Data Visualization & Design

Week 9

Introduction to **mapping**

Map types

- **Reference —** Spatial without emphasis
  - (ex. Topographic features, transportation routes)
- **Thematic —** Special theme or focus
  - (ex. Precipitation)
- **Special purpose —** Industry-specific
  - (ex. Navigation map)

Elements of a thematic map

- Scale
- Base map & thematic data
- Cartographic generalization
  - Selection
  - Classification
  - Simplification
  - Symbolization
- Qualitative or quantitative

Choropleth

Source

Choropleth

- Polygon
- Shaded regions
- Variability and difference
- Predefined boundaries

Considerations

- Bucketing
- Level of abstraction
- Modifiable area unit problem (MAUP)
- Can overemphasize difference

Choropleth

Total Population of 2000 Census Block Groups
Population Density of 2000 Census Block Groups
Logan Airport
Logan Airport
POPULATION
0 - 770
771 - 986
987 - 1251
1252 - 1665
1666 - 6131
POP. / ACRE
0.00 - 1.22
1.23 - 3.60
3.61 - 8.41
8.42 - 20.31
20.32 - 210.75

Dot

Ridgefield Park
Leonia
Fort Lee
Ridgefield
Rutherford
Mill Creek Point Park
North Bergen
New Jersey
New York
Hackensack River
Secaucus
Union City
Weehawken
Hoboken
Jersey City
New York
Upper Bay
Queens Midtown Expy
Bay Park
Sands Point
Manorhaven
Manhasset Bay
Port Washington
Flower Hill
Great Neck
Little Neck Bay
Great Neck Plaza
North New Hyde Park
Floral Park
Franklin Square
Elmont
North Valley Stream
Valley Stream
Belt Pkwy
Van Wyck Expy
North Woodmere Park
Hewlett
Woodmere
Inwood
Jamaica Bay Wildlife Refuge
Floyd Bennett Field
East Atlantic Beach
Gravesend Bay
Ocean Avenue
Avenue R

Source

Dot

- Point
- Spatial density

Considerations

- Especially reductive — isolated events
- High-density areas make comparisons difficult

Proportional Symbol

Source

Proportional Symbol

- Point
- Larger symbol = more at location
- Most often, area of proportional 2D symbol encodes data
- Possible to create compound symbols

Considerations

- Overlapping symbols
- Ambiguous centers
- Can get congested

Isopleth (Contour)

Source

Isopleth (Contour)

- Data not grouped into predefined boundaries
- Good for showing gradual change between areas

Considerations

- Not good for showing discontinuous distributions
- Need lots of data

Cartogram

Source

Cartogram

- Substitutes thematic mapping variable for land area
- Tries to preserve general features

Considerations

- Distortion

Introduction to mapping with **QGIS** and **CARTO**