

The “Broken Window” Theory

Does it Apply to Boston?

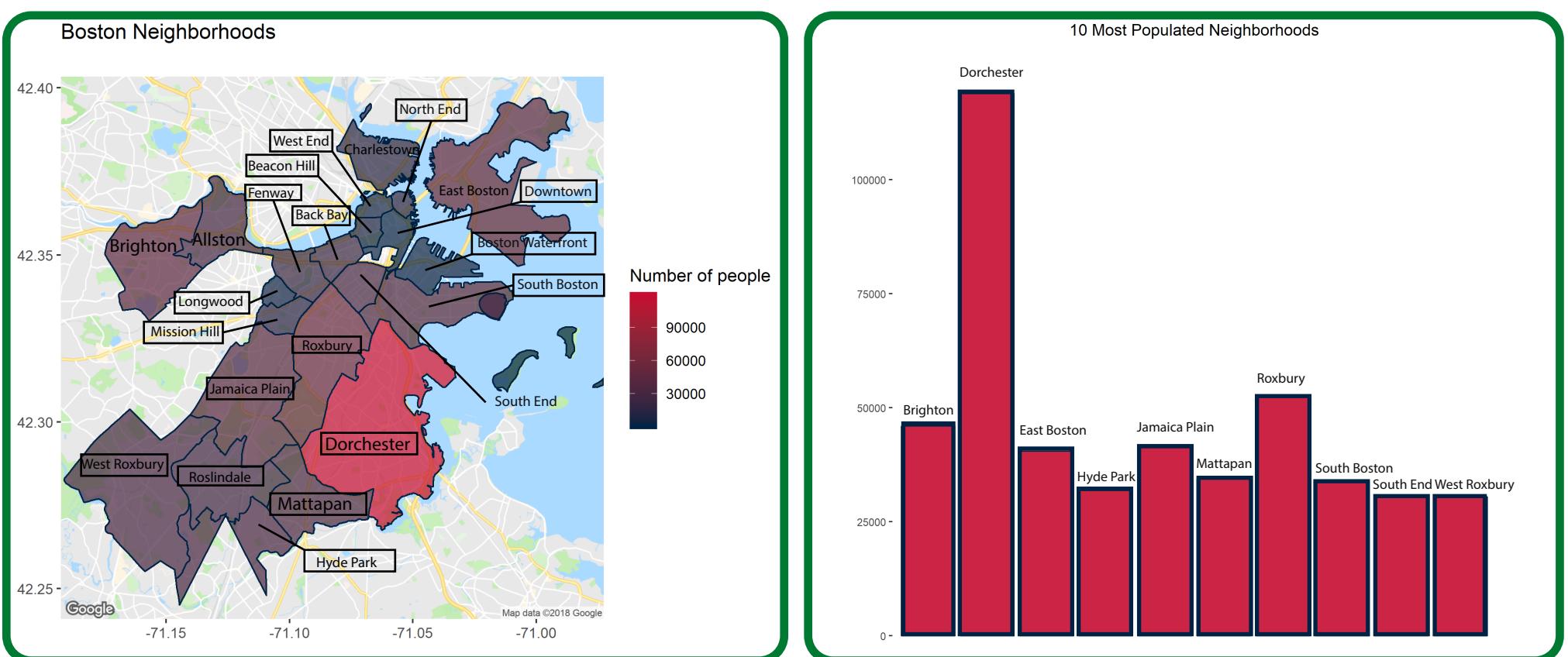
The first step is to understand what is the “Broken Window” Theory.

The broken window theory is a criminological theory that postulates that visible signs of crime, such as broken windows, create an environment that further increases crime of a given area.

Typically crime has been associated with a low socioeconomic status (SES) and plenty of research has been conducted to that effect, hence why this approach will follow a different path.

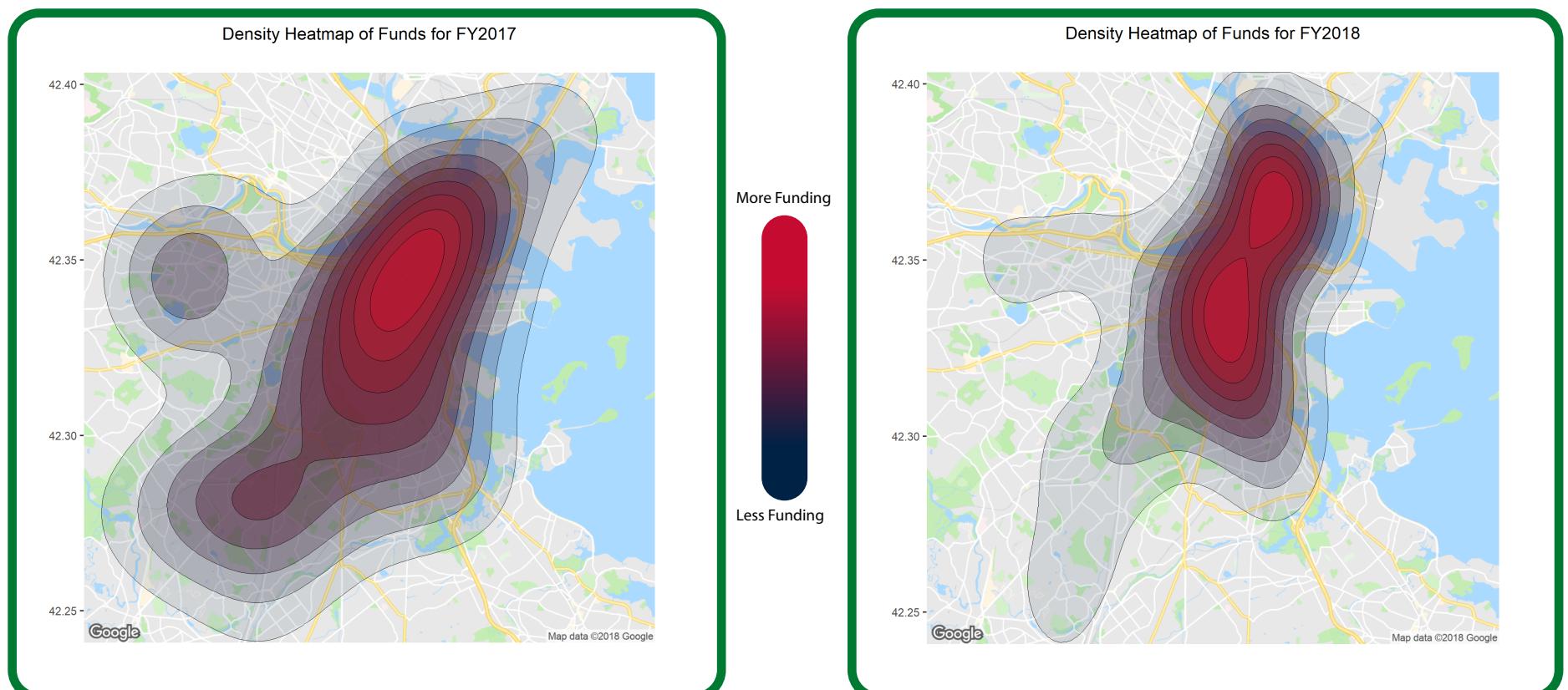
Unfortunately the available data doesn't allow for an extensive analysis on whether which neighborhoods have more visible signs of crime reason why it's being assumed that Budget allocation and population hold a direct correlation with Crime Rate.

First off an initial visualization to understand all Boston's neighborhoods and its population distribution



The next two visualizations gives an idea of how the budget for Fiscal Year 2017 (FY2017) and Fiscal Year 2018 (FY2018) is distributed along the map of Boston.

It can be seen that the two years differ substantially from one to another. It appears that while FY2017 focused much of its budget in covering a wider area, FY2018 has focused on expanding its high expenditure zone at the cost of leaving other areas less covered

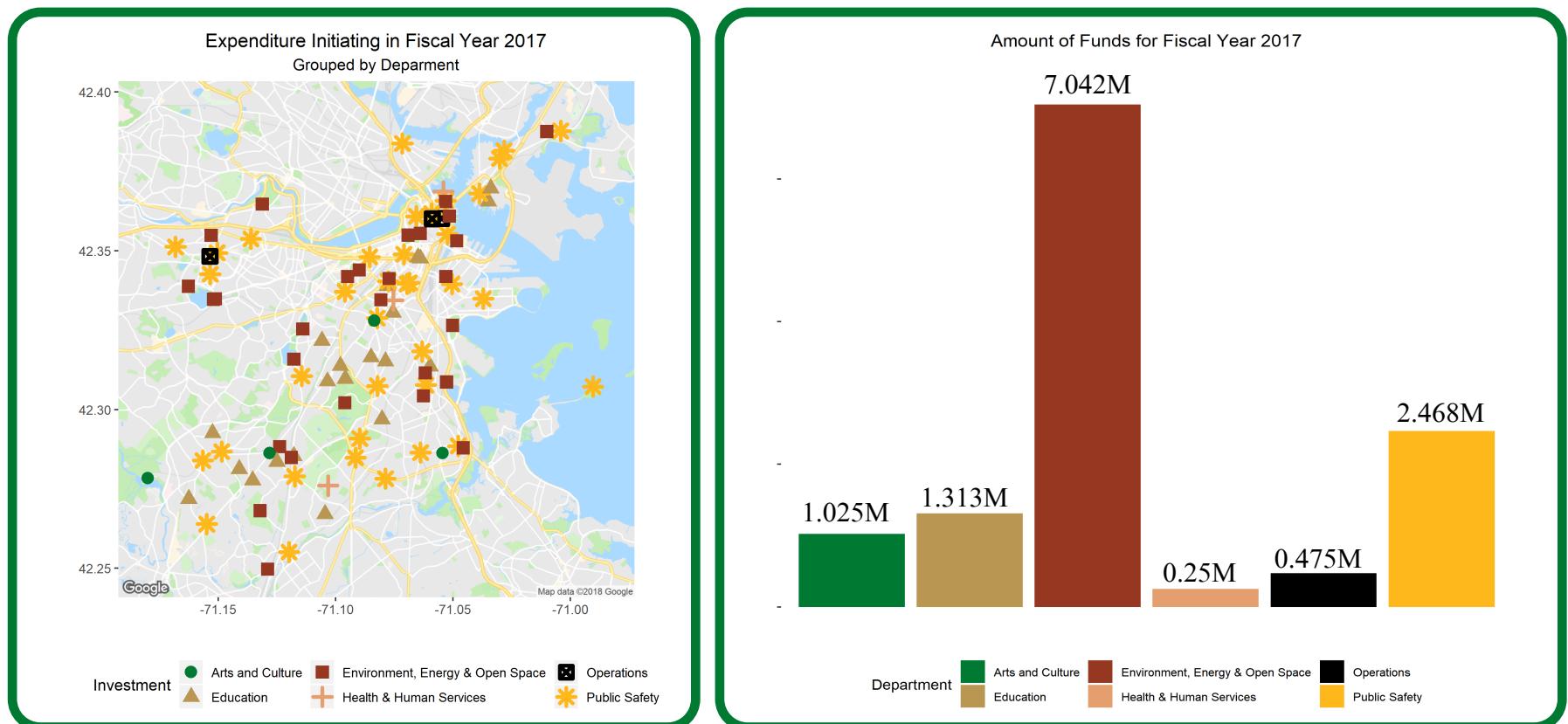


What is Money Being Spent on?

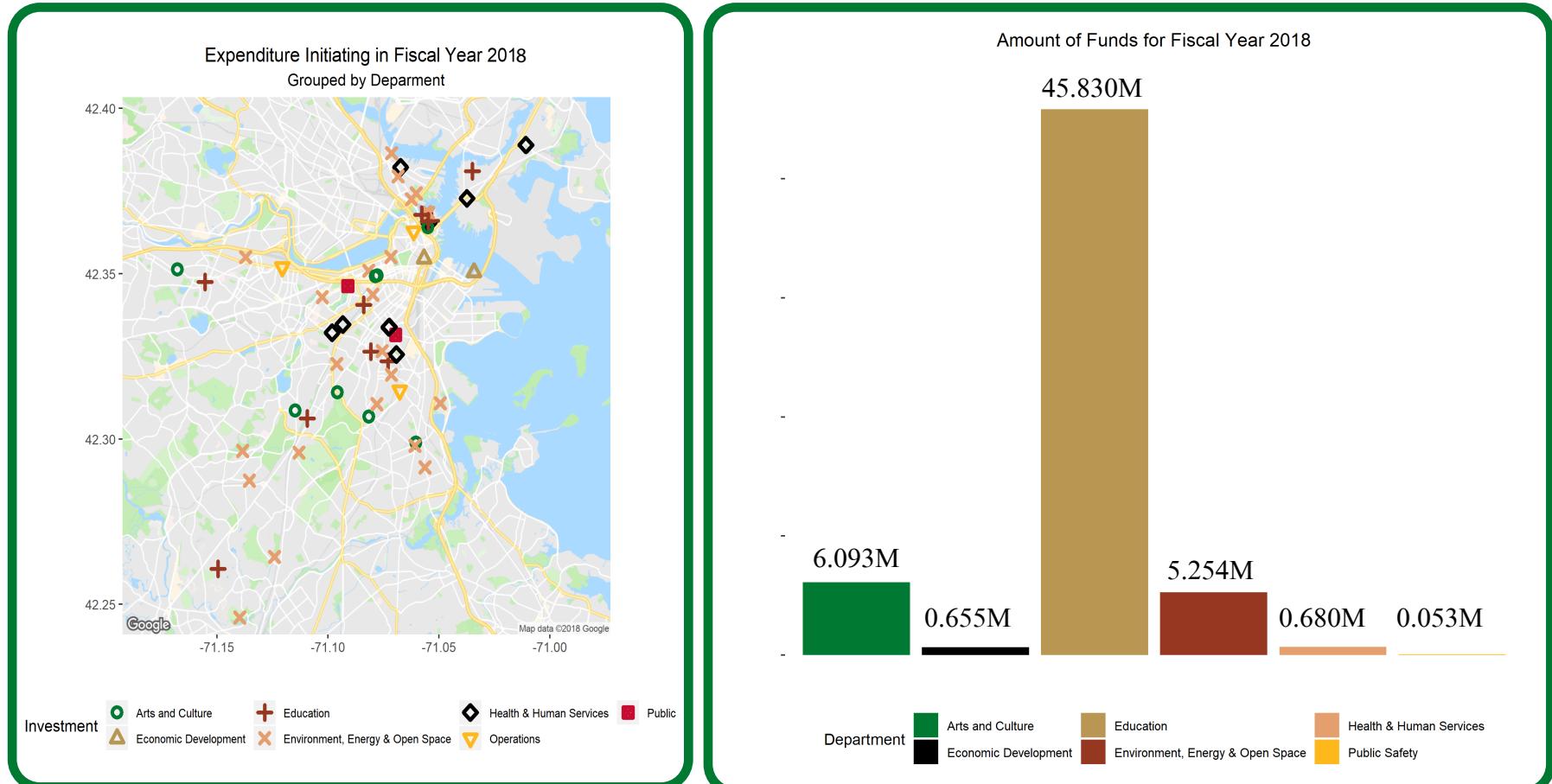
It is interesting to see how that money is being spent and what departments have allocated more money in comparison to others and which areas those funds are being sent to

- **Arts & Culture** : The department of Arts & Culture consists mainly on libraries.
- **Education**: This department covers everything that involves school facilities.
- **Environment, Energy & Open Space**: This branch includes playgrounds, parks, fields and ponds.
- **Health & Human Services**: The funds spent in this department covers community centers Boston Center for Youth and Families
- **Operations / Economic Development**: Operations cover mainly property and construction management and Economic Development facilities such as public garages.
- **Public Safety**: Public Safety involves Police departments and Fire departments.

The data from FY2017 shows that money is almost being spent evenly throughout the Boston area and while the map doesn't quite show it, Environment, Energy & Open Space gets most of the budget for this Fiscal Year.



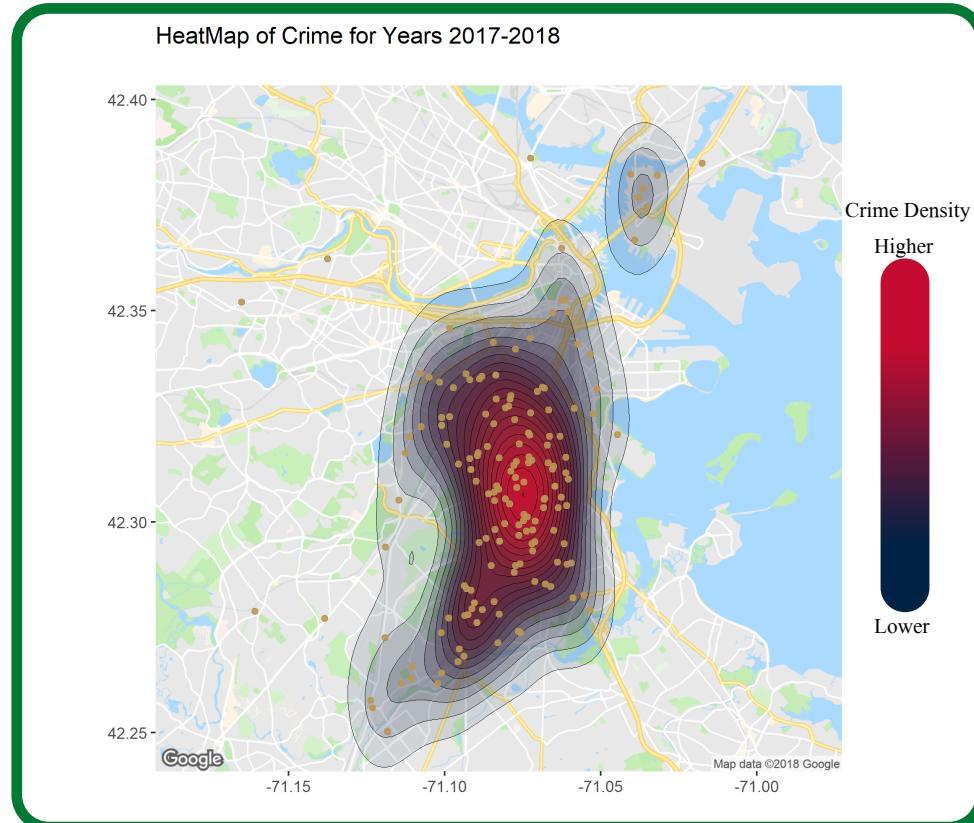
Like it was mentioned on the heatmaps this time the budget allocated for FY2018 shows that expenditure is concentrated in a smaller area than it was for FY2017, additionally to that the bar plot shows that Education takes most of the budgeted money for this time period. It would be worth considering to see whether Midterm Elections caused this change or there's an underlying reason for it



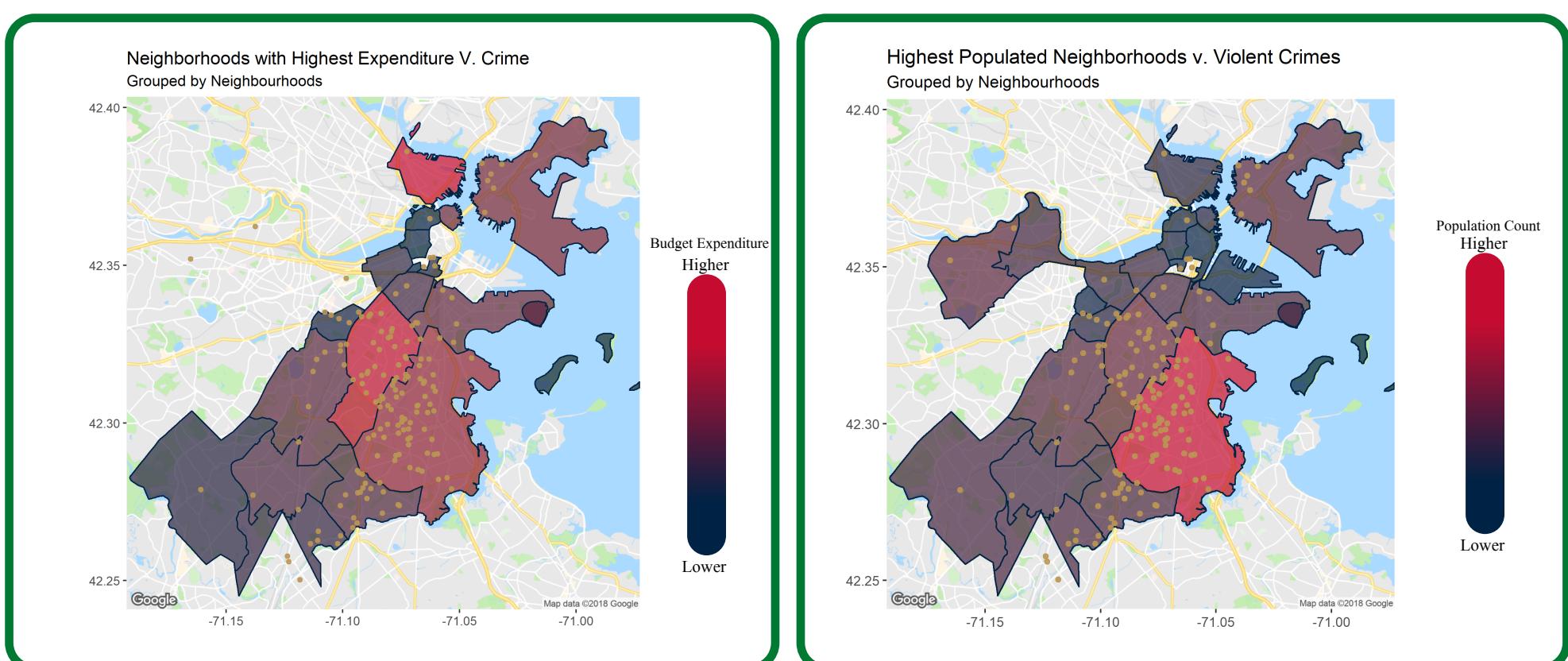
Is There a Relationship?

The final step tries to determine whether there's a direct relationship between budget allocation and crime while taking into consideration the population density of each neighborhood.

The heatmap below dives into the crime density, with the only condition that only violent crimes are shown since those types of crimes have the higher impact on the population. As expected neighborhoods with higher population have higher amount of crime in this case Dorchester being the worst neighborhood in terms of crime



In the next two graphs the population and the budget expenditure are compared with crime. Clearly it can be seen that the neighborhood with highest count of people attain most of the crime, however it is not the one who attains most of the budget.



At first glance there seems to be no correlation between budget and crime. If these graphs are compared to the previous budget heatmaps it can be seen that the places with highest budget expenditure do not have the highest crime rate nor the highest population of that area. On the other hand the budget expenditure seems to be more focused on the financial districts than in areas where crime is more common.

While a more in depth analysis would have to be conducted, it needs to be questioned whether crime, in part, is a side effect of being left out of the highest budget expenditures from the city of Boston.