Mapping Gentrification and Crime Incidents Rate in Boston

Project Description

Gentrification is usually defined as "the process of renewal and rebuilding accompanying the influx of middle-class or wealthy people into deteriorating areas that often displaces poorer residents" (Freeman 2005). When low income residents are pushed out of the neighborhood, the crime rate falls because high income residents generally have low crime rates (Lawrence 2013). The main purpose of this project is to track gentrification of Boston between 2000 and 2015 using census data at block group level, identify the area that are experiencing gentrification and analyze whether these areas correlate to the areas that have low crime rates.

Data and Methodology

The five indicators in gentrification analysis are selected from the Seattle assessment report in 2015--four of them are from vulnerability category and another one is from amenities category: the percentage of renters, communities of colors, residents over 25 without a Bachelor's degree, median households income, and access to MBTA.

Each Indicator was classified into five groups based on Natural Breaks classification method and was reclassified on a scale of 1-5 where a higher score represents a higher gentrification level Every block group gets evaluated based on the above criteria and the scores on the five factors are added to get the overall score.
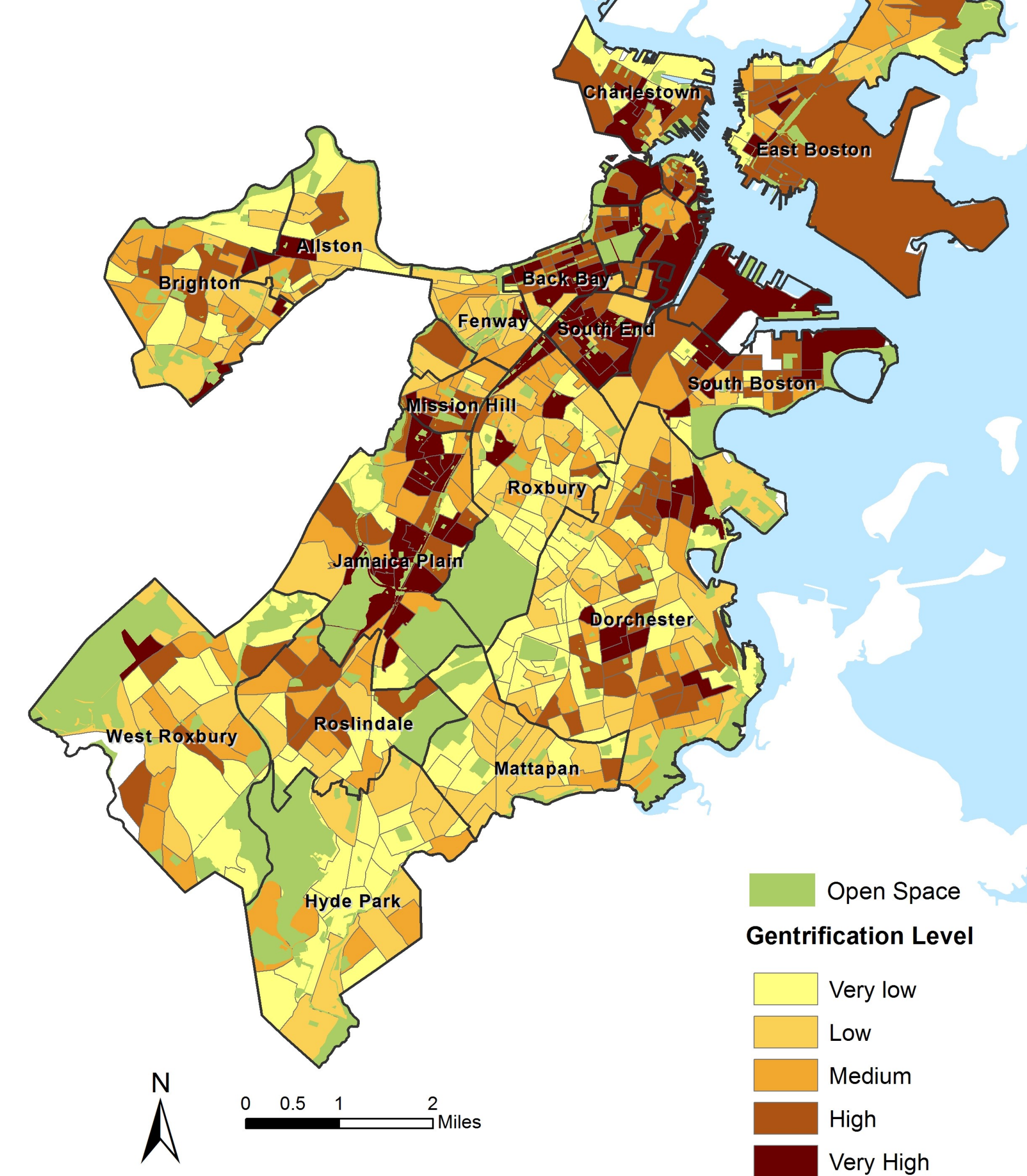
Indicators	Weight	Score	Final Score	Gentrification Level
Increase in White Population (percentage points change)	0.2	1-5	1.2-2.4	Very Low
Increase in Population over 25 without a Bachelor's Degree (percentage points change)	0.1	1-5	2.5-2.9	Low
Increase in Median Household Income (percentage points change)	0.3	1-5	3.0-3.3	Medium
Increase in Owner-Occupied (percentage points change)	0.2	1-5	3.4-3.8	High
Proximity to MBTA	0.2	1-5	3.9-5.0	Very High

Gentrification Indicators

Increase in White Population 2000-2015

Increase in Population over 25 with Bachelor's degree 2000-2015

Increase in Median Household Income 2000-2015

Increase in Owner-occupied 2000-2015

Proximity to MBTA
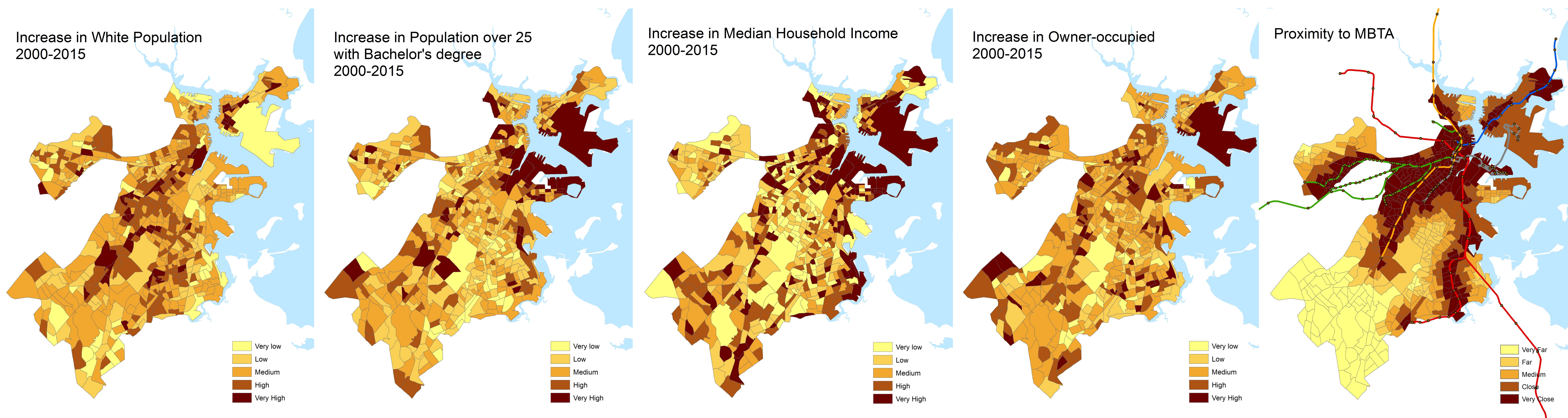
Results

Gentrification in Boston 2000-2015

Open Space

Gentrification Level
Very low
Low
Medium
High
Very High

Density of Crime Incidents in Boston 2012-2015

Open Space

Crime Incidents Rate
Very low
Low
Medium
High
Very High
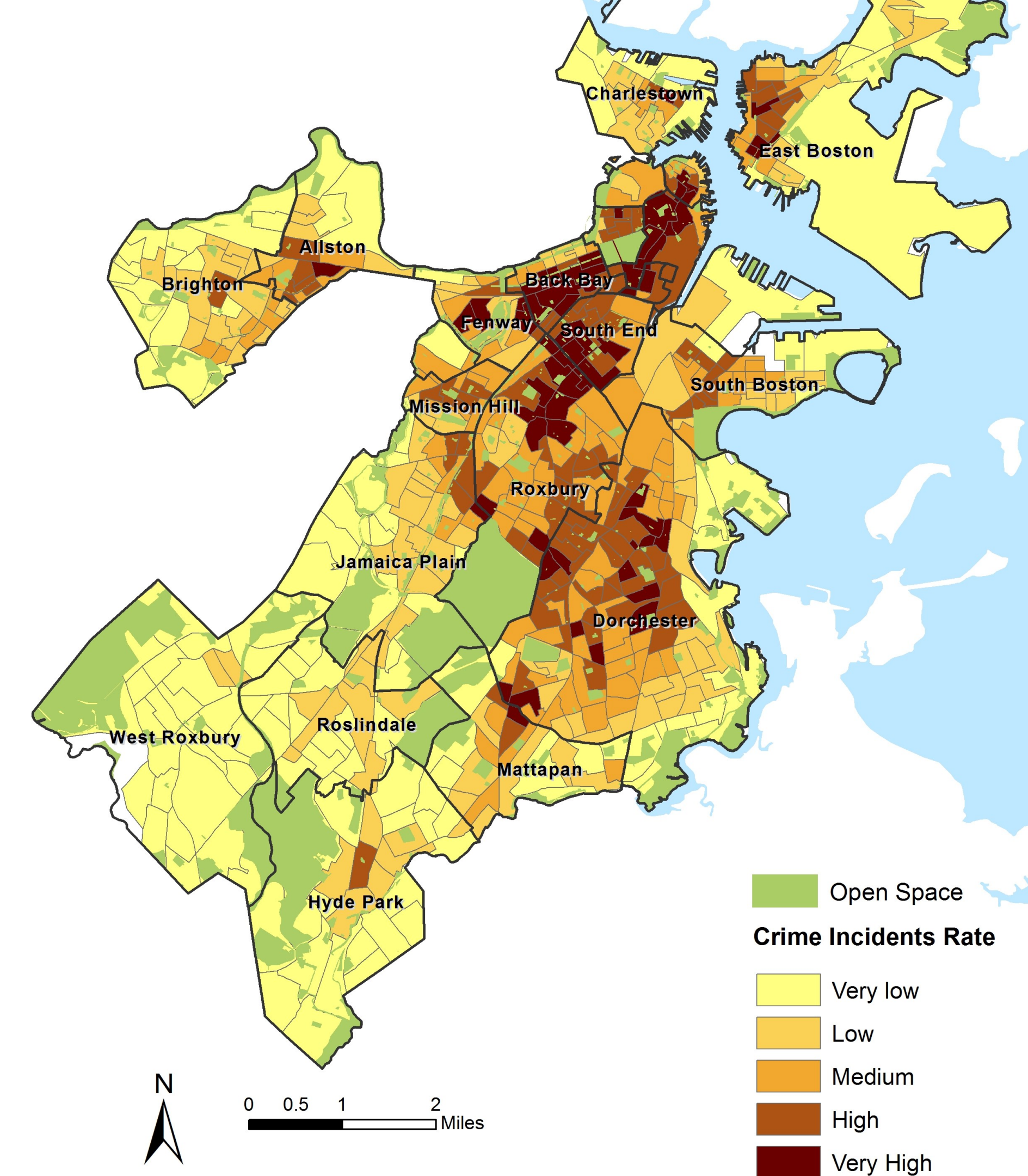
Conclusion

Among the block groups in Boston, block groups where experienced high level of gentrification mainly located in Roslindale, Jamaica Plain, Back Bay and South End, and some of them located in Charles town and South Boston. Block groups of low gentrification level mainly located in Roxbury and Hyde Park.
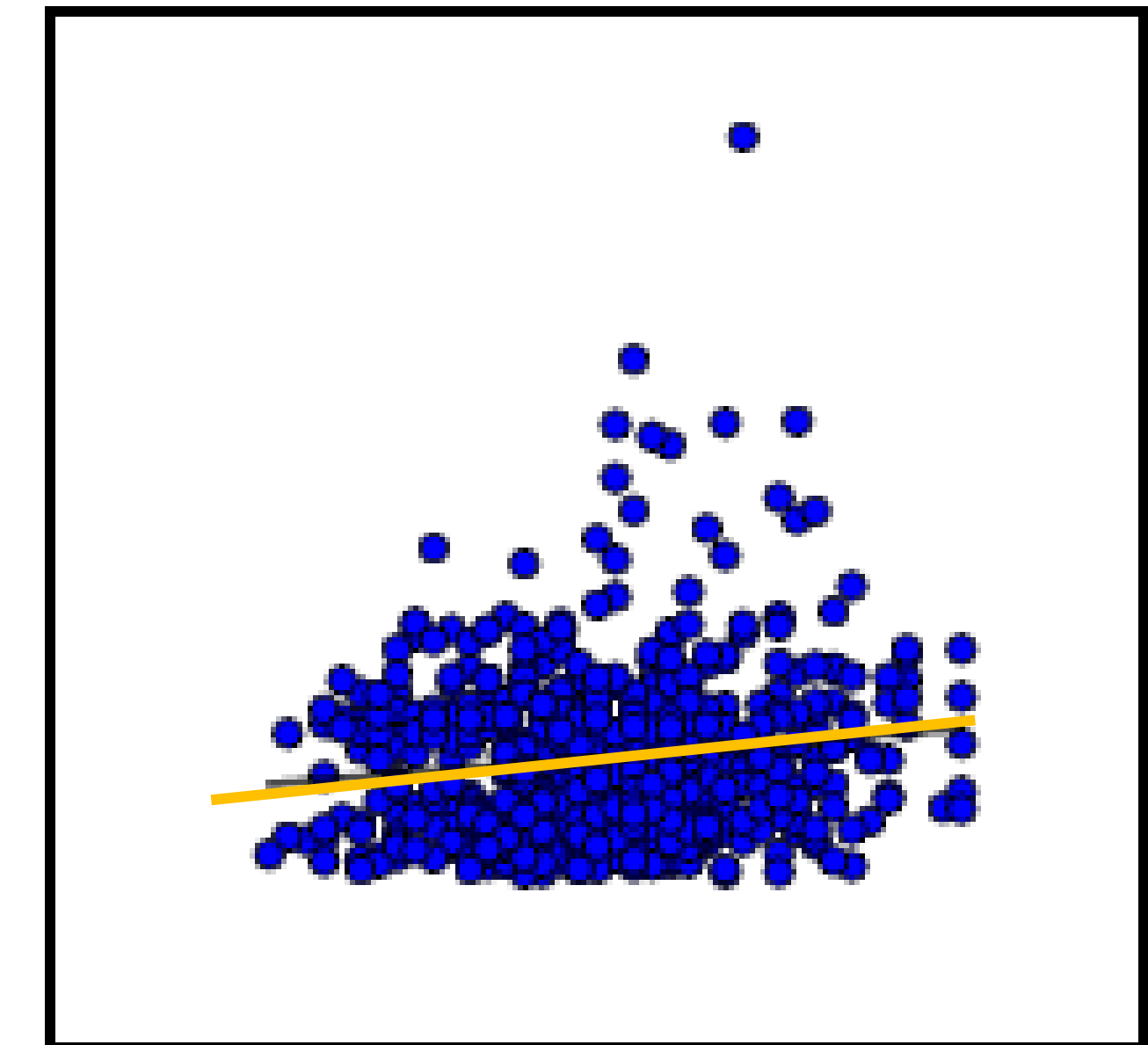
This project used OLS regression to predict whether the area experienced high level of gentrification correlate to the area with high crime incidents rate. The above graph is Scatterplots for gentrification level and crime incidents rate in Boston. The adjusted R-square is 0.015, so gentrification level and crime incidents rate have a slightly positive relationship, which contradicts my original hypothesis that high gentrification area always has low crime incidents rate.

Limitation

The selection of weight model has an important and direct influence in the overall result. A slightly change of weight for each indicator would result in that an neighborhood become more or less vulnerable to gentrify. Another limitation is the currency and accuracy of data. The gentrification map uses census data 2000 and ACS 2011-2015, but the crime incidents data are from Boston open data 2012-2015, so the time line of these datasets are not the same.

Cartography: Yi Zhong

Data: 9 May 2017

Projected Coordinate System:
NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001.

Sources:

2015 American Community Survey 5 year estimates

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