ComputerScience

Research of Factors Correlated with Crime Incidence in Boston Area (CS591 L1)

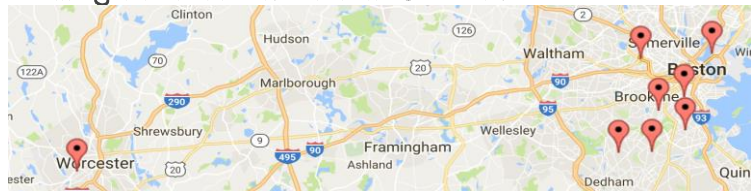Jiadong Chen, Bowen Yang, Xiao Lu

Introduction& Background:

According to the research, the crime rate in Boston is 6% higher than the national average and 45% higher than the Massachusetts Average. In this project our team aims to find out which factors are correlated to the crime locations so that police can pay more attention to those area.
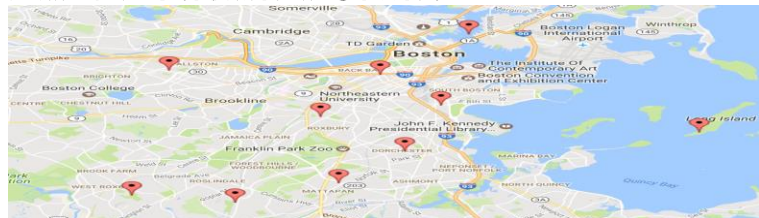
Methodology:

In this project, I uses the geojson datasets of city of Boston, the garden and crime locations' scale is too large so I use k-means(k=10) to classify them into 10 clusters for later computing. (G: the garden locations, C: crime locations, L: liquor locations and P: property assessment locations, each represented as (latitude, longitude)).Firstly I calculated the distance between each point in G to its closest point in C, and the reverse. If the average distance are all close and the standard deviations are both small, then I can determine that the garden locations are highly correlated with crime rate, which implies that they are dangerous. The same methodology can be applied to liquor store location and property assessment.
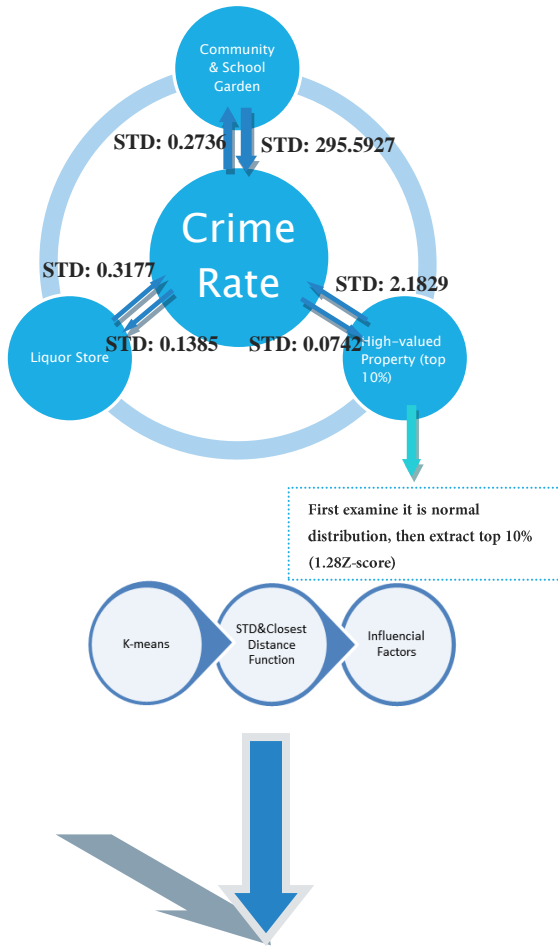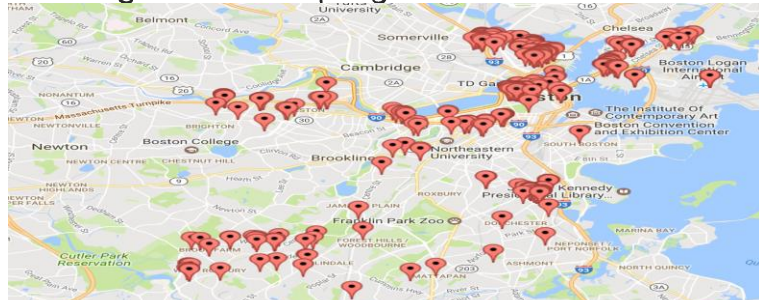
Main garden distribution in Boston:

Main Crime location in Boston:

Main High-valued Property in Boston Area:

Community & School Garden

STD: 0.2736   STD: 295.5927

Crime Rate

STD: 0.3177

STD: 2.1829

STD: 0.1385   STD: 0.0742

Liquor Store

High-valued Property (top 10%)

First examine it is normal distribution, then extract top 10% (1.28Z-score)

K-means → STD&Closest Distance Function → Influencial Factors

Conclusion:

After all, we are able to draw the conclusion that the liquor store location and high-valued property are correlated with crime rate. Yet the garden locations are not that necessary.

Data Resource:
- Boston Crime Incident Reports (July 2012 - August 2015)
- Boston Property Assessment (2016)
- Locations of Liquor Licenses in Boston (2016)
- School Gardens in Boston (2013)
- Community Gardens in Boston (2013)

(All by City of Boston)