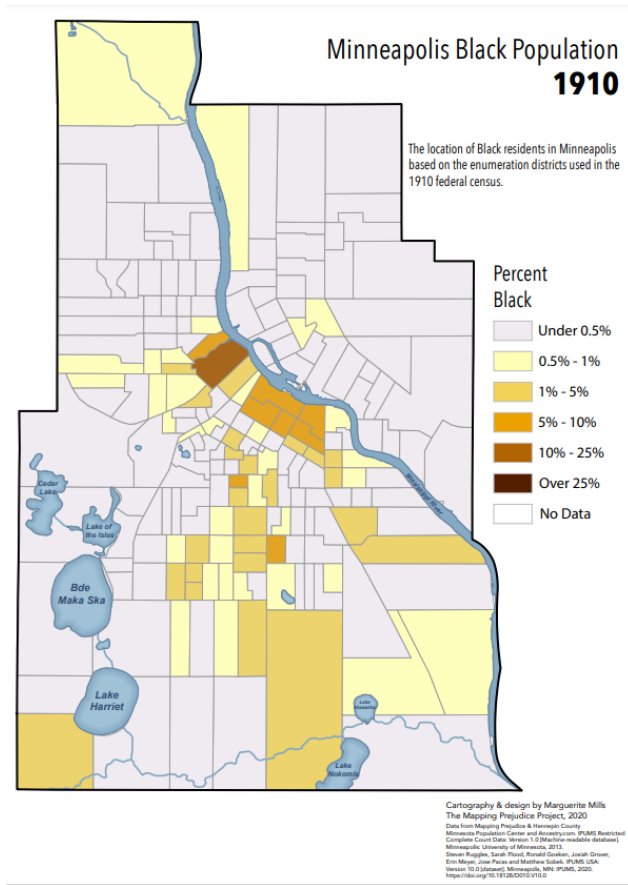
# What is a choropleth map?

- Choropleth maps represent quantitative data that is aggregated to areas (often called "enumeration units"). The units can be countries of the world, states of a country, school districts, or any other regional division that divides the whole territory into distinct areas.

Source: Thematic Maps. Geog 160 Mapping Our Changing World. Penn State.

[https://www.e-education.psu.edu/geog160/c3\\_p14.html](https://www.e-education.psu.edu/geog160/c3_p14.html)

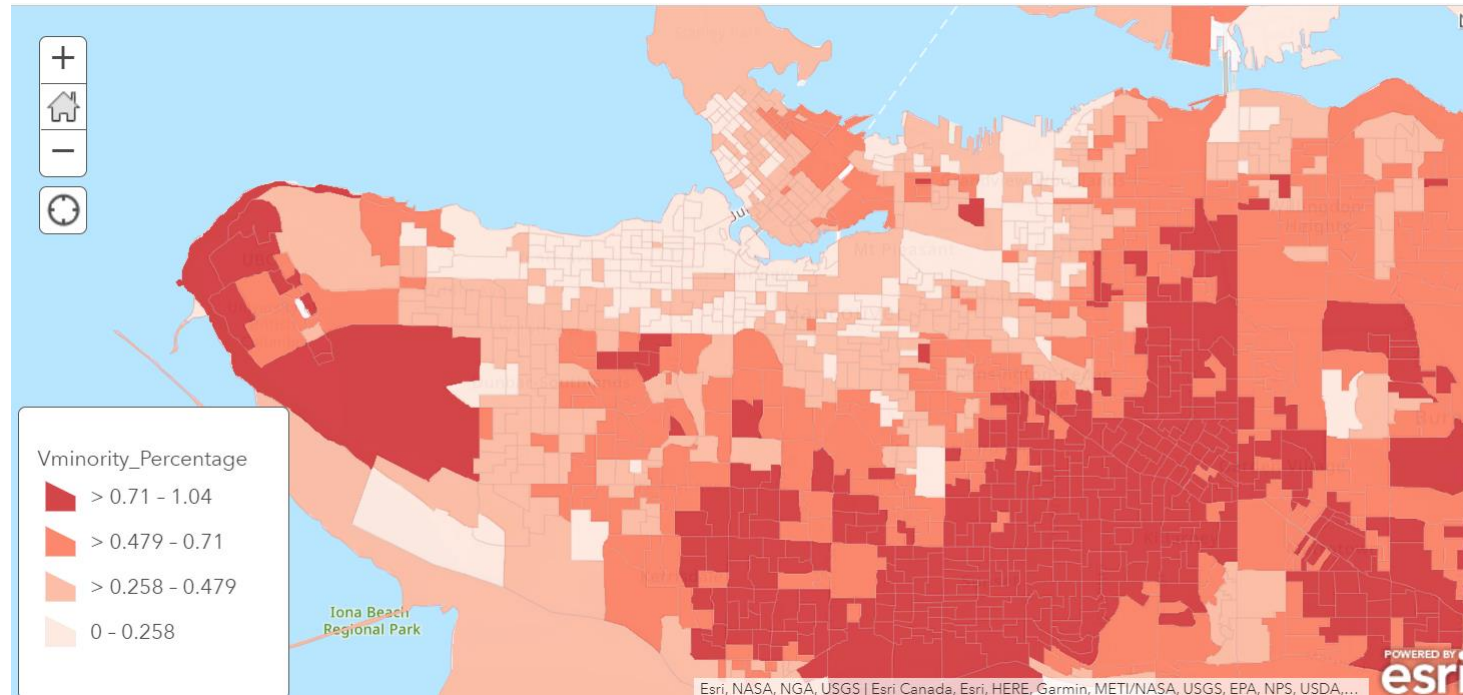
# Another example



Source: [Mapping Prejudice](https://www.mappingprejudice.org/)



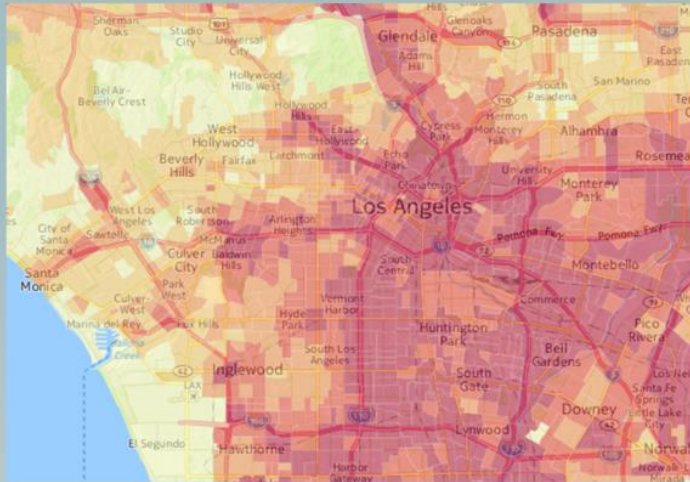
# Let's learn how to make a choropleth map!



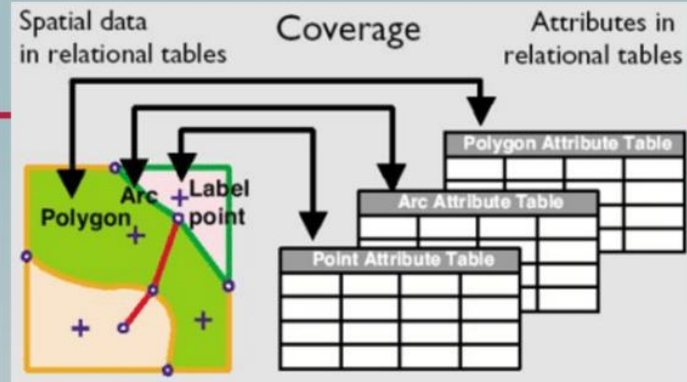
# Enumeration unit: DA

- Dissemination Area (DA): “Small area composed of one or more neighbouring dissemination blocks, with a population of **400 to 700** persons. ... It is the smallest standard geographic areas for which all census data are disseminated”

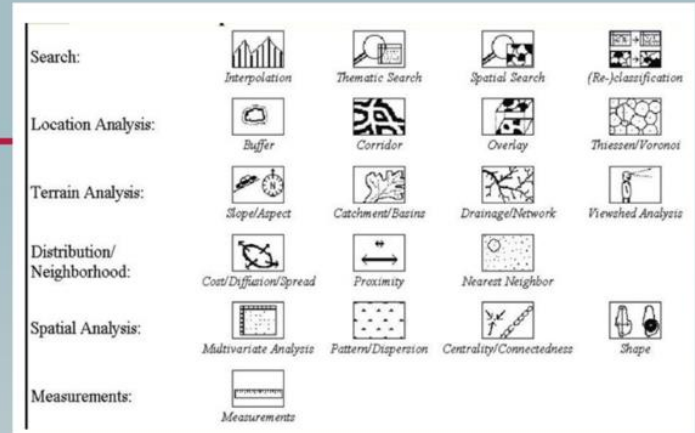
# Basic components of GIS



Visual representation

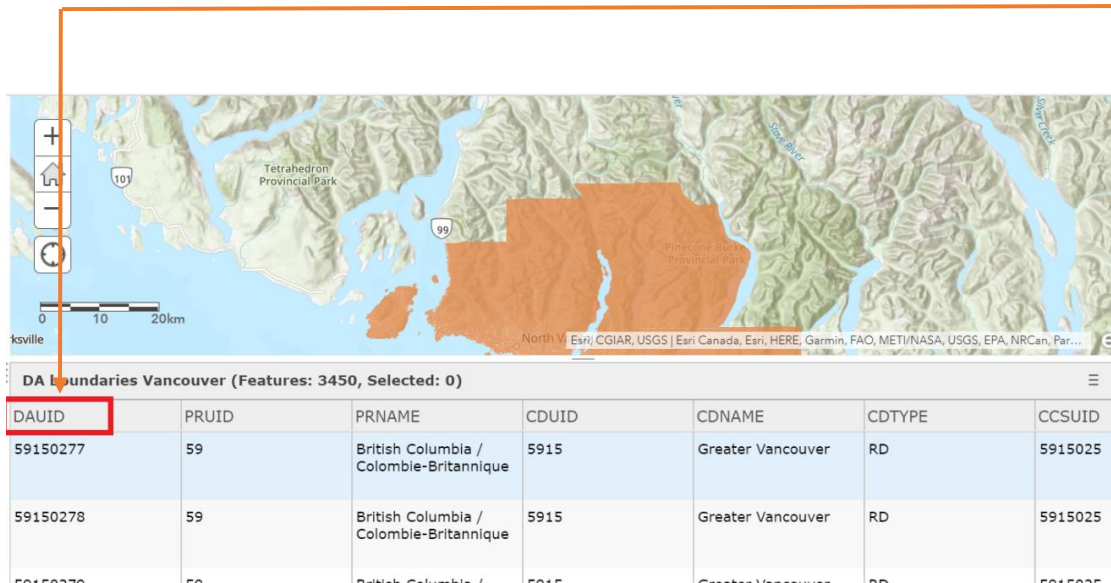


Relational database



Spatial analysis tools

# Attribute Join



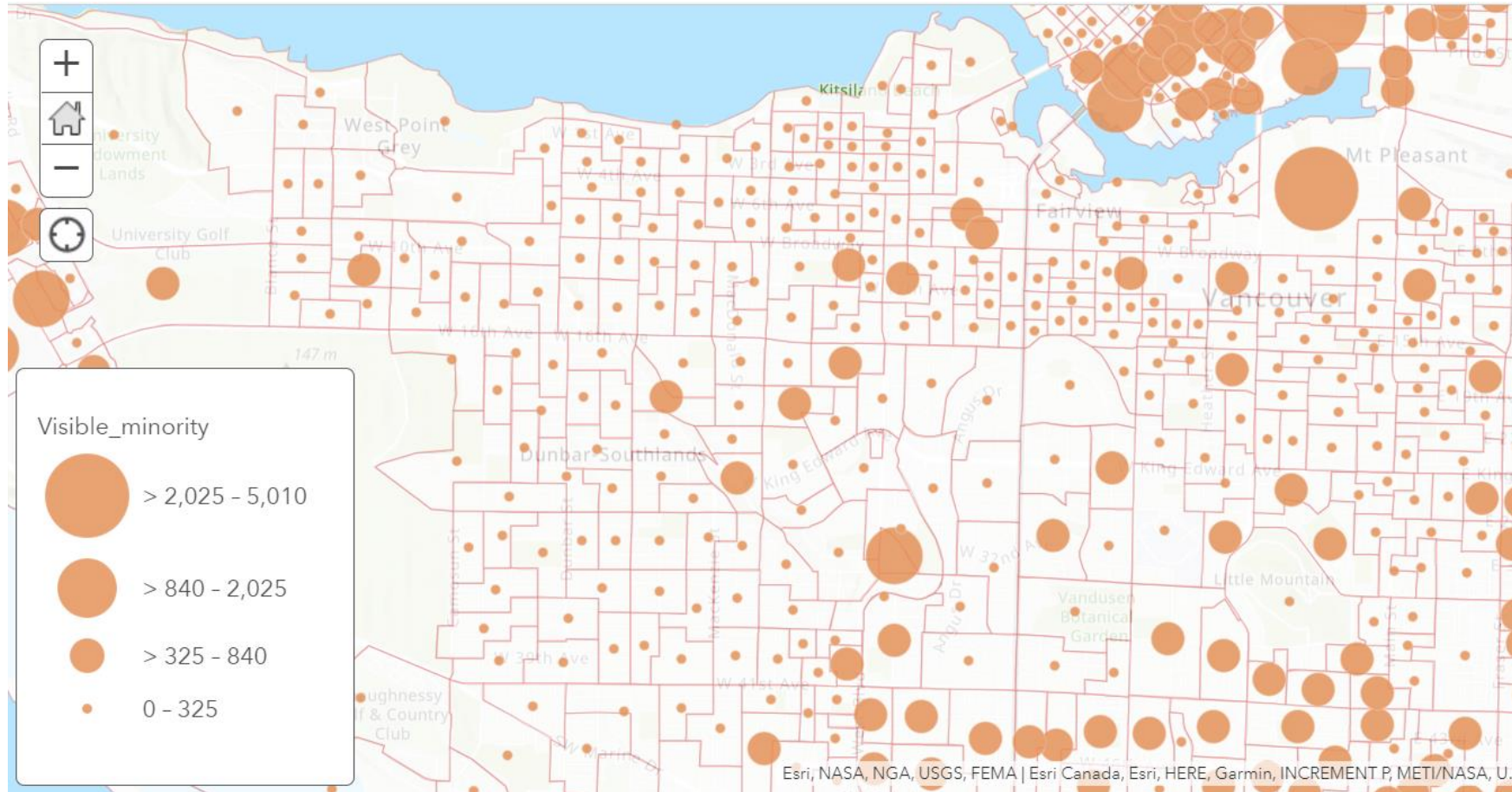
A	B	C	D
DAUID	Total_pop	Visible_minority	
59150004	370	70	
59150005	500	55	
59150006	460	85	
59150007	515	50	
59150008	645	85	
59150009	405	65	
59150010	740	105	
59150012	455	170	
59150013	390	100	
59150014	1100	485	
59150015	530	105	
59150016	415	125	
59150017	285	75	
59150018	530	130	
59150019	495	30	
59150020	370	150	
59150021	285	0	
59150022	335	135	

Attribute Join: you can join a table of data to a layer based on the value of a field that can be found in both tables.

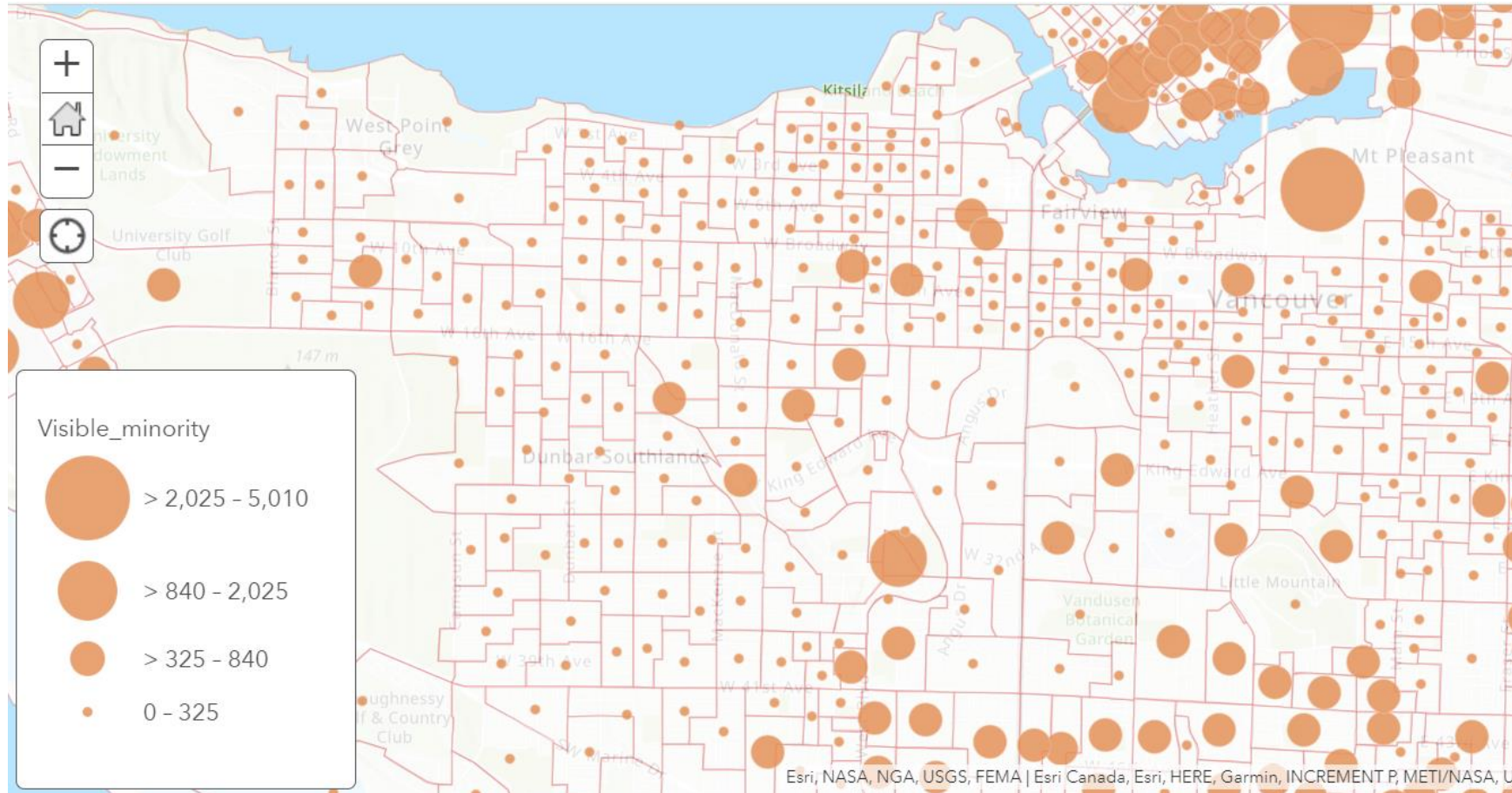
# Symbolization

***Symbolization*** is the process of choosing how to represent the features on a map. The symbols we choose should help describe additional information about the features on the map.

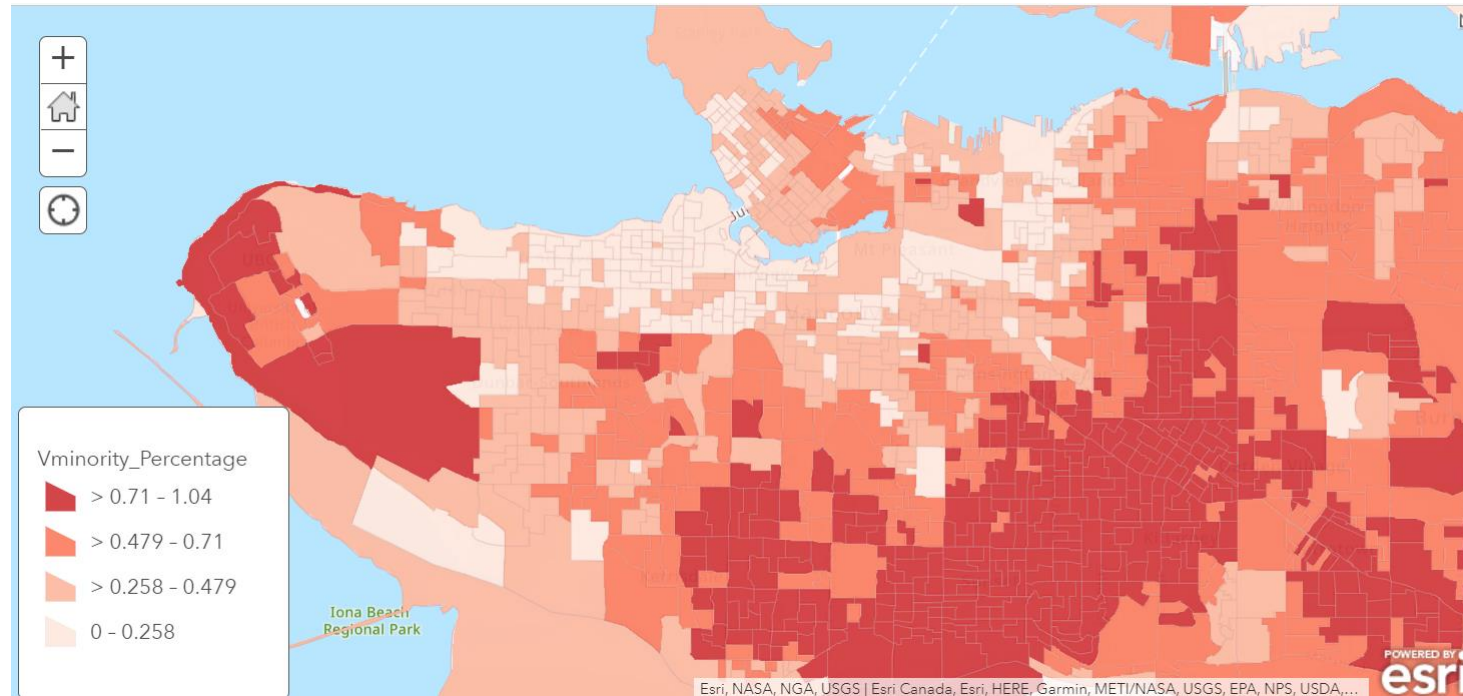
# Proportional symbol maps



# Wait a minute... is it right to map the number of visible minority people?



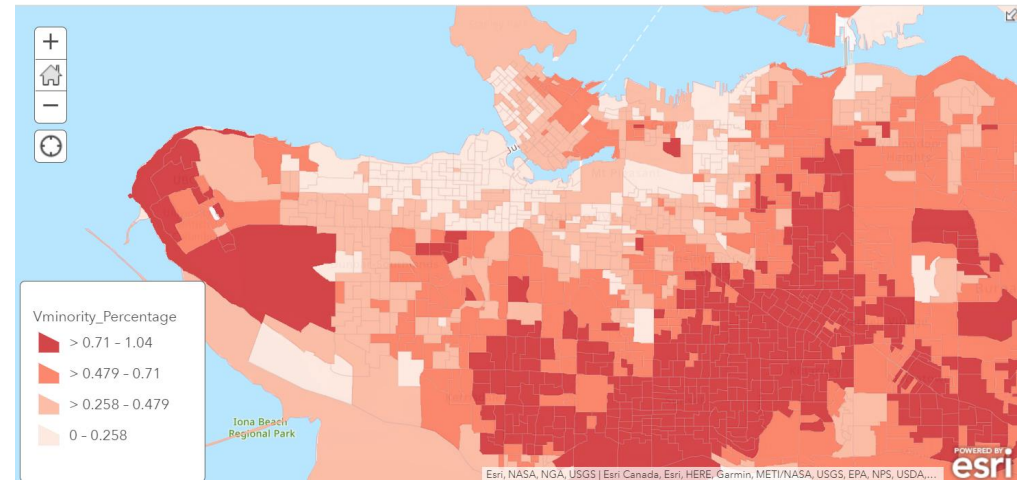
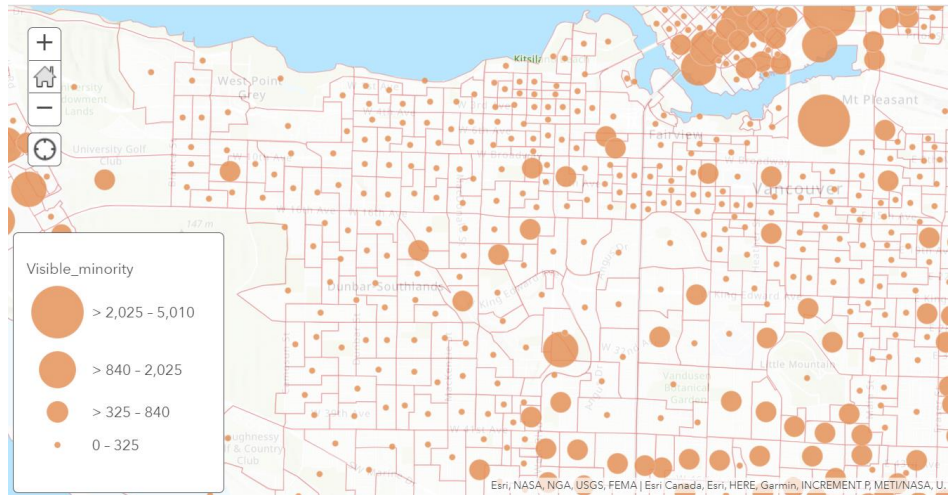
# Choropleth maps



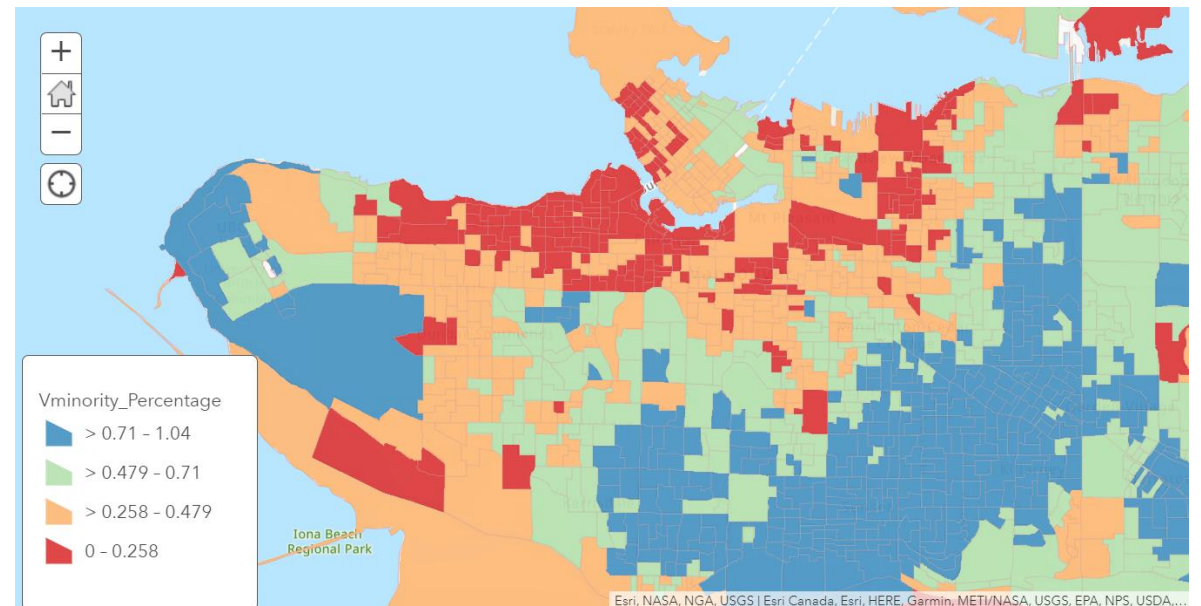
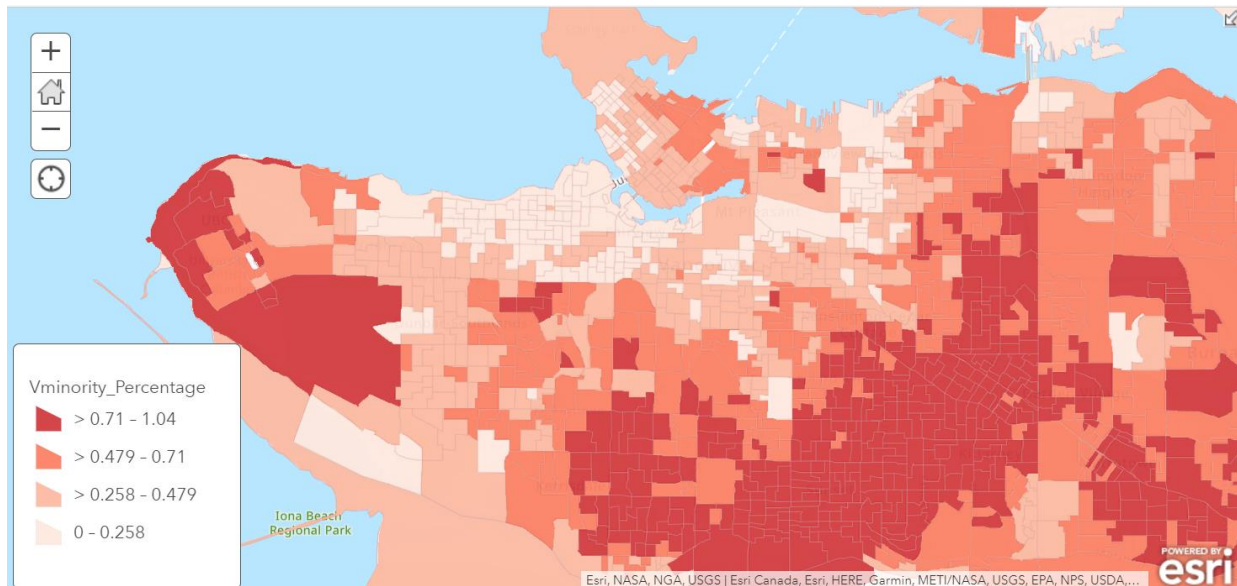


# Proportional symbol maps vs. Choropleth maps

- Graduated point symbols are best for displaying **amount/acount**
- Choropleth maps are best for displaying **density/rate/percent**



# Color scheme selection



- Match data's level of measurement (numerical or categorical) with your color scheme (sequential color scheme vs. categorical color scheme)

# What went wrong in this map?



## Europe Population

82,000,000 - 57,000,000
57,000,000 - 38,000,000
38,000,000 - 19,000,000
19,000,000 - 13,000,000
13,000,000 - 10,000,000
10,000,000 - 6,000,000
6,000,000 - 3,000,000
3,000,000 - 320,000
320,000 - <100,000



Source: <https://www.nevron.com/products-dot-net-diagram-asp-net-gallery-maps-choropleth-maps.aspx>

# Recommended Learning Resources

Thematic maps basics:

- Thematic Maps. Geog 160 Mapping Our Changing World. PennState. [https://www.e-education.psu.edu/geog160/c3\\_p14.html](https://www.e-education.psu.edu/geog160/c3_p14.html)

Cartography basics (and how to avoid making misleading maps):

- Maps and Geospatial Revolution. By PennState. [https://www.e-education.psu.edu/maps/l5\\_p1.html](https://www.e-education.psu.edu/maps/l5_p1.html)
- From coronavirus to bushfires, misleading maps are distorting reality. <https://firstdraftnews.org/articles/from-coronavirus-to-bushfires-misleading-maps-are-distorting-reality/>

# Recommended Learning Resources- Con't

- Choosing Colors In Maps and the geospatial revolution by Penn State: [https://www.e-education.psu.edu/maps/l5\\_p5.html](https://www.e-education.psu.edu/maps/l5_p5.html)