

Crimes and Firearm Recovery

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Objective:

Find if a correlation exists between the number of firearms recovered by the Boston Police Department and the number of crimes involving firearms in Boston.

Expectations:

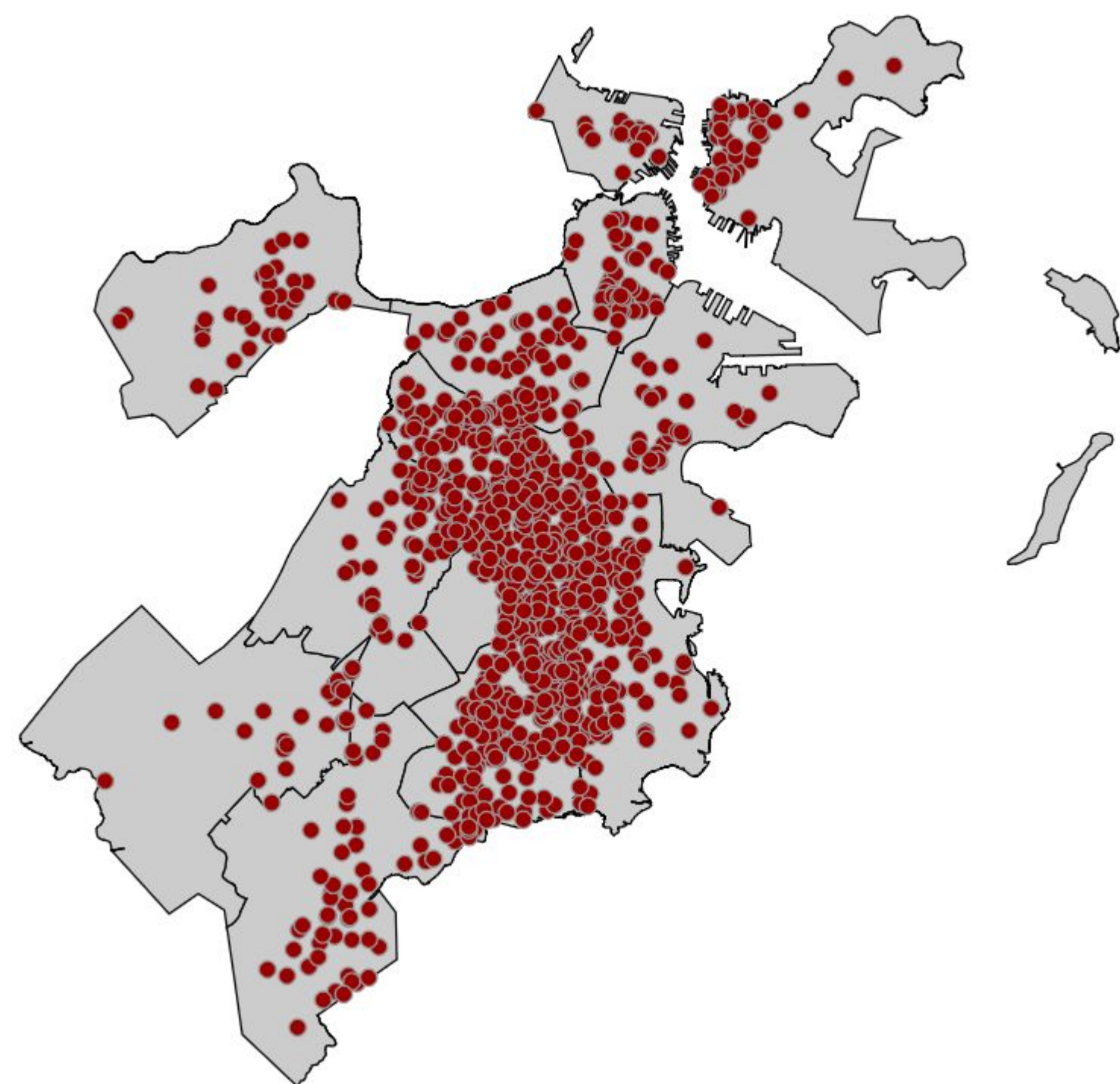
The number of crimes involving firearms should decrease after a greater number of firearms have been recovered.

Approach:

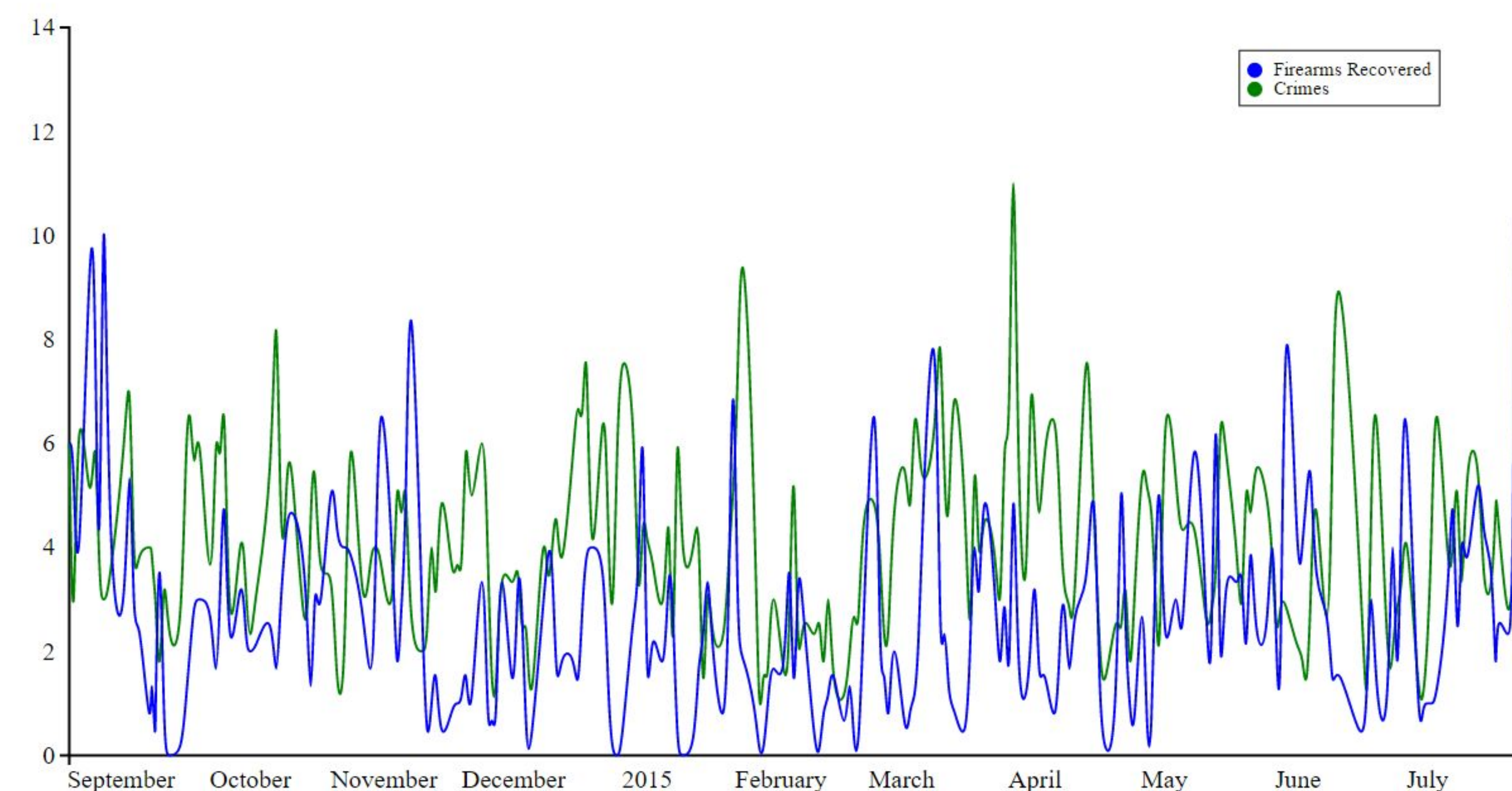
Analyze the effect of recovering firearms on the amount of firearms crimes.

Data Used:

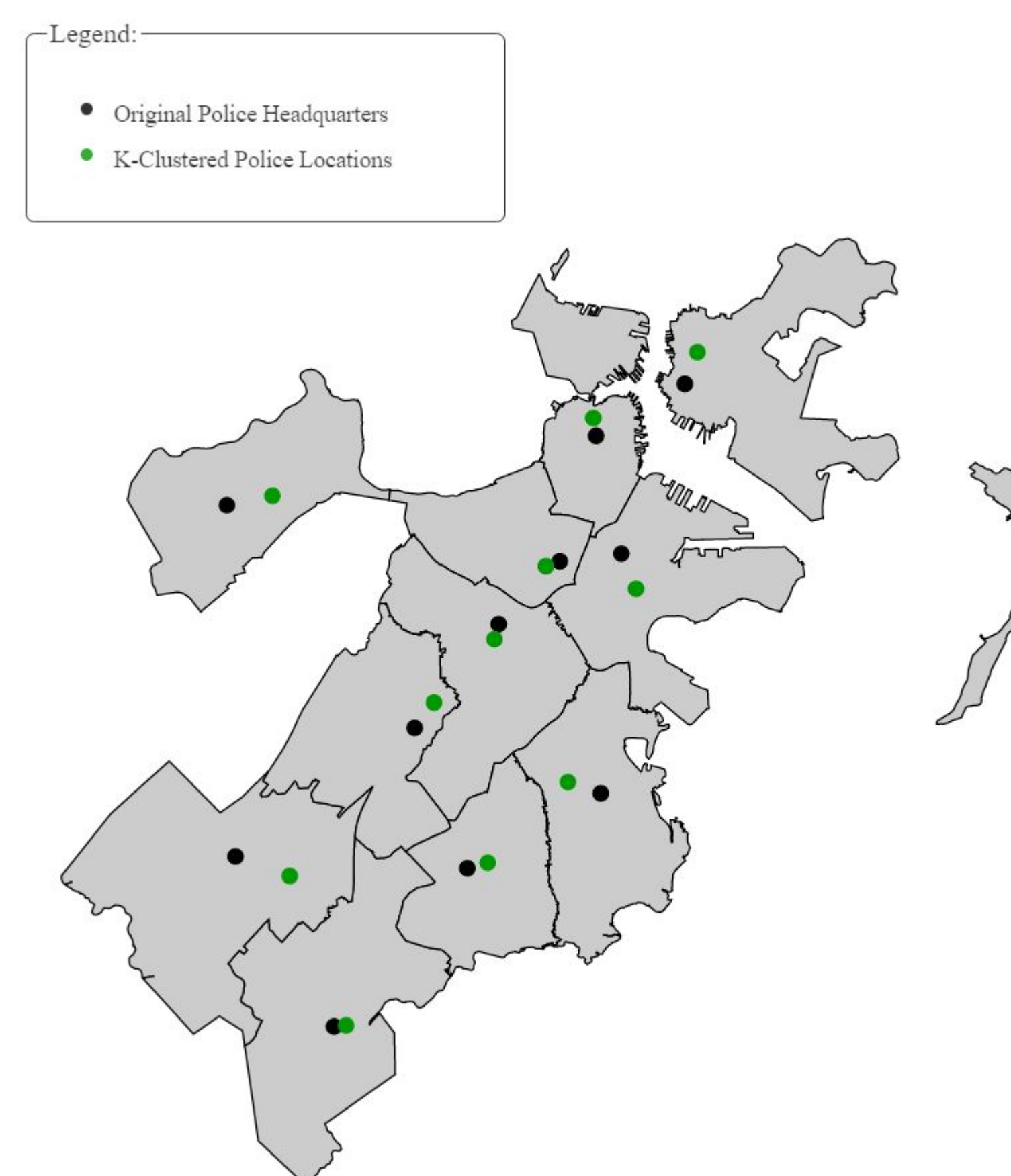
Datasets used span a one-year period, from 8/20/2014 to 7/27/2015, due to the maximum size of the Firearm Recovery Counts dataset. Police department location data used to determine in which areas of Boston firearm crimes are most frequent.



This map shows the location of each crime during this time period.



This graph shows the number of crimes involving firearms and firearms recovered by police departments in Boston from 8/20/2014 to 7/27/2015.



This map shows the locations of police departments in Boston and the average of all crime locations in each district produced by the k-means clustering algorithm.

Results:

Firearm Recovery and Crime Analysis

Before performing this analysis we believed there should be a negative correlation between the number of firearms recovered and the number of firearm-related crimes. We predicted that as the number of firearms recovered increases, the number of crimes should decrease. We found a correlation coefficient of 0.068 and a p-value of 0.29. This correlation coefficient indicates a very weak positive correlation between the data sets. However, the p-value is high so we cannot reject the null hypothesis.

Police Station Location and Firearm Crime Rate Analysis

For this analysis, we used the District Crime police station coordinates and the coordinates of where crimes occurred from the Crime dataset. In the District Crime dataset, there are 12 police stations; however, A1 and A15 police stations service the same area so we set our K means to 11 distinct police stations. For this problem, we wanted to analyze whether the current locations of the police stations are optimal against the locations of the most firearm crimes.

Conclusion:

We found no significant correlation between the number of firearms recovered by Boston police departments and the number of crimes involving firearms. However, this analysis is constrained by the limited amount of available firearm recovery data. Using the k-means algorithm, we found that police departments in Boston are ideally located at the center of areas with a high concentration of firearm crimes.