

An Analysis of the Safety of Boston and its Towns

Introduction:

Boston is a sprawling city, growing day-by-day with new students, families and businesses. In such a relatively dense city, one thing we must all keep in mind is our safety. So, just how safe is Boston and its 23 towns?

Goals:

With safety in mind, our goal for this semester-long project was to analyze the overall safety of the 23 neighborhoods/towns that the city of Boston recognizes. By the end of this project we hoped that anybody could use this to be more safe, whether you're a just a resident, business owner, and/or homeowner.

Datasets Used:

Crime Incident Reports (Aug '15 to Present)

Link: <https://bit.ly/2g3khXJ>

Vision Zero Crash Records

Link: <https://bit.ly/2XVQ7pl>

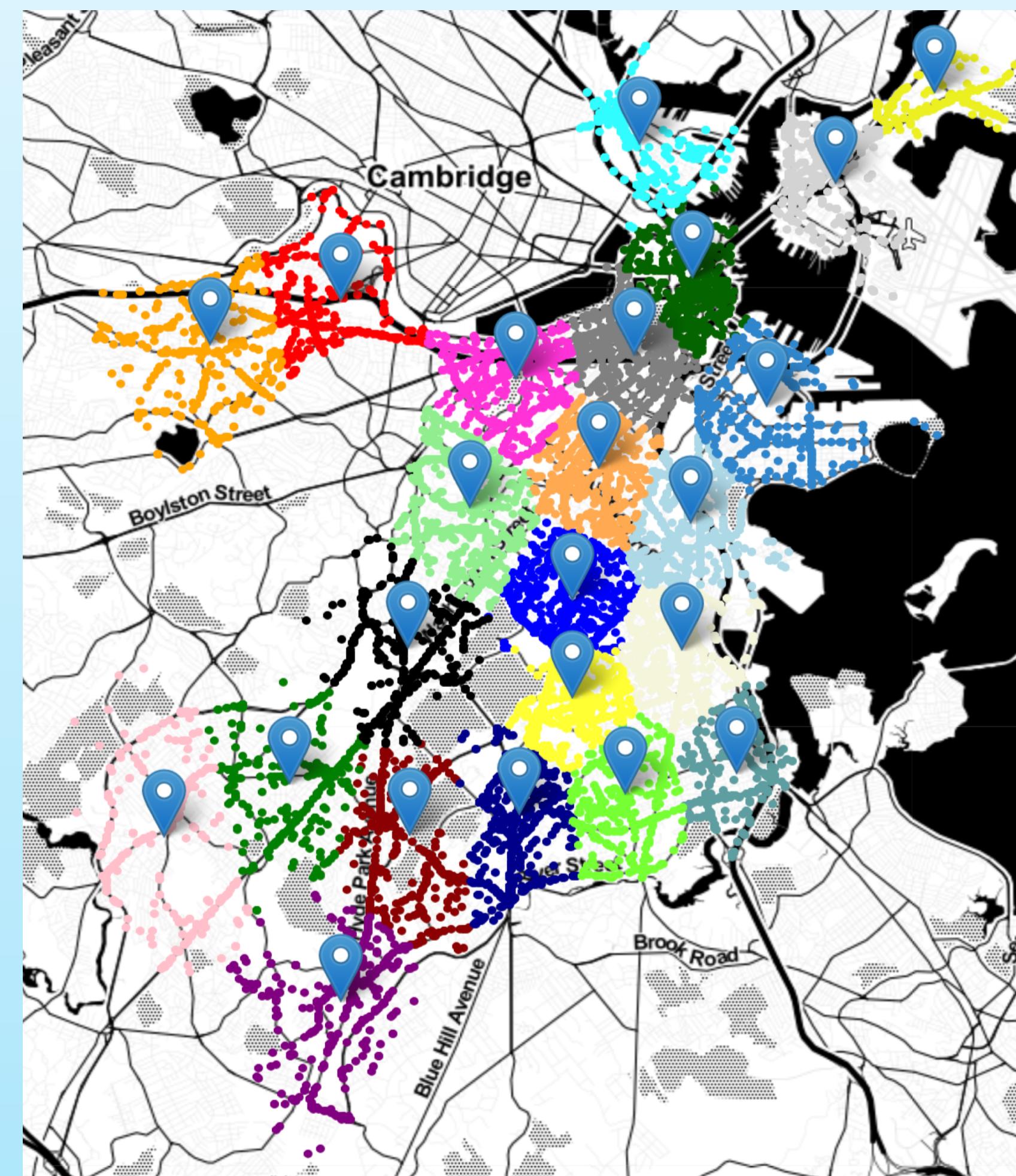
Vision Zero Fatality Crash Records

Link: <https://bit.ly/2ITW3Mq>

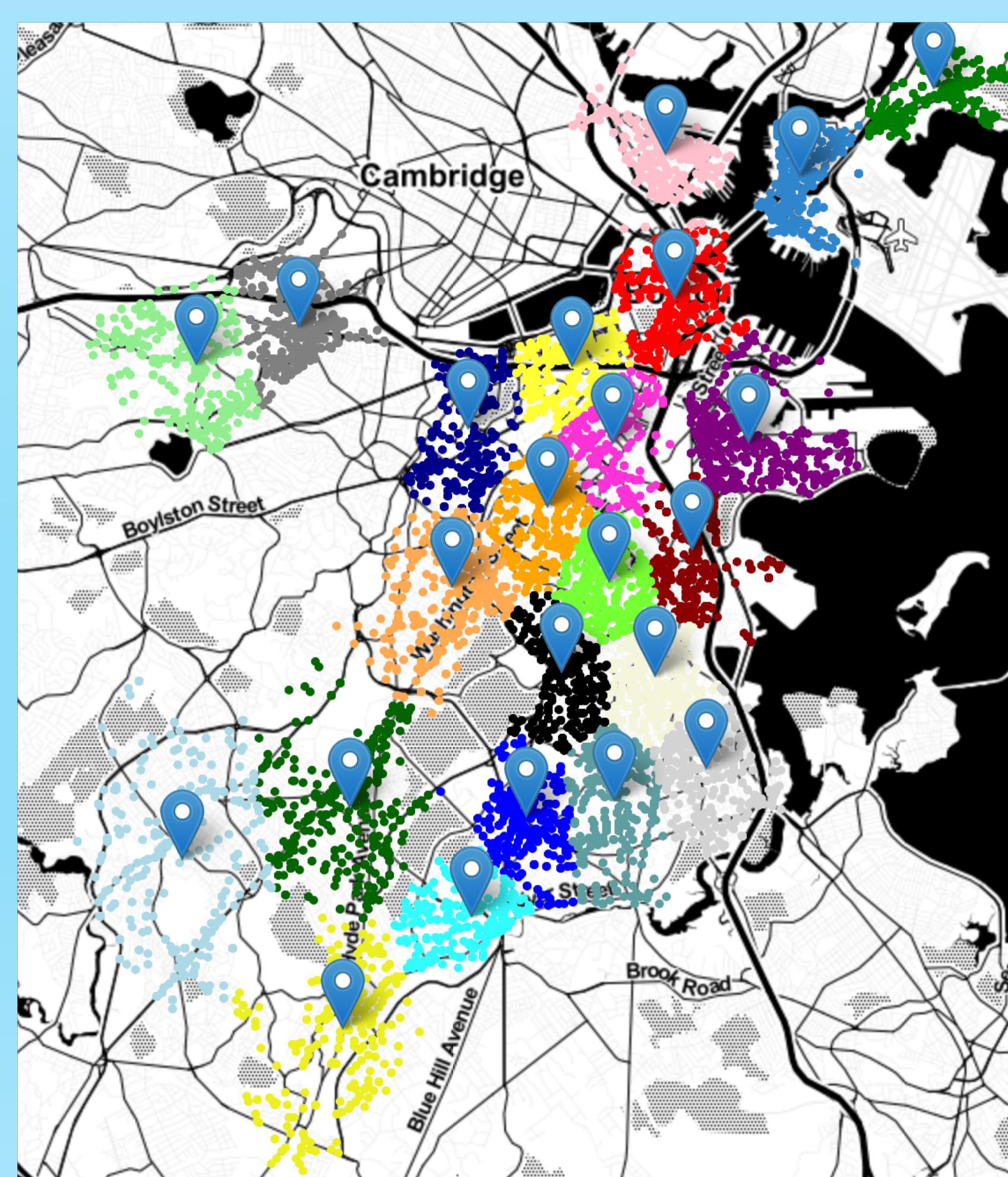
Techniques:

For our project, we utilized *k-means* in order to cluster our data. Since Boston distinguishes 23 different neighborhoods, we used 23 clusters to get a rough match to the actual city. With the 23 clusters, we performed statistical analysis on each cluster and as a whole.

Accident Map:



Crime Map:



Analysis:

For our analysis, we analyzed crime and road crash records separately, on different maps and clusters.

Road Accidents –

For crash records, we had a little under 20,000 data points to use. With each entry, we could see if the accident involved a motor vehicle, pedestrian, or a bike. Our findings are what we expected, but with a few outliers. First, there are more accidents that occur more closely to the city where it is more densely packed. Inversely, there are fewer accidents away from the city. However, this isn't the case for towns like Mattapan, Dorchester, and Roxbury. Despite being a bit more spread out, the number of accidents were nearly equal to those in the actual city. The transportation types were pretty evenly distributed.

Crime Reports –

For crimes, we had around 390,000 data points to use. With each entry, we could see the type of offense, which we deemed to be the most important. A pattern similar to road accidents emerged where clusters were larger (more data points) where it was closer to the city and more densely packed. However, there were still outliers as well, such as Mattapan having nearly 2x more crimes despite a slightly higher population. We created a subset of offenses that we thought were more serious than others so that we could gauge how immediately dangerous a cluster was, however, surprisingly we found that every town had close to the same percentage of serious crimes to overall number of crimes (~42%).

Conclusion:

In the end, we've concluded that crime and vehicular accidents are pretty uniform throughout Boston's towns. There is no strong indication that any town/cluster is more prone to any type of crime or terrible drivers.