BOSTON UNIVERSITY

CS 591 Data Mechanics

A Characterization of Neighborhood Wealth and New Hospital Location Optimization

Cody Karjadi
John Gonsalves

Narrative:

- Why are certain neighborhoods more wealthy than others?
- How do we best distribute resources such as new hospitals?
- Does neighborhood wealth have any correlation with the number of hospitals?

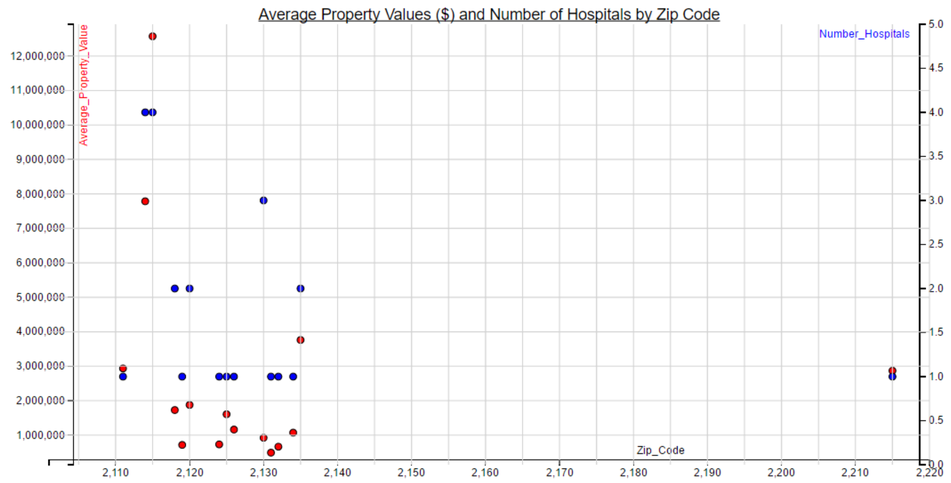
Introduction and Purpose:

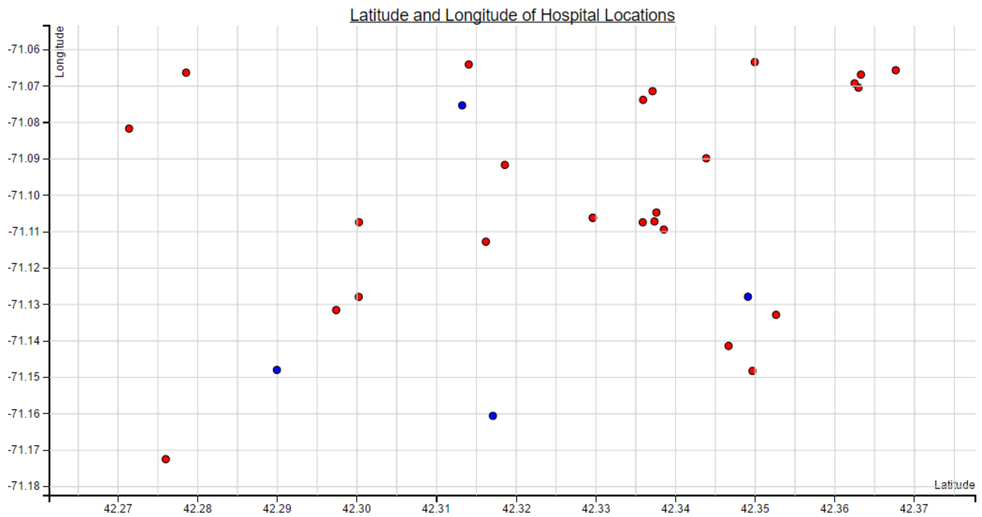
- Characterize local wealth by average property value.
- Analyze correlations with average property value and other factors.
- Calculate optimal locations for new hospitals.

Calculations:

- Correlations between average property value and hospitals, community gardens, fast food restaurants, food pantries, and crime incidents.
- Where to place new hospitals in order to relieve weight of crimes + traffic jams.

Data Visuals





Correlation and P Values:

Dataset	Dataset	Correlation	P-Value
Average Property Value	Community Gardens	-0.28	0.943
Average Property Value	Crime Incidents	-0.172	0.674
Average Property Value	Fast Food	0.358	0.043
Average Property Value	Food Pantries	-0.355	0.958
Average Property Value	Hospitals	0.793	0.0027

Correlations:

- Hospitals, Fast food; only results significant by p value.

Algorithms:

- Clustering: crimes and traffic jams were clustered to the closest hospital.
- 3D K-Means: (lat, long, crimes+jams) passed into k-means.

Next Steps / Conclusions:

- Boston is incredibly complex.
- Find more precise ways to define neighborhoods.
- Weigh datasets by specific criteria (e.g. crime incidents by type of crime)
- Make new hospital locations more realistic (a given lat/longitude may not be feasible to build on).