



CRP 4080: Introduction to Geographic Information Systems for planners

Lecture 2: Thematic Mapping (continue...)

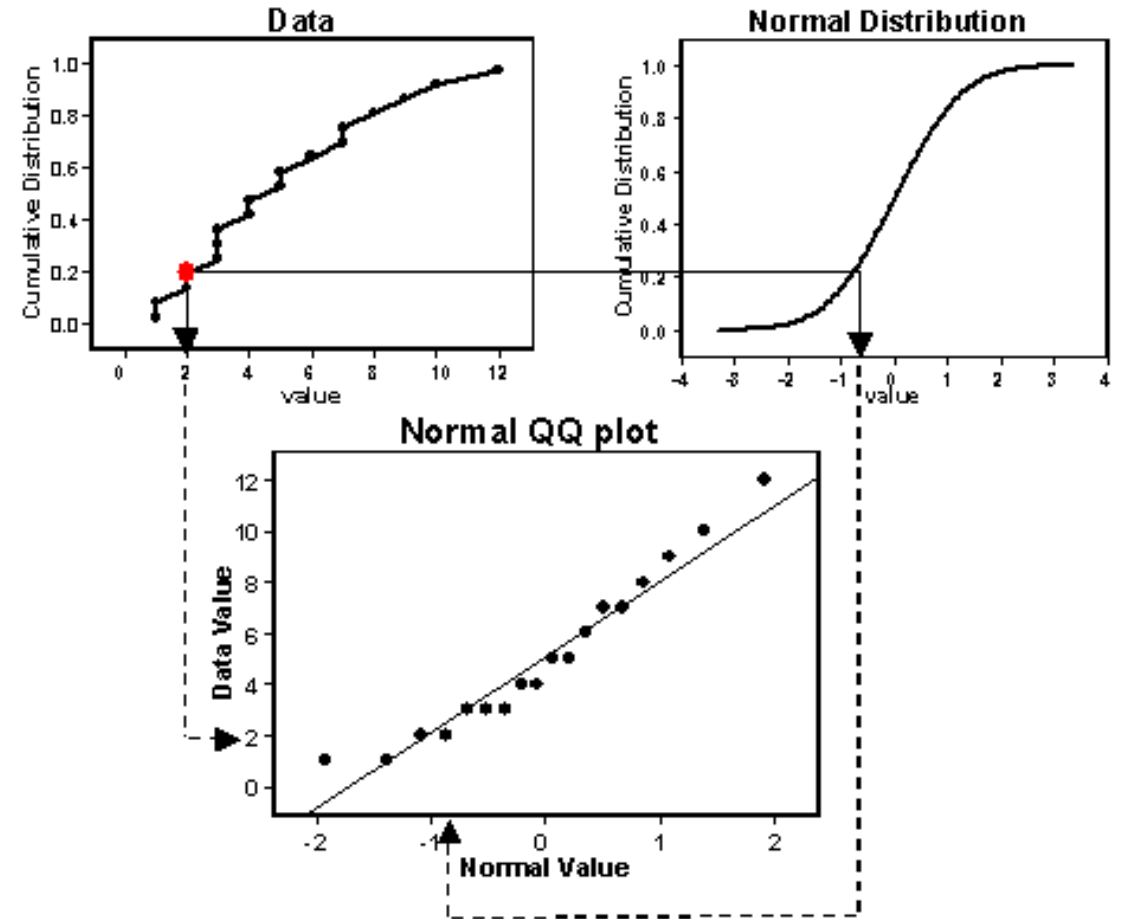
Wenzheng Li, Ph.D.
City and Regional Planning
Fall 2024

Announcement

1. Lab 1 is due on next Tuesday (Sep 10th)
2. Lab 2 is due on Next Thursday (Sep 12th), Please plan ahead!
3. TA's Office hour: Wednesday, 4:30pm – 6:30 pm at Sibley 305
4. Instructor office hour: Tuesday, 3-6pm by [appointment](#)

Exploratory spatial data analysis: Normal QQ plot

- A Q–Q plot is used to compare the shapes of distributions by plotting their quantiles against each other.
- 2 distributions are plotted relative to each other. If the two distributions being compared are similar, the points in the Q–Q plot will approximately lie on the line $y = x$.
 - Normal QQ Plot is created by plotting data values with the value of a standard normal where their cumulative distributions are equal
 - General QQ Plot is used to assess the similarity of the distribution of two datasets.

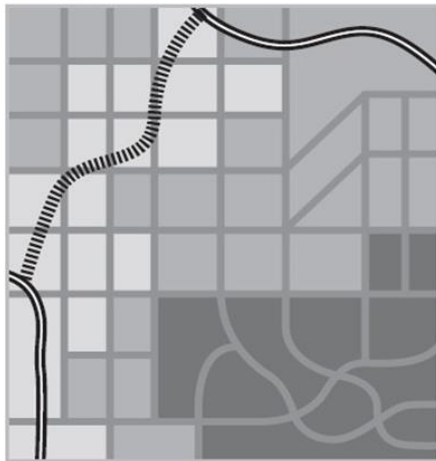


Normal QQ Plot

What is the message?

Goal: The County Chamber of Commerce shows the shortest and least costly route for the connector. They focus on property values:

Good:



Property Values: ■ high ■ med. ■ low

Goal: A community group contends the connector will devastate the African American community by cutting it in half:

Good:



% African Amer: ■ high ■ med. ■ low

Goal: A historical preservation group shows that historical properties in a historical district will be adversely affected:

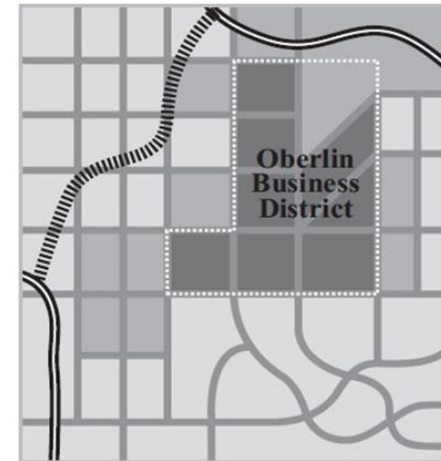
Good:



% Historical Buildings: ■ high ■ med. ■ low

Goal: The Oberlin Business Association argues the proposed road will siphon traffic and thus business away from their members:

Good:



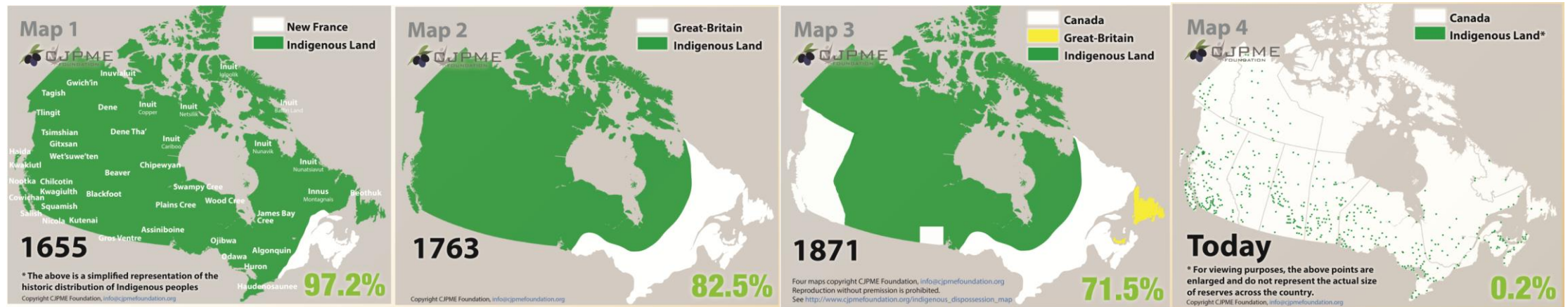
Density of Businesses: ■ high ■ med. ■ low

From: *Making Maps: A Visual Guide to Map Design for GIS* by John Krygier and Denis Wood

Mapping and Counter-Mapping

Mapping and Counter Mapping: a form of mapmaking used by communities or groups who are often marginalized or excluded from mainstream maps, to represent their own spatial knowledge and perspectives (based on Peluso, 1995) - challenge the dominant narratives in conventional maps.

Indigenous Land Rights in Canada



The mid-17th century
arrival of French

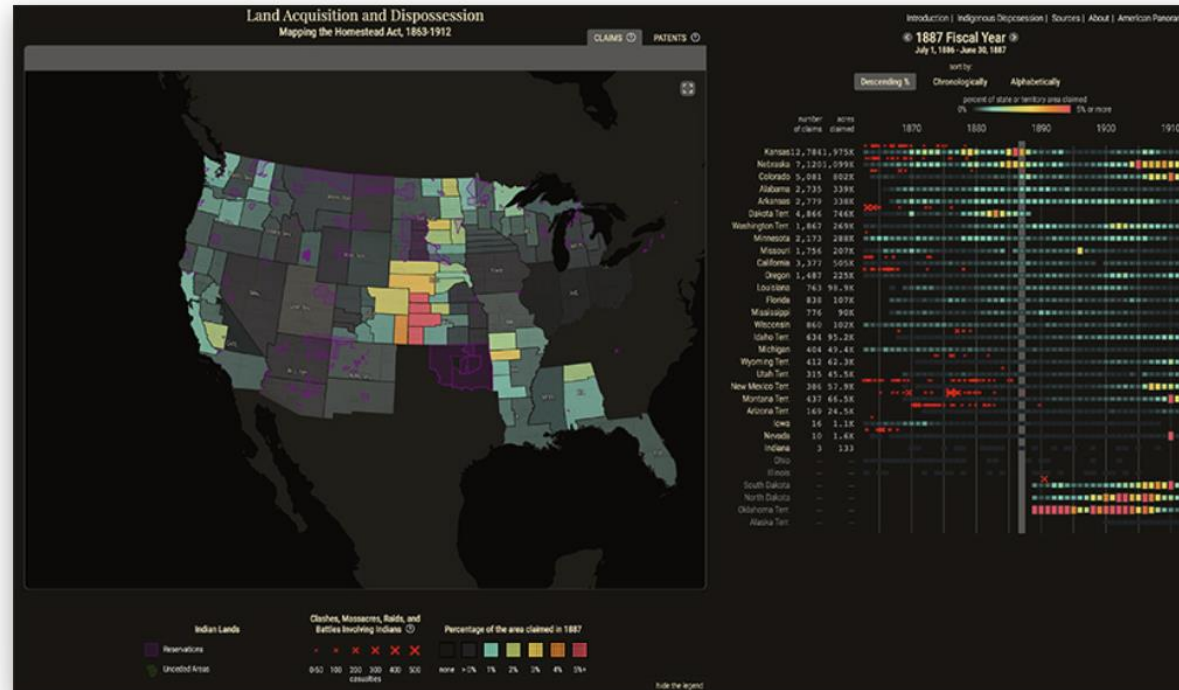
the British Empire had gained
control of France's colonies

Canadian government set its
sights on developing the land in
the West

Colonization and the
dispossession continues...

Source: https://www.cjpmefoundation.org/indigenous_dispossession_map

Mapping and Counter-Mapping



Land Acquisition and Dispossession

Mapping the Homestead Act

1863-1912

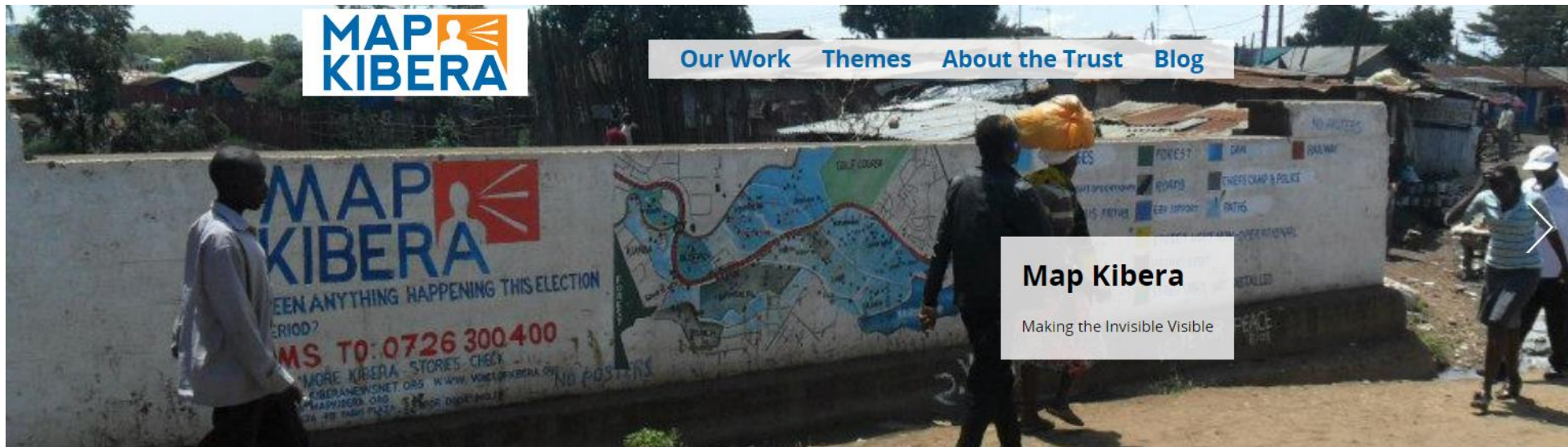
The Homestead Act of 1862 offered Americans the opportunity to claim parcels of "public land," occupy and improve it for five years, and then receive title to it. This map visualizes over time and space the more than 2.3 million claims and 900,000 "patents" granting ownership made and issued in the half-century after passage of the act. By 1912, homesteaders had transformed more than 125 million acres—more than 5% of the total acreage of the entire United States—from public lands to private property.

During the same period, Americans and their government dispossessed Native Americans of large portions of the American West. While not doing it full justice, this map pays particular attention to the dispossession of those lands through violence and claims on Indian reservations that the federal government defined as "surplus."

[American Panorama](#): An Atlas of United States History

Mapping and Counter-Mapping

Community Mapping of Slums - Kibera Slum Mapping Project (Kenya)



Kibera in Nairobi, Kenya, was a blank spot on the map until November 2009, when young Kiberans created the first free and open digital map of their own community. Map Kibera has now grown into a complete interactive community information project. We work in **Kibera**, **Mathare** and **Mukuru**, use all these **tools**. **Get in touch!**

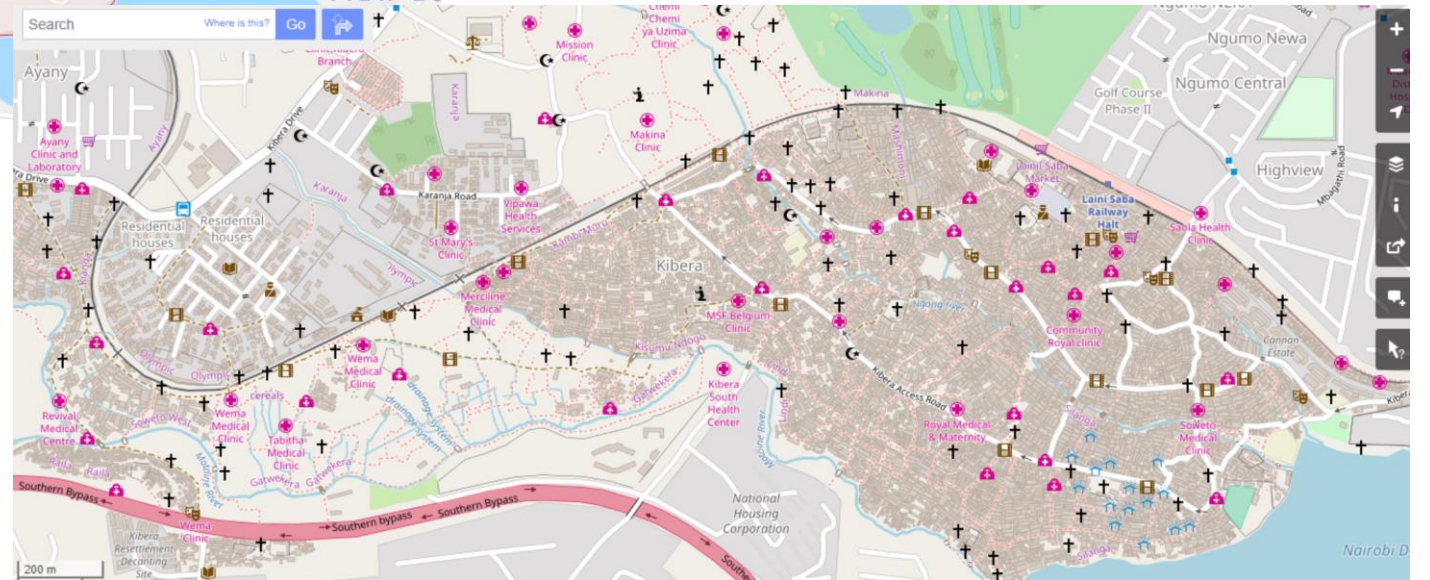
Source: <https://mapkibera.org/>

Mapping and Counter-Mapping

Community Mapping of Slums - Kibera Slum Mapping Project (Kenya)



Google map



OpenStreetMap

Source: <https://mapkibera.org/>

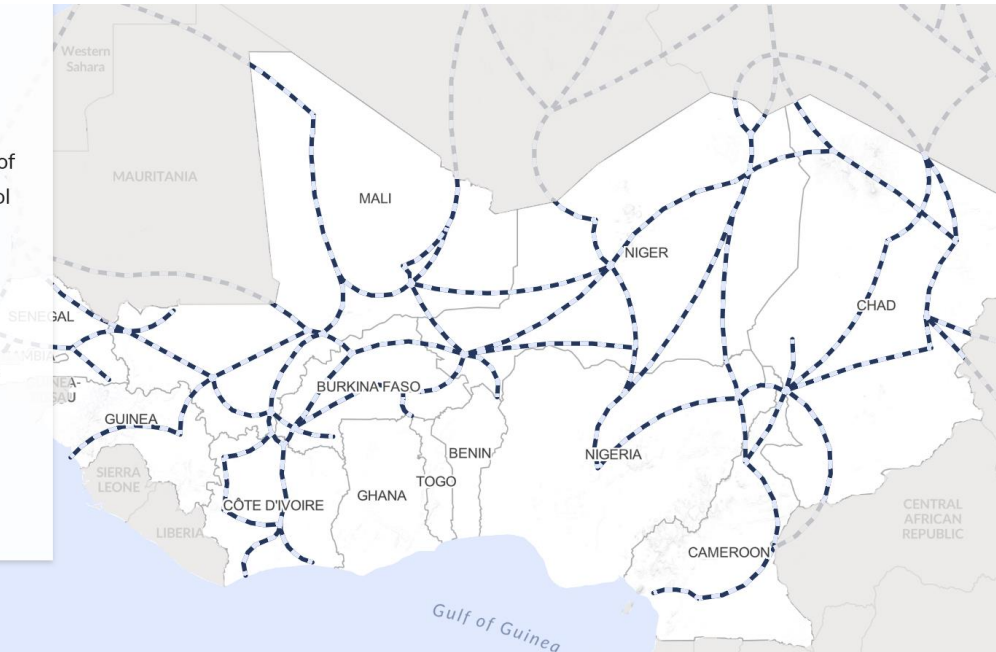
Mapping and Counter-Mapping

Mapping Refugee Journeys - *Refugee Crisis Mapping*

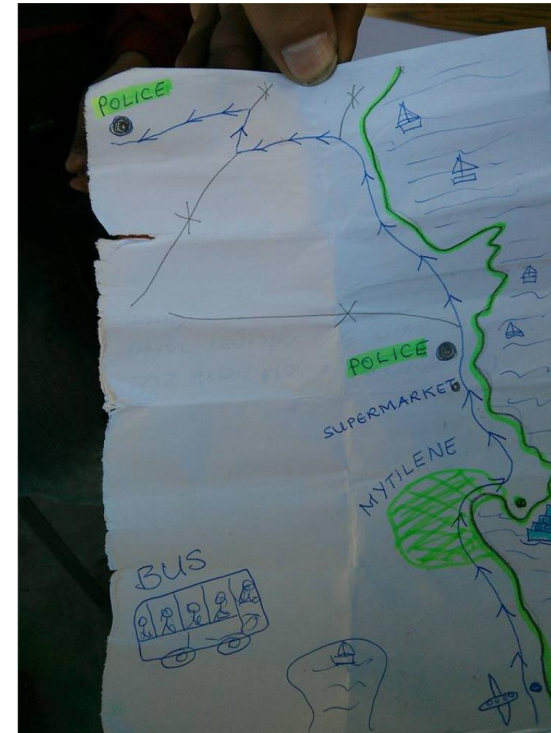
Routes from West and Central Africa

In this region, Economic of Community of West African States (ECOWAS) protocol allows citizens of the regional bloc to travel freely, reducing reliance on smugglers. However, the recent withdrawal of Burkina Faso, Mali and Niger following military takeovers have complicated this dynamic.

The West Africa routes run via Burkina Faso, Mali, Niger and Chad.



Source: Death in the Desert



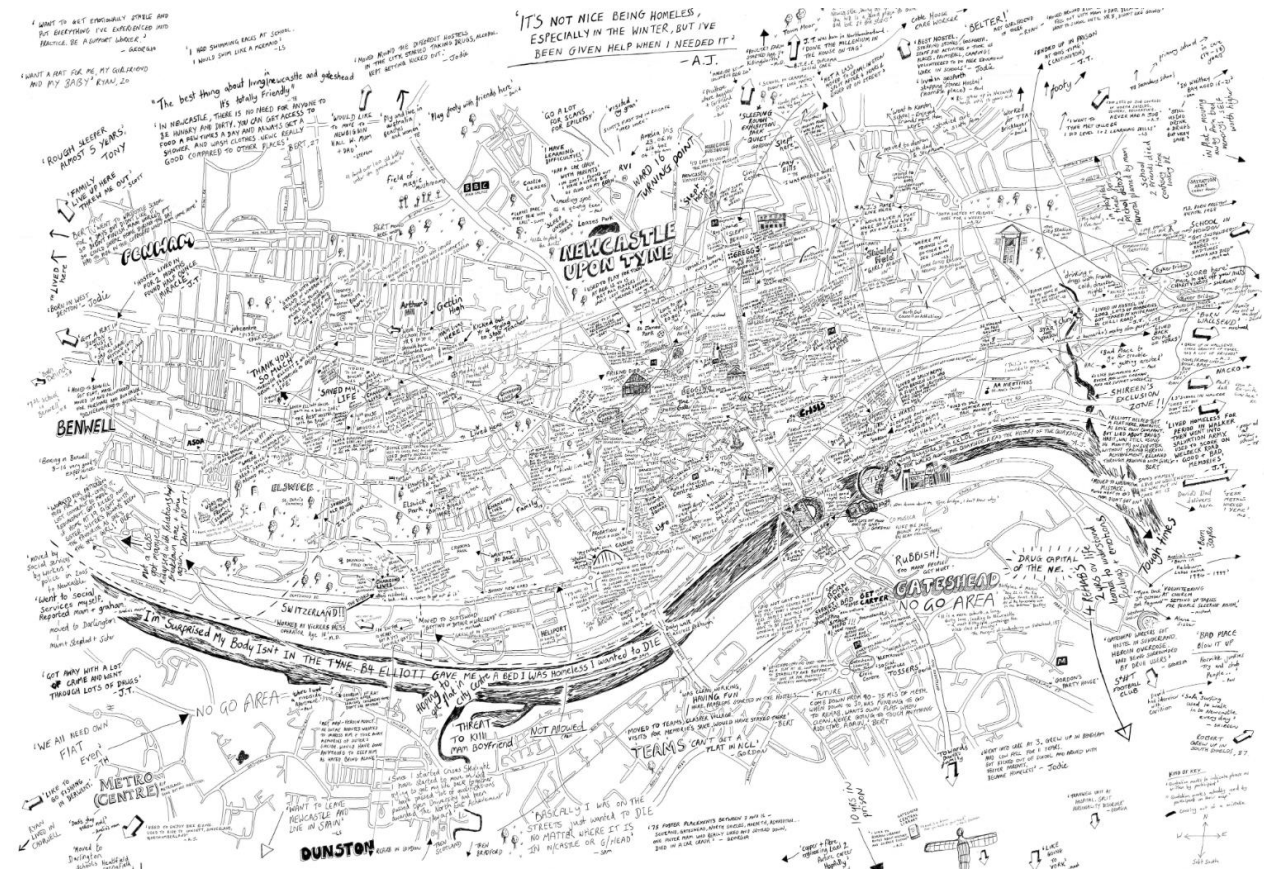
Hand-drawn map given to refugee by volunteer. Many Afghan refugees have no smartphones or access to digital maps (Credit: Dimitris Skleparis).

Source

Mapping and Counter-Mapping

Further Cases:

- participatory Mapping of Homelessness-
Imaging Homelessness in a City of Care (UK)



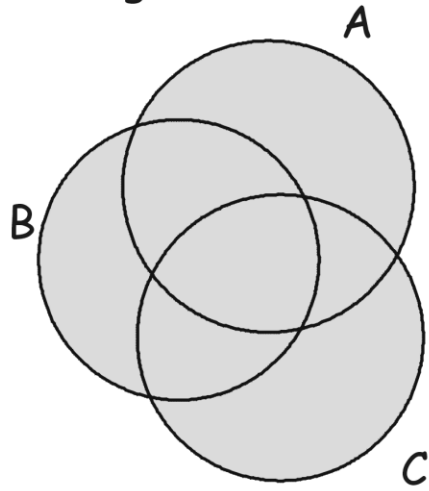
A counter-map with a magnified inset, produced by the project “Imaging Homelessness in a City of Care,” a participatory mapping project undertaken with 30 single homeless people in Newcastle-upon-Tyne, U.K., in 2014.

Interactive Mapping Software

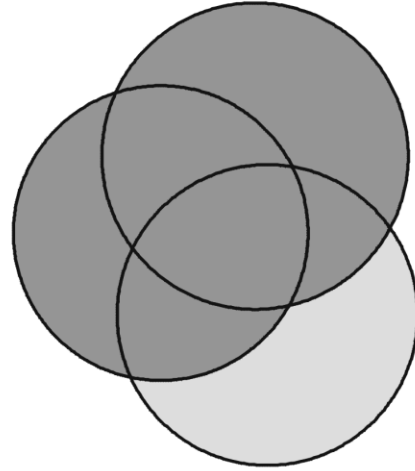
MapBox

ArcGIS [StoryMaps](#)

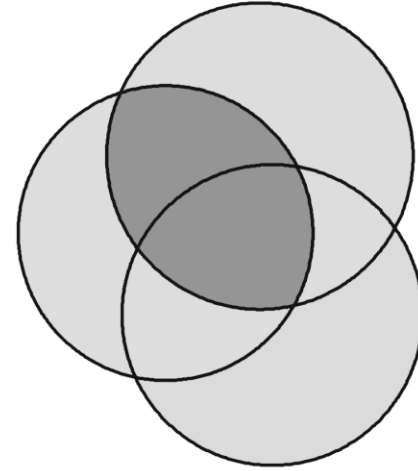
Regions



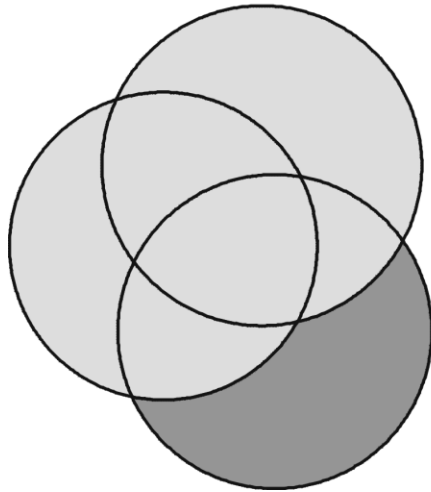
$A \text{ OR } B$



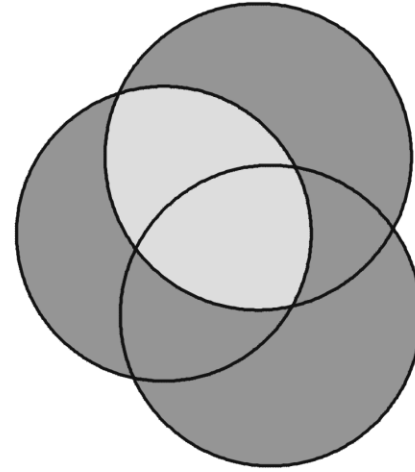
$A \text{ AND } B$



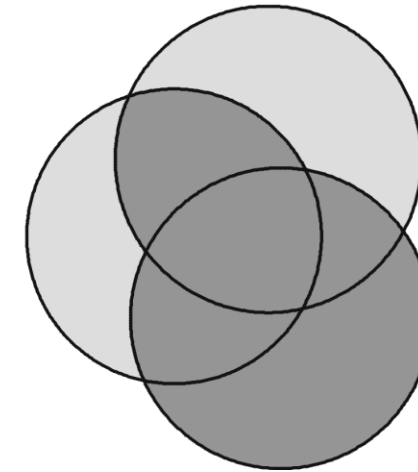
$\text{NOT}(A \text{ OR } B)$



$\text{NOT}(A \text{ AND } B)$



$(A \text{ AND } B) \text{ OR } C$



Set theory: Boolean expressions