

Introduction

After browsing through Boston's Open Data Portal, we noticed that police compensation was a lot higher than we expected for officers in the city of Boston. As a result, we became interested in the allocation and distribution of police resources within the city. Towards a better understanding of that problem, we looked at: where crimes are centered among Boston's 12 police districts, and which demographics might correlate with crime incidents across districts.

We investigated three main factors taken from Boston census data: per capita income, education level (bachelor's degree or higher attained), and percentage of white non-hispanics in a neighborhood. For each of these factors we calculated the IQR to see if there were any outliers at the neighborhood level and also at the district level.

Outliers

Before beginning any form of statistical analysis, we wanted to make sure that there were no outliers in our data. If there were any outliers, that could potentially skew our results when calculating the correlation coefficient.

Using the interquartile range (IQR), we decided to see if there were any outliers for the education level data set, per capita income data set, and race and ethnicity data set. We ran this test at the district level. We found that there were no outliers according to this metric.

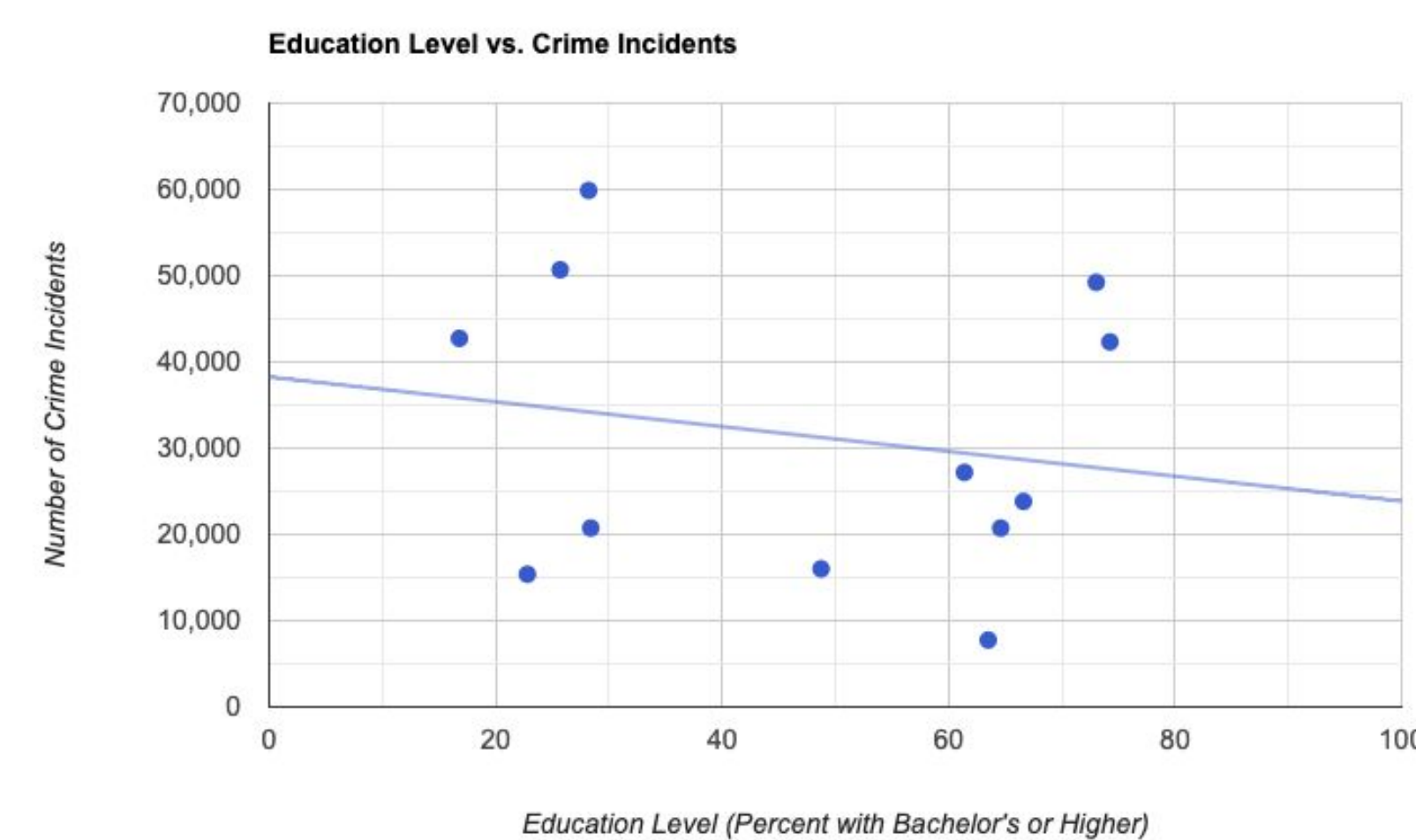
We also found the districts with the highest and lowest numbers of crime incidents to see if there was anything significant about those data points. Besides generally fitting in with the trends, these data points were unremarkable.

Is There a Correlation?

Our goal was to see if there was a strong correlation between some of the census data from the neighborhoods of Boston and the number of crime incidents. A strong correlation could help predict the amount of crime in a given district and/or neighborhood.

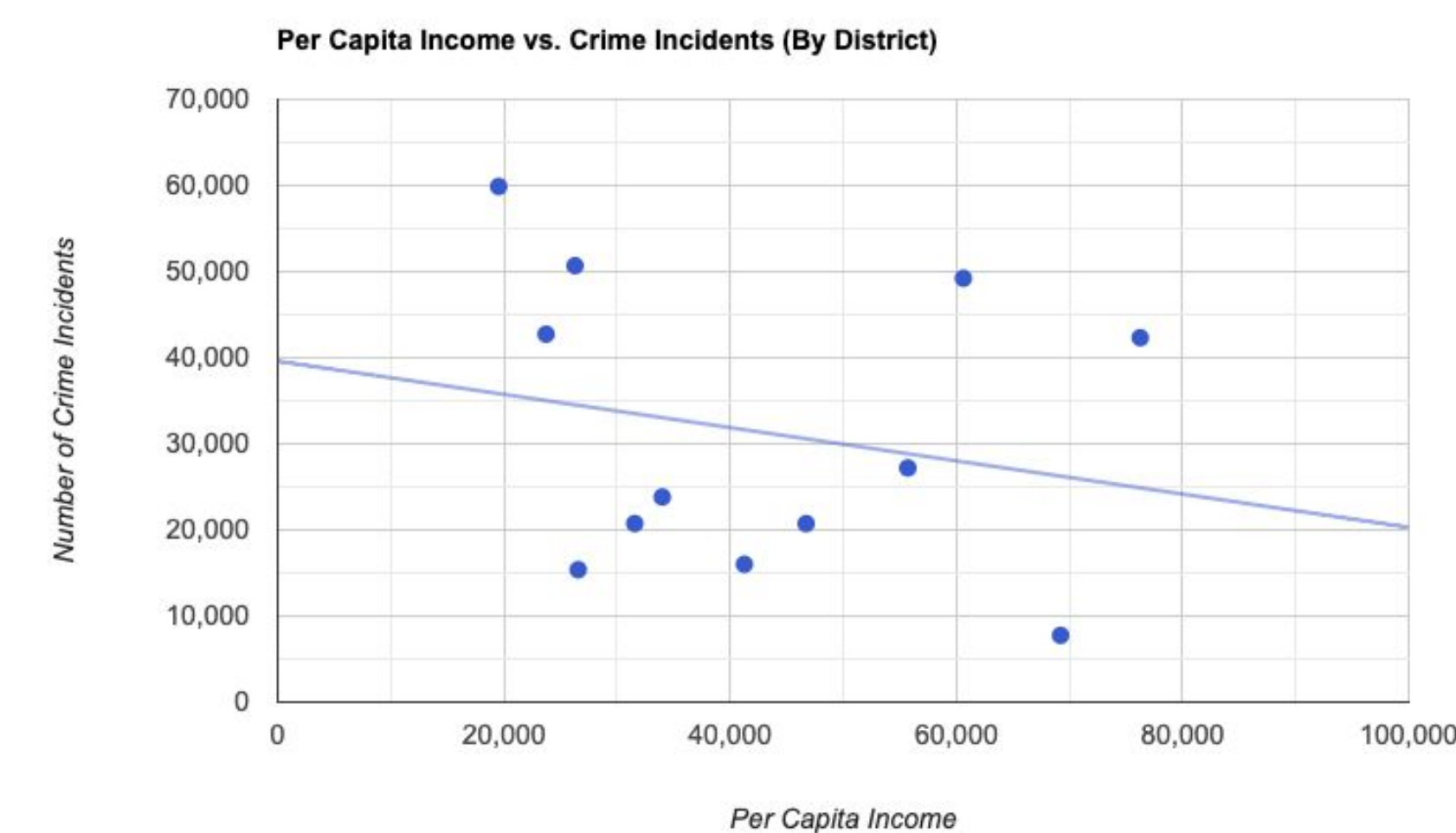
Education Level vs. Crime Incidents

Correlation Coefficient: 0.1789



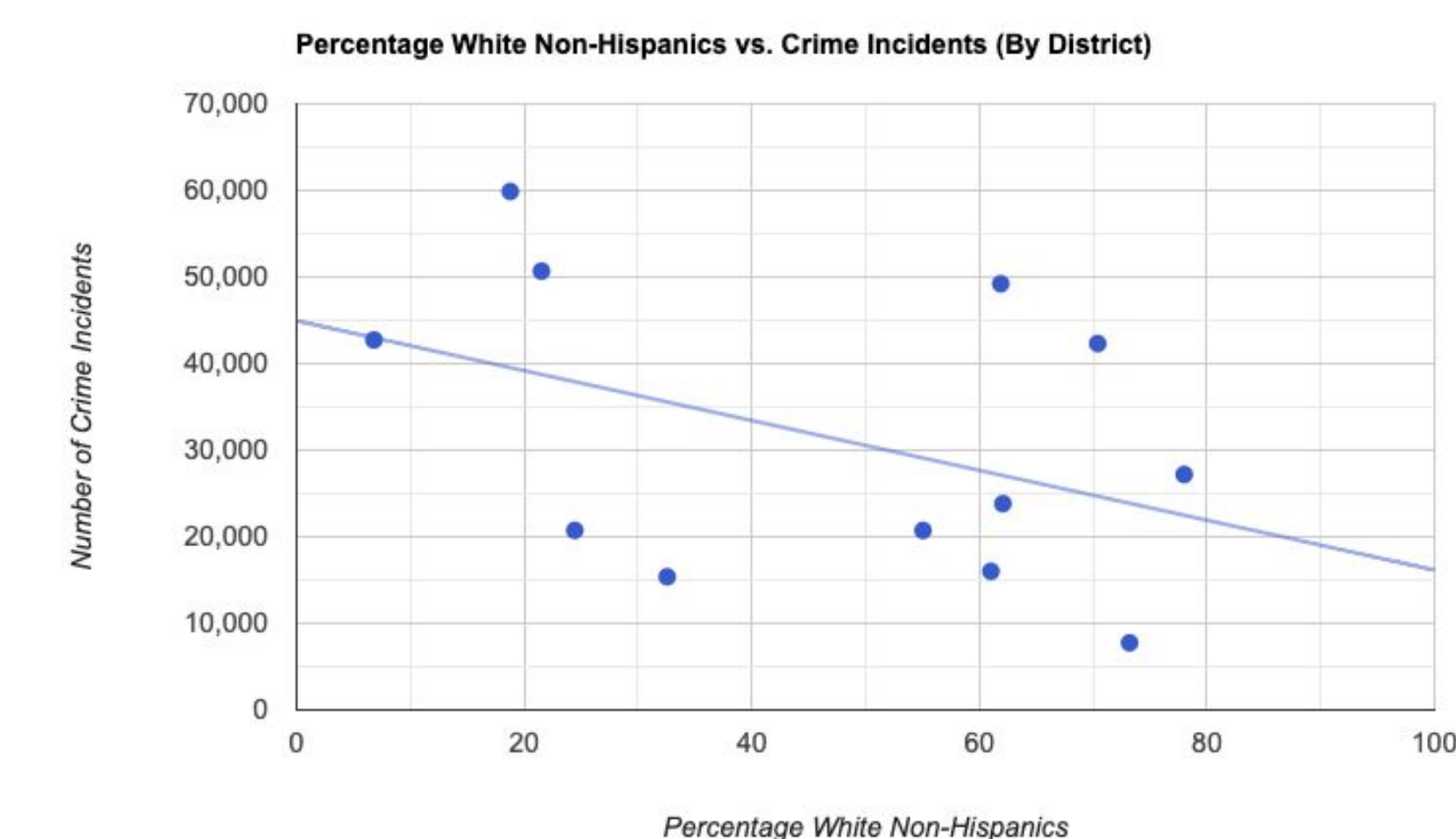
Per Capita Income vs. Crime Incidents

Correlation Coefficient: 0.0481



White Non-Hispanics vs. Crime Incidents

Correlation Coefficient: 0.0354

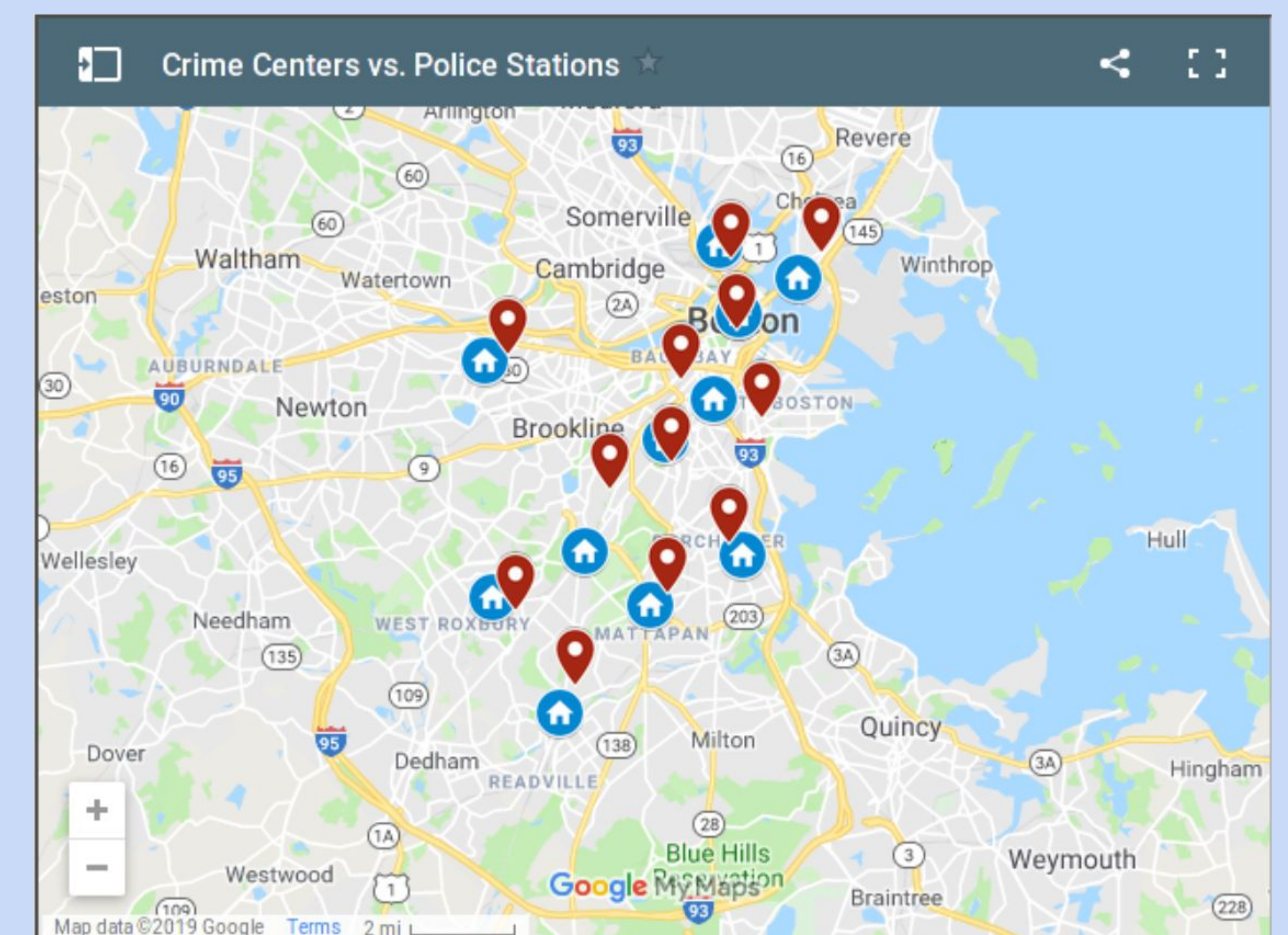


Based on these results, there is not a strong correlation between any of these data sets.

District Crime Centers

Within the City of Boston, there are 12 police districts (seen below as blue houses). We were interested in determining to what extent these districts' headquarters were located centrally to crime incidents within those districts.

Towards that end, we found the points in each district which were minimally distant from all crime incidents reported in that district (these points are seen below as red markers). There was only one district that was significantly farther away from the calculated data points.



References

1. <https://docs.digital.mass.gov/dataset/massgis-data-police-stations>
2. <http://www.bostonplans.org/getattachment/8349ada7-6cc4-4d0a-a5d8-d2fb966ea4fe>
3. <https://data.boston.gov/dataset/crime-incident-reports-august-2015-to-date-source-new-system>