City Council Services: Equity of Government Funding Distribution

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Fall 2022 Spark! Project for Councilwoman Meijia

Project Motivation and Goal

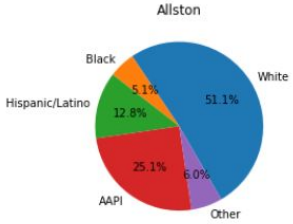
The goal of the project as a whole is to evaluate whether the city's funding is equitably distributed.

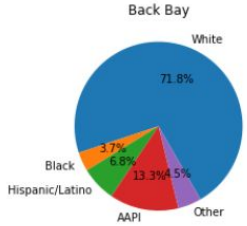
Our team is interested in discovering any funding discrepancies and unfair practices, especially toward low-income communities and communities of color. We will also be looking into how the funding (or lack of funding) has impacted the communities by analyzing data on relief funds, licenses, capital investments, and other programs.

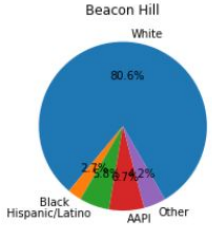
To better understand this project, it is important to get a grasp of the mapping of the geographic neighborhood to capital budget funding distribution. To do so, we must understand the spread of food, liquor, and cannabis licenses allocated to different regions and whether funds are being equally distributed.

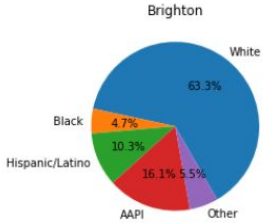
Structure

- Census Data Analysis(demographic information by neighborhood)
- Business Grant Administration Analysis
- Liquor Licenses Analysis
- Capital Investment Analysis
- Rental Assistance Analysis
- Base Project Conclusions
- Extension Project
- Solution/Final Remarks


Allston
Black
Hispanic/Latino
White
AAPI
Other
5.1%
12.8%
51.1%
25.1%
6.0%


Back Bay
White
Black
Hispanic/Latino
AAPI
Other
71.8%
3.7%
6.8%
13.3%
4.5%


Beacon Hill
White
Black
Hispanic/Latino
AAPI
Other
80.6%
2.1%
5.8%
8.7%
4.2%


Brighton
White
Black
Hispanic/Latino
AAPI
Other
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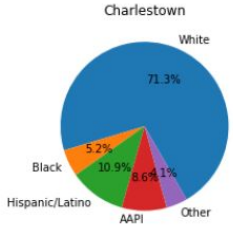
4.7%
10.3%
16.1%
5.5%


Charlestown
White
Black
Hispanic/Latino
AAPI
Other
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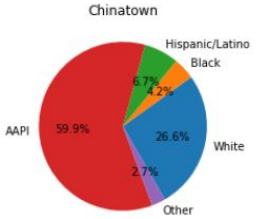
5.2%
10.9%
8.6%
4.1%


Chinatown
Hispanic/Latino
Black
AAPI
White
Other
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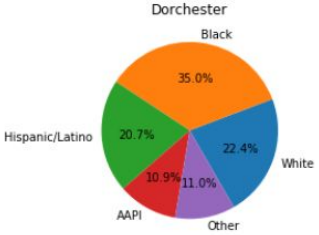
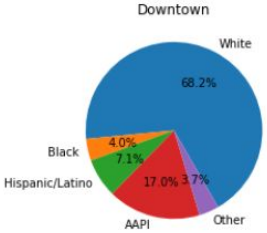
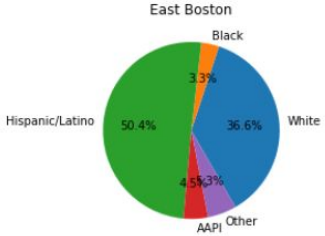
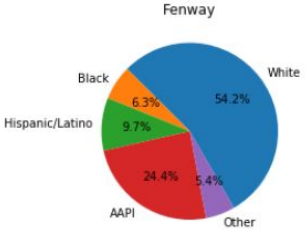
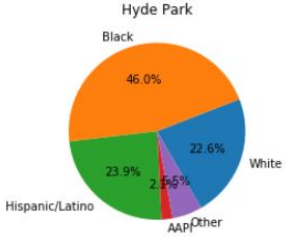
4.2%
59.9%
26.6%
2.7%

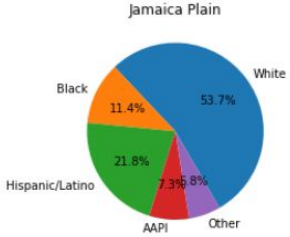

Dorchester
Black
Hispanic/Latino
White
AAPI
Other
35.0%
20.7%
22.4%
10.9%
11.0%

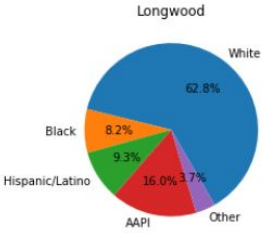

Downtown
White
Black
Hispanic/Latino
AAPI
Other
68.2%
4.0%
7.1%
17.0%
3.7%

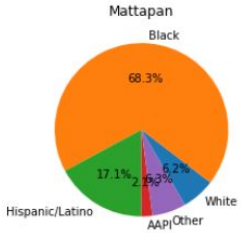

East Boston
Black
Hispanic/Latino
White
AAPI
Other
3.3%
50.4%
36.6%
4.5%
5.3%

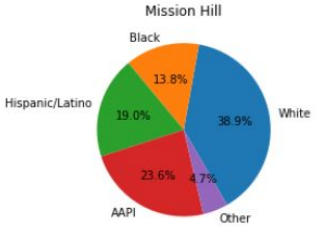

Fenway
Black
Hispanic/Latino
White
AAPI
Other
6.3%
9.7%
54.2%
24.4%
5.4%

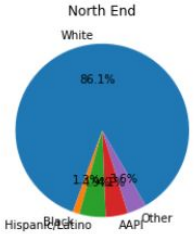

Hyde Park
Black
Hispanic/Latino
White
AAPI
Other
46.0%
23.9%
22.6%
2.5%
5.5%

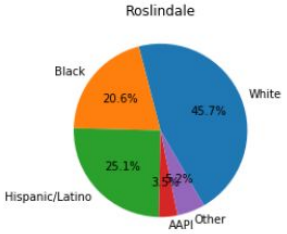

Jamaica Plain
Black
Hispanic/Latino
White
AAPI
Other
11.4%
21.8%
53.7%
7.3%
5.8%

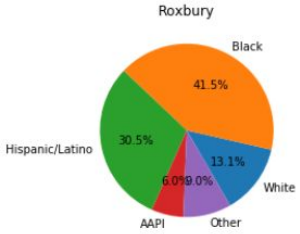


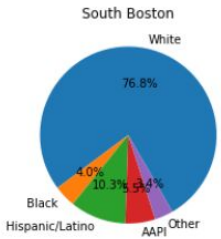


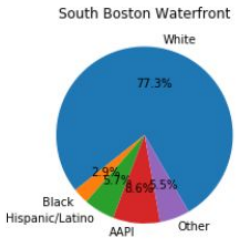


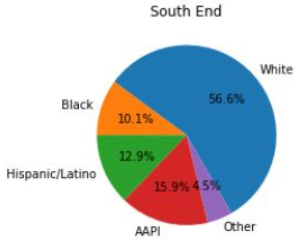


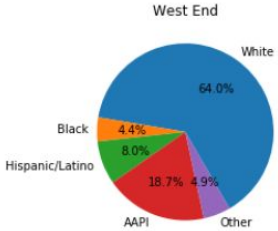


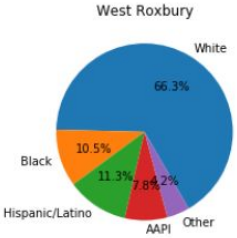




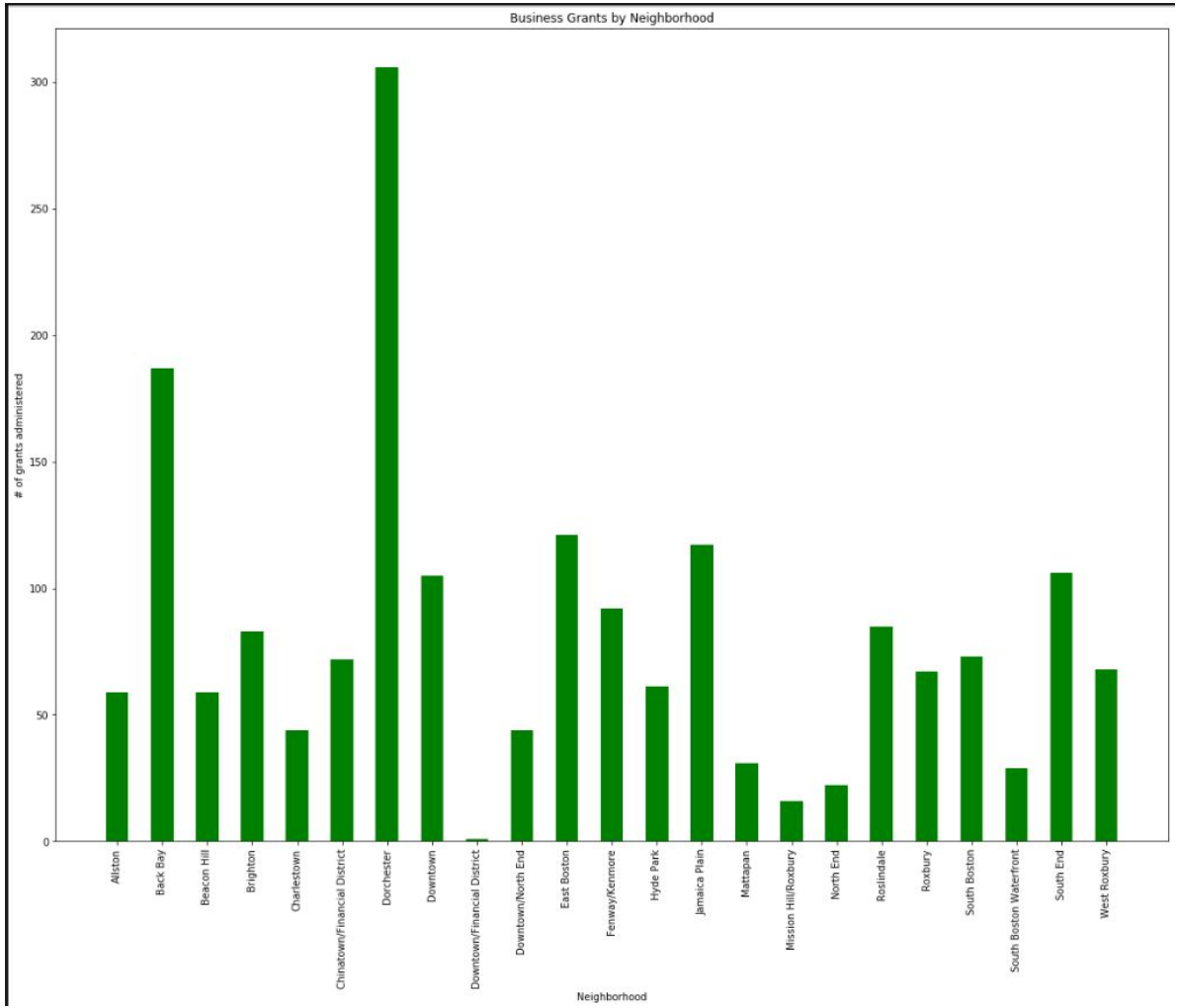




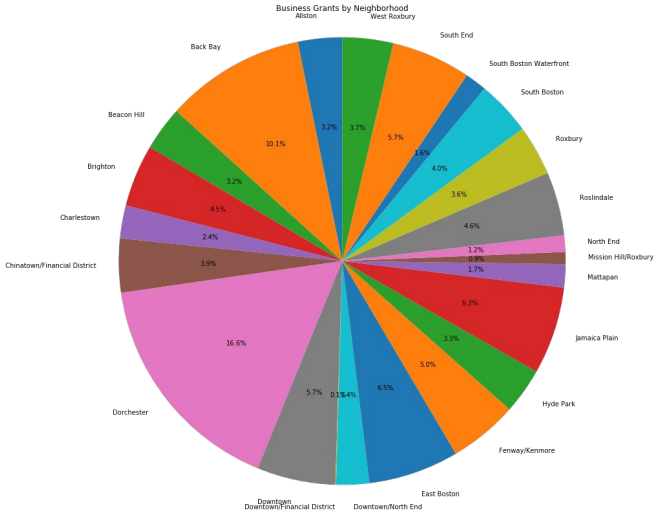


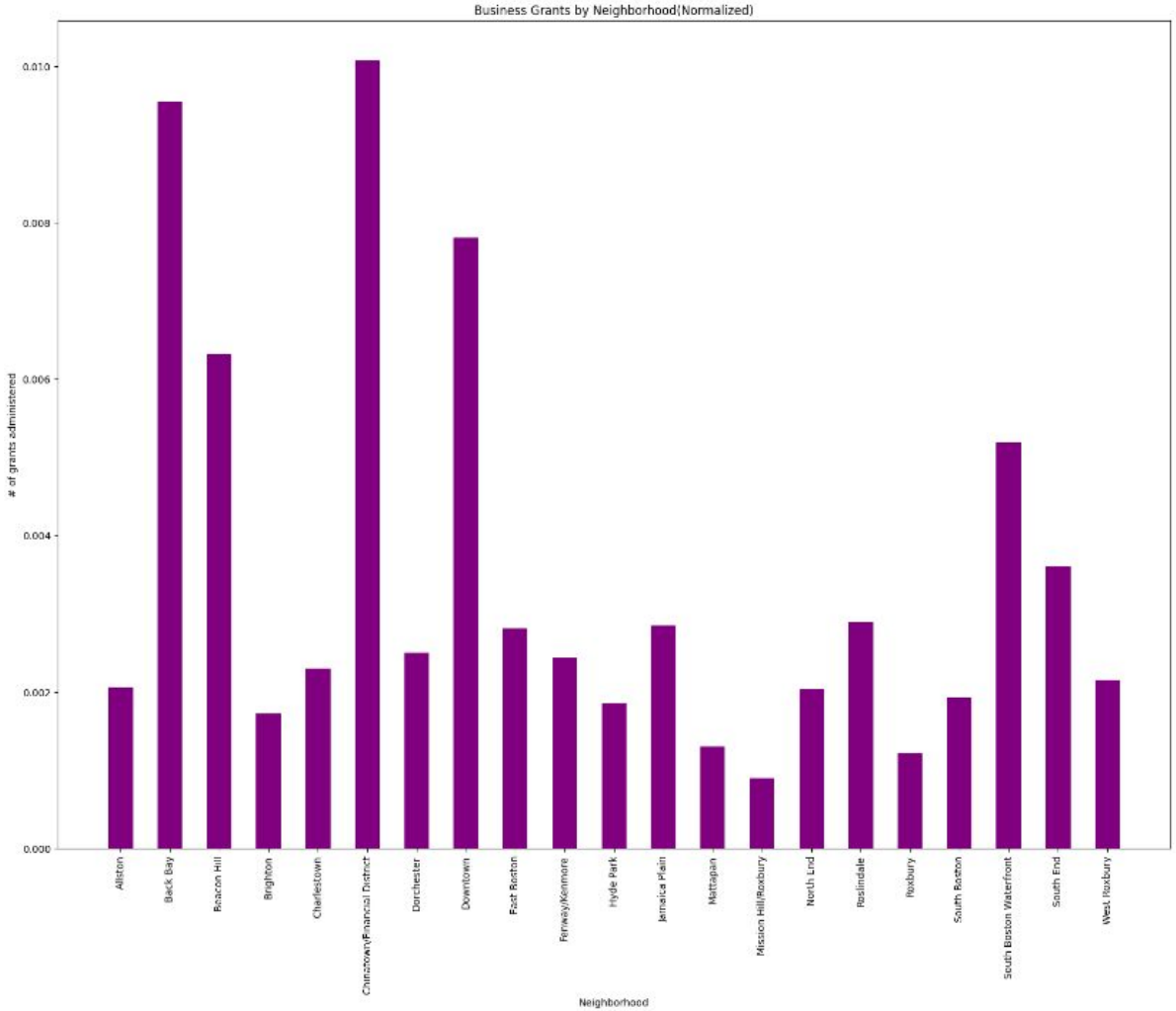


From these visualizations, we can identify the target demographic neighborhoods to be Dorchester, Mattapan, Roxbury, Hyde Park, East Boston, and Chinatown as the neighborhoods that are not majority white



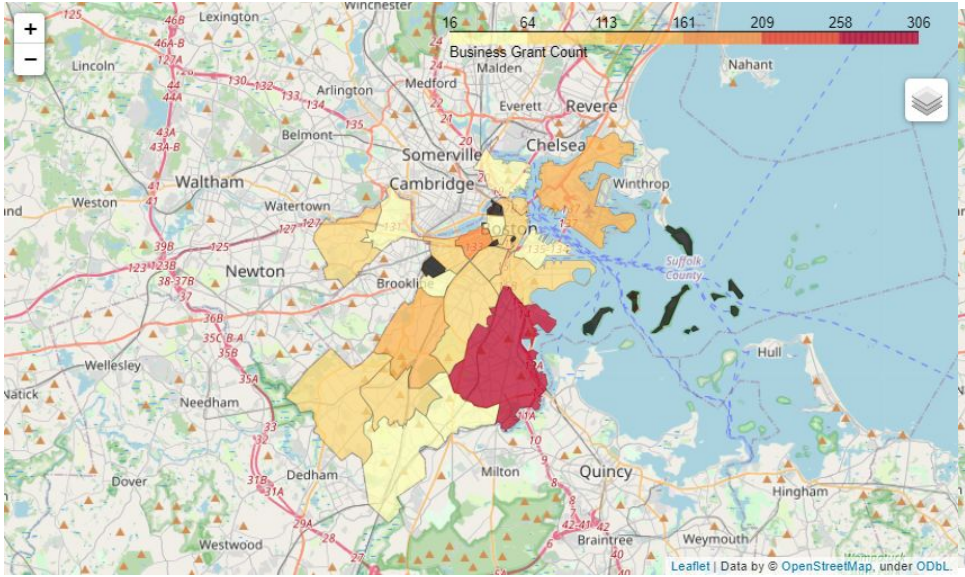
This bar graph represents the amount of business grants that were given per neighborhood. The pie chart shows the same data but in percentages. This is helpful because it demonstrates which neighborhoods are receiving more grants.



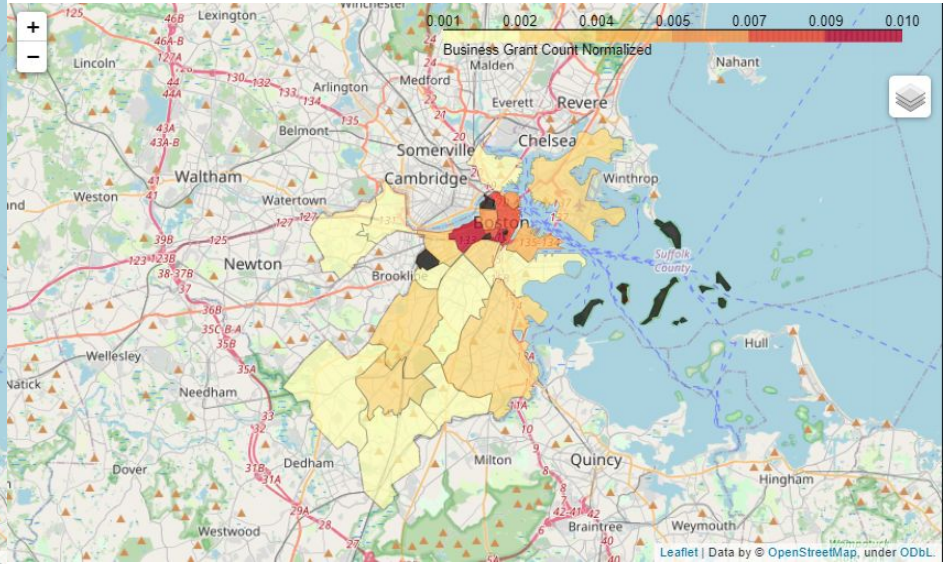


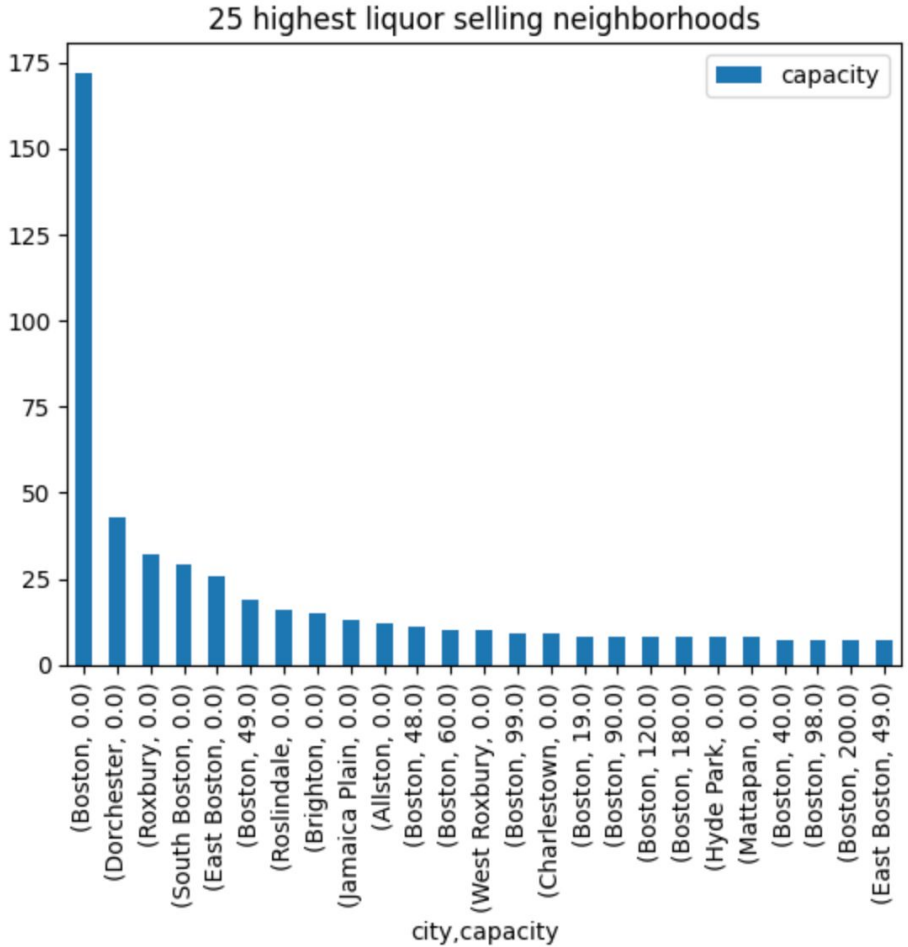
By normalizing the data on Business Grants administered by the city, we can find the # of business grants administered per capita. In contrast to the previous slide, the neighborhoods that we identified as target neighborhoods are not receiving an equitable number of business grants per capita in comparison to Back Bay, Downtown, and Beacon Hill, which are mostly white, wealthy neighborhoods.

Original

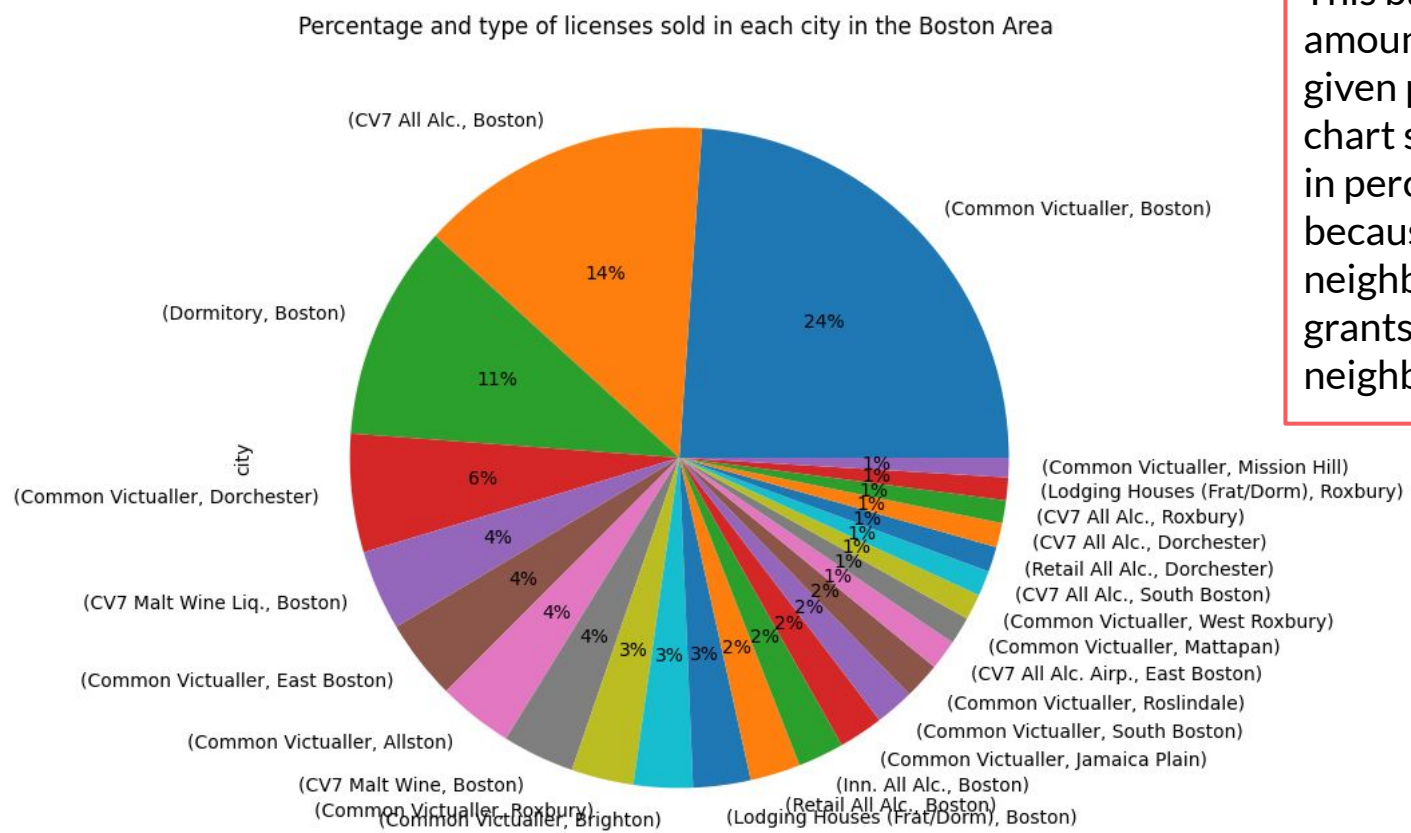


Normalized

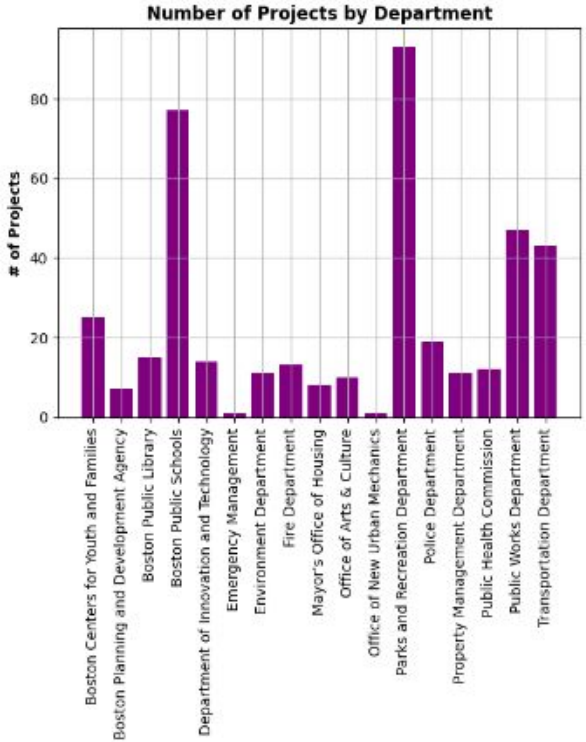


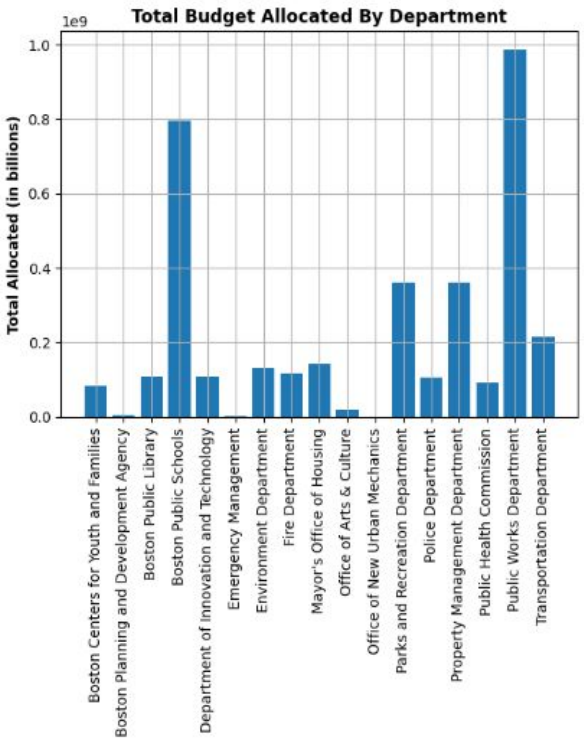


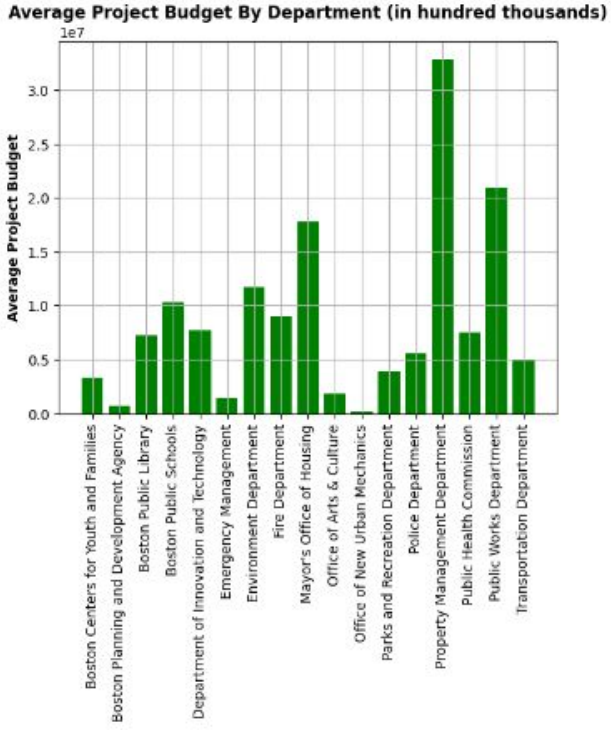
This visualization shows which neighborhoods have the highest liquor licenses given to businesses in that neighborhood. This information is valuable to us because we want to get a sense of the amount of money businesses in each neighborhood are bringing in and having a liquor licence can garner more business in many cases.



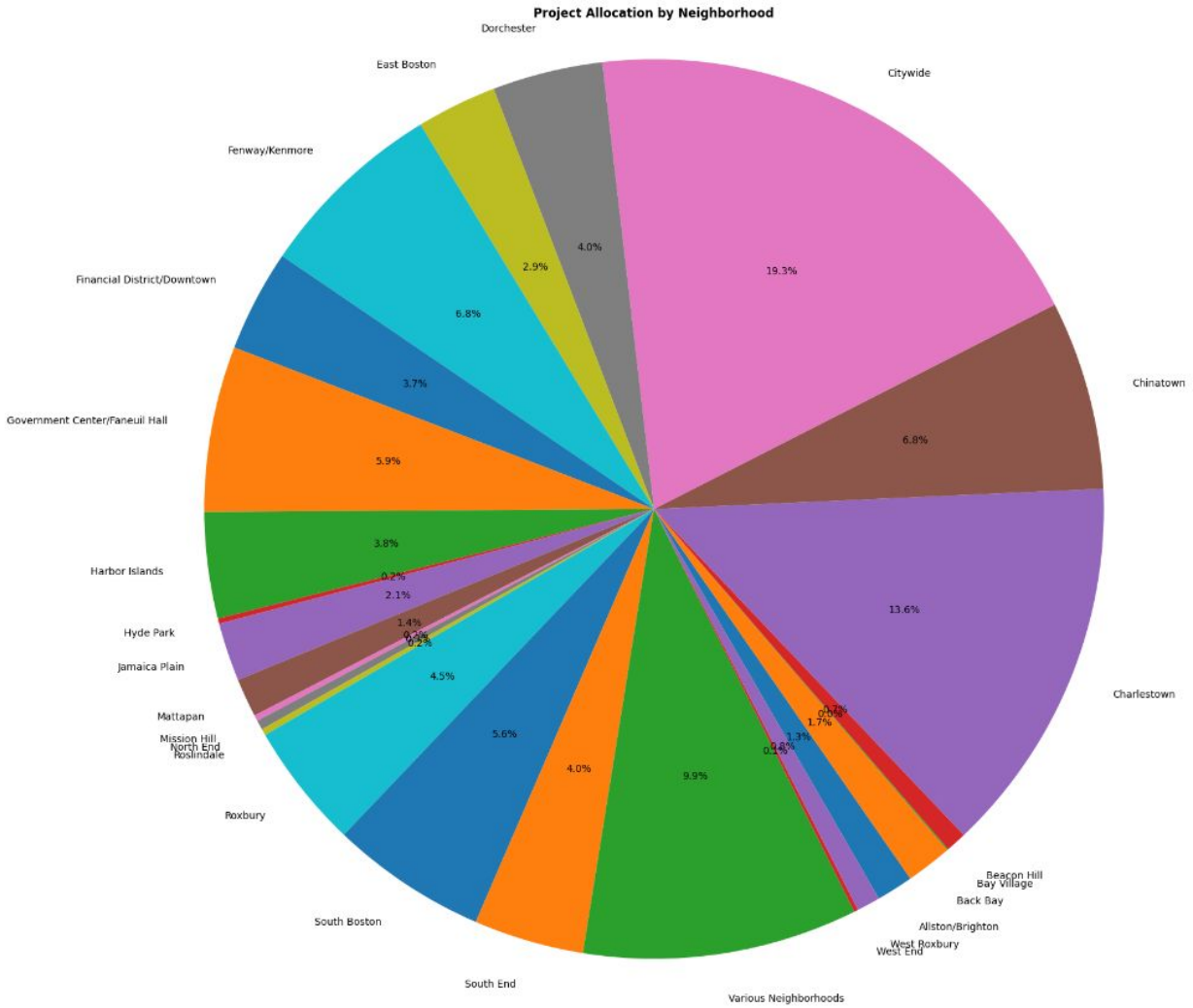
This bar graph represents the amount of licenses that were given per neighborhood. The pie chart shows the same data but in percentages. This is helpful because it shows us that some neighborhoods barely get any grants whereas other neighborhoods are thriving.



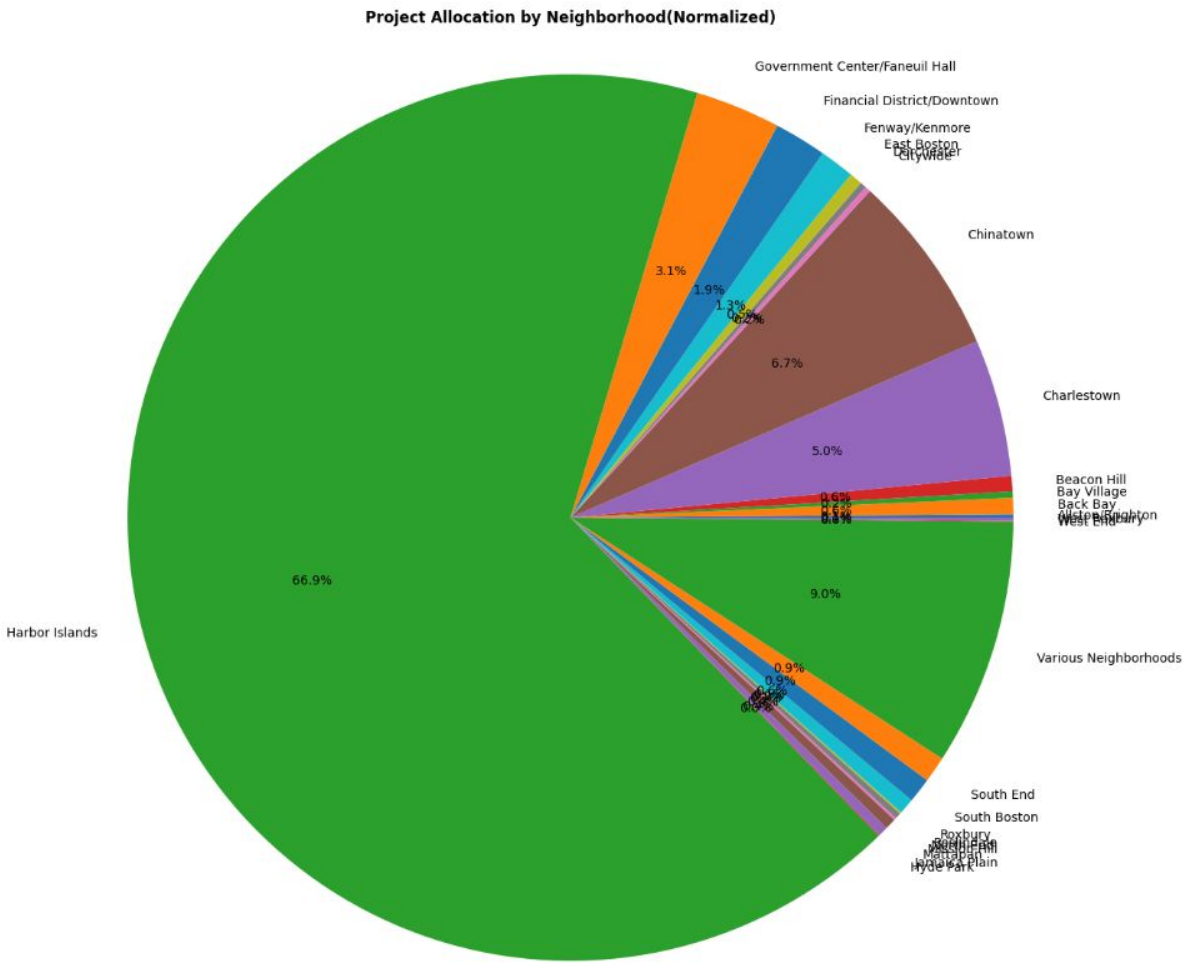




This visualization of the Capital Investments data is helpful in understanding the behavior of each department. For example, the Parks and Recreation department has the highest number of projects, but has a lower average budget for these projects.

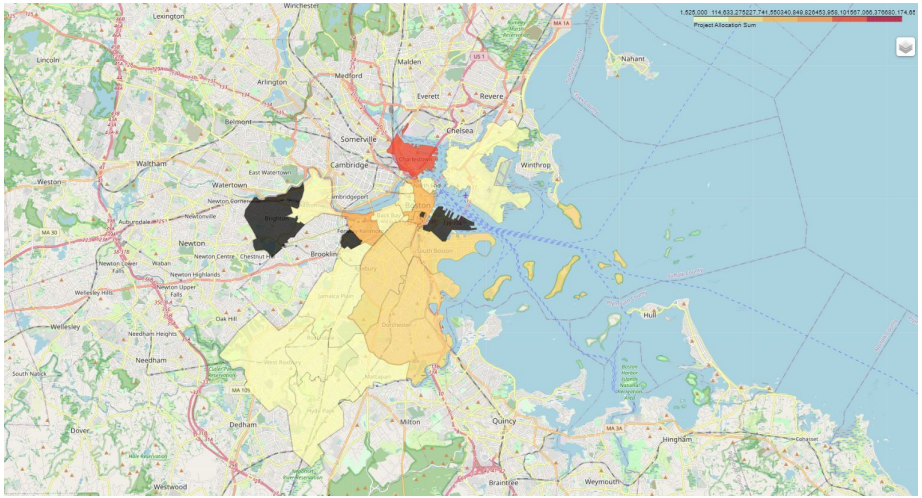


This chart displays the proportion of Capital Investments by neighborhood. This also reveals a limitation of our analysis, as many projects had neighborhoods labelled as “Citywide” or “Various Neighborhoods”.

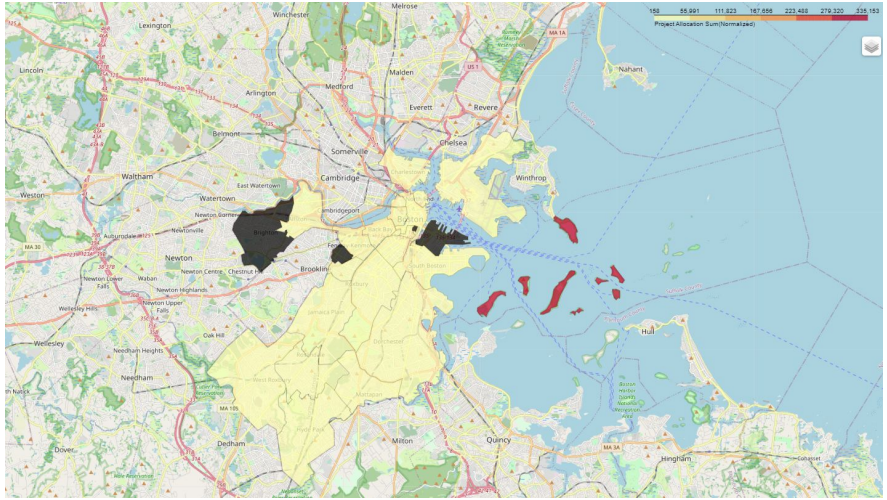


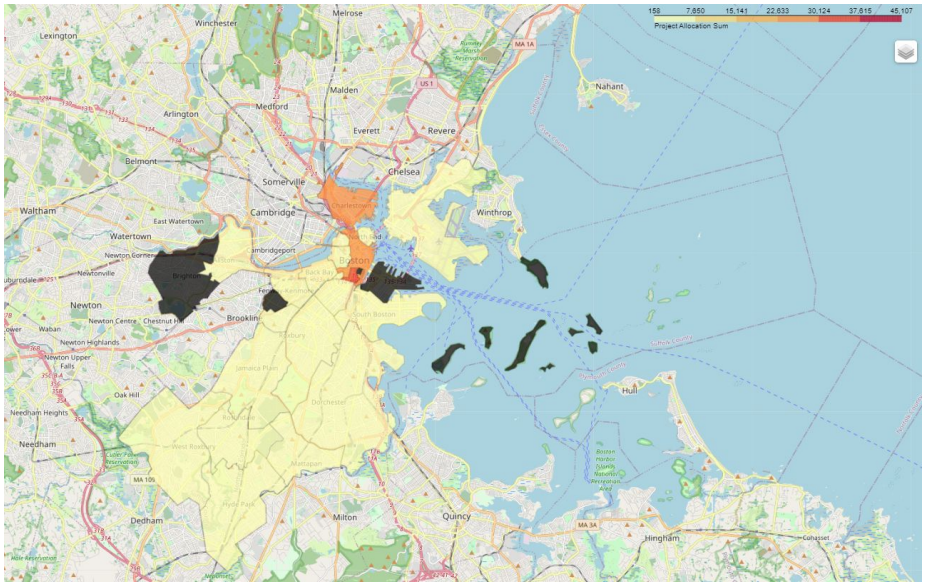
Normalizing the data identifies Harbor Islands as the largest recipient of capital investments per capita, islands which have a population of ~400. Harbor Islands is the location of the Fire Department Training Academy, which has large renovations planned for this fiscal year.

Original

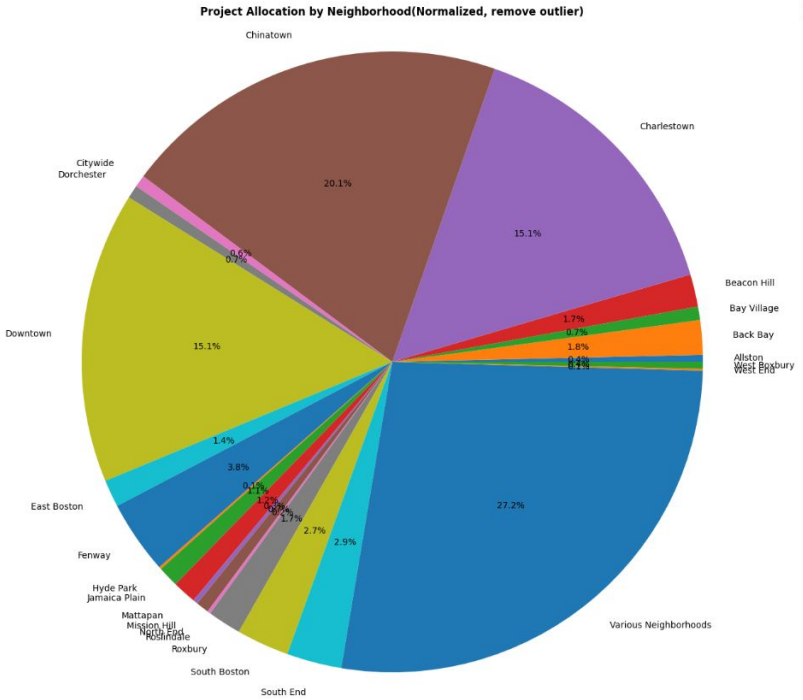


Normalized





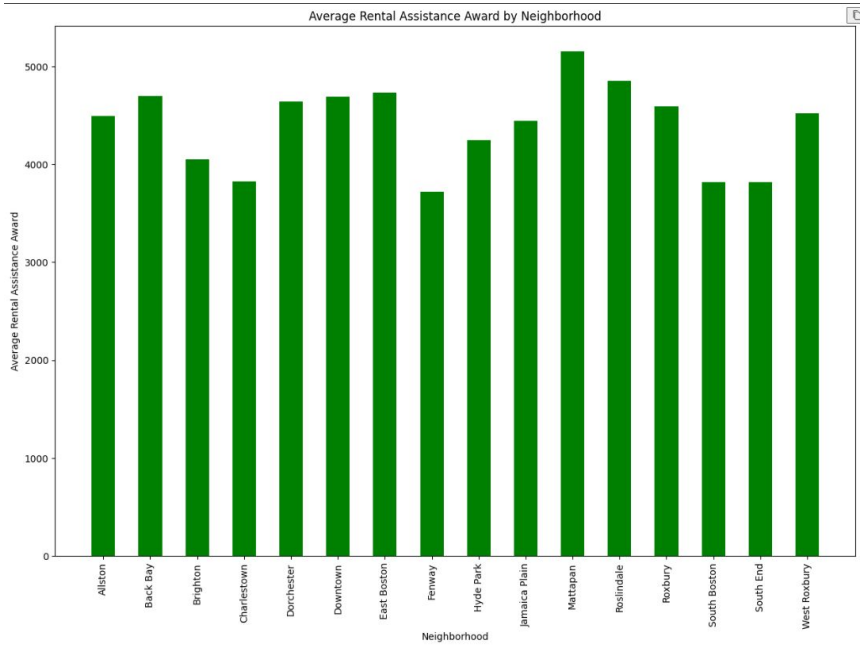
Because the amount allocated to the Harbor Islands is more than two standard deviations above the average capital investments of a Boston neighborhood, there is the option to remove it as an outlier of this data. These visualizations are the result of removing it.



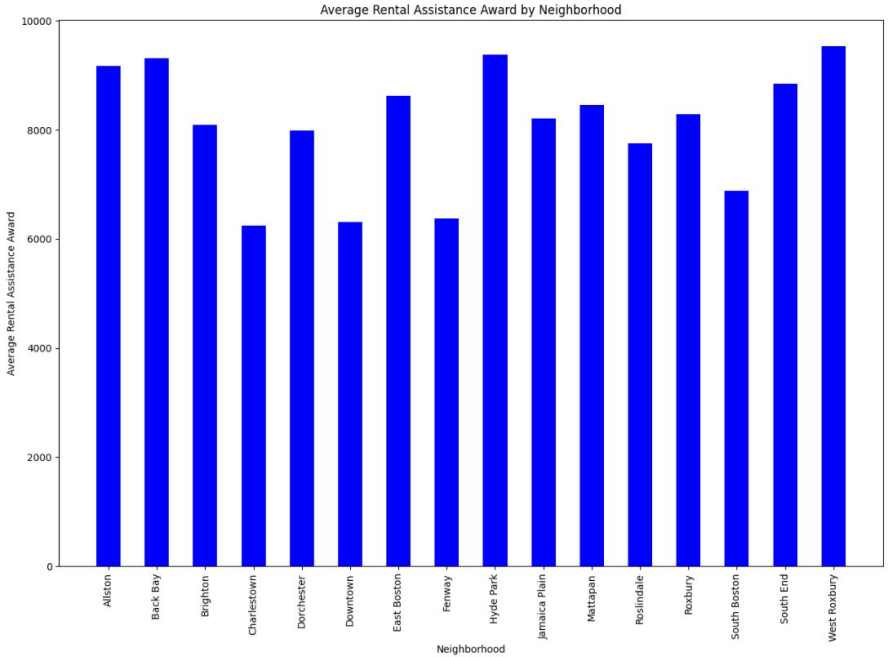
Average allocation = $1.466231e+08
Standard Dev of allocation = $1.710563e+08
Harbor Islands Allocation = $6.801747e+08

Rental Assistance Funds

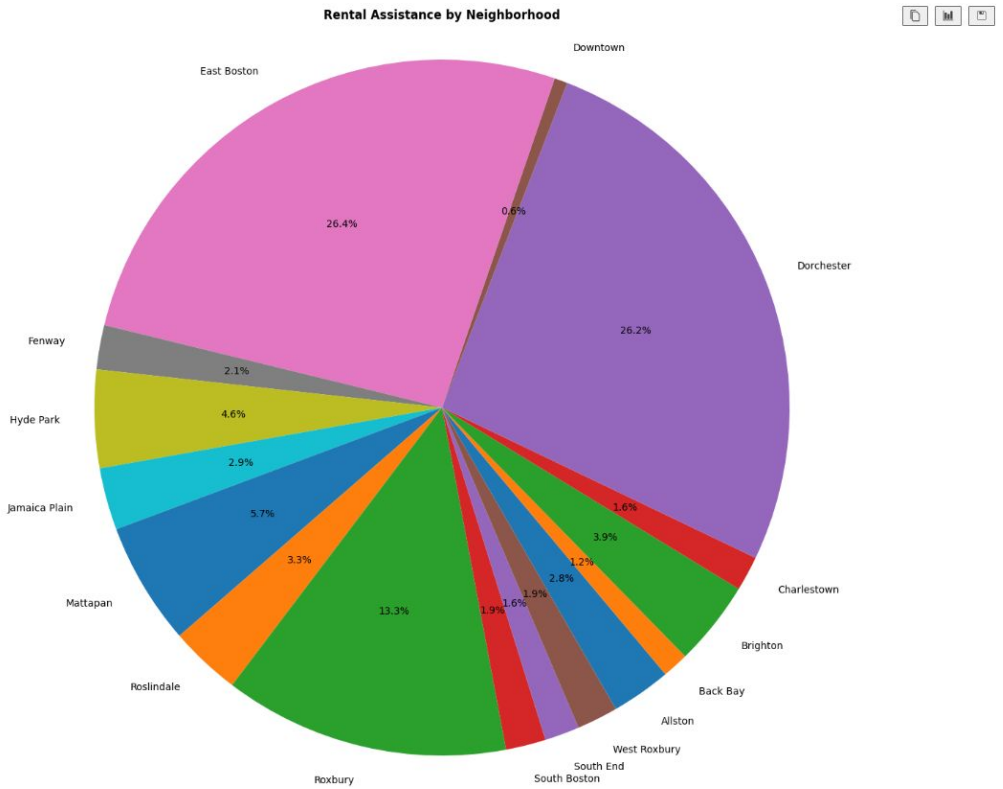
Oct 2020 - Mar 2021



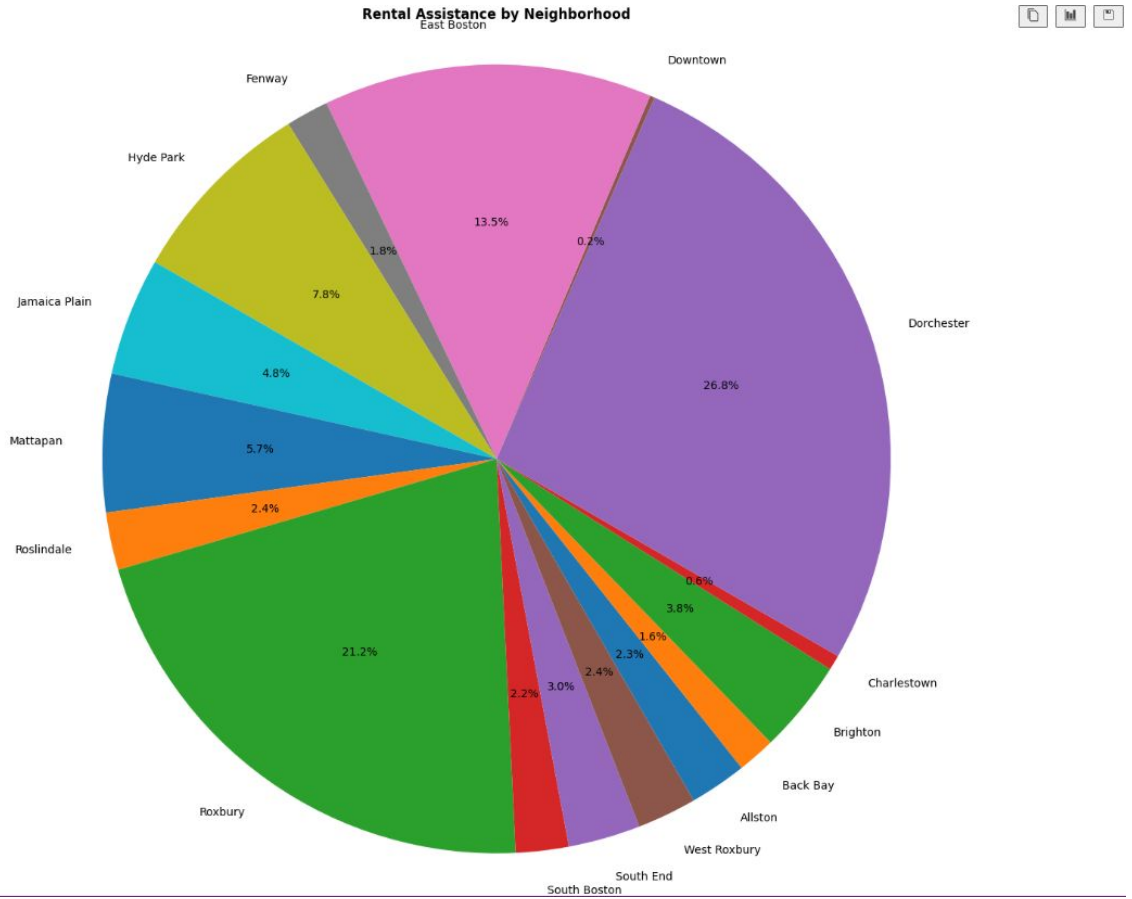
April 2021 - Sept 2021



Oct 2020 - Mar 2021

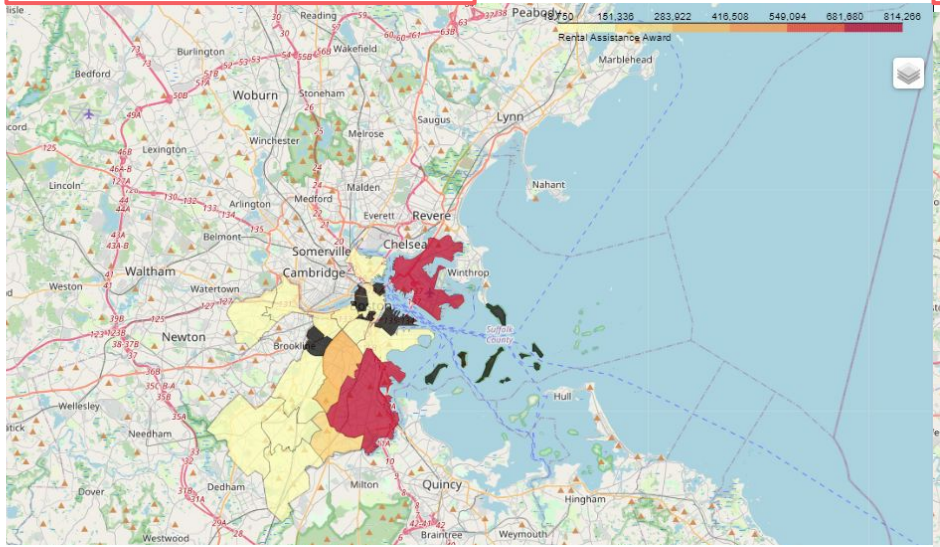


April 2021 - September 2021

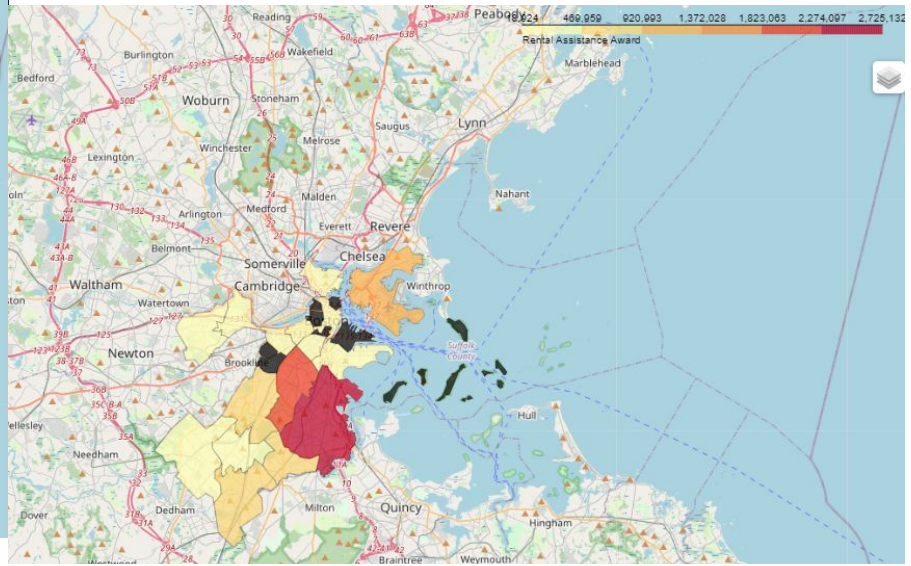


Sum of Rental Assistance by Neighborhood

Oct 2020 - Mar 2021



April 2021 - September 2021



We can see that the majority of the rental assistance awards are being distributed to Dorchester, East Boston, and Roxbury, which matches our target neighborhoods.

Answers to base project question

Where are the city's economic development licenses? Which communities are benefitting? Which communities are being left out?

Most economic development licenses, including liquor, food, common victualler (which every establishment that has the capabilities of cooking, preparing and serving food in house needs) end up going to Boston and the second most to Dorchester. Business grants also largely allocated to Dorchester.

These neighborhoods benefit a lot because they get more money flowing into their communities. With more businesses that have more licenses these cities can attract more people to their city and therefore more money.

Almost every other boston neighborhood gets left out as we can see from the data.

Where did business assistance go during the pandemic? What were the demographic profiles of the communities where the businesses were located?

From our analysis, we conclude that the highest number of Business Assistant grants were allocated to Dorchester, whose demographic profile is 35% Black, 22.4% White, 20.7% Hispanic/Latino, 10.9% AAPI, and 11% Other races. Dorchester received 306 Business Grants

The largest recipient of Business Grants per capita were Chinatown/Financial District and Back Bay. Chinatown's demographic profile is 59.9% AAPI, 26.6% White, 6.7% Hispanic/Latino, 4.2% Black, and 2.7% Other. Back Bay's demographic profile is 71.8% White, 13.3% AAPI, 6.8% Hispanic/Latino, 3.7% Black, 4.5% Other. Chinatown/FD received .01 business grants/capita and Back Bay received .009 business grants/capita.

In comparison, the neighborhoods that we identified as "target neighborhoods" to receive business grants received the following:

Dorchester: 306 business grants, .0025/capita
Mattapan: 31 business grants, .0013/capita
Roxbury: 67 business grants, .0012/capita
Hyde Park: 61 business grants, .0013/capita
East Boston: 121 business grants, .0028/capita

Where did the city's rental assistance go during the pandemic? What were the demographic profiles of the recipients of these funds?

From our analysis, we can conclude that rental assistance funds are being equitably distributed to our target communities.

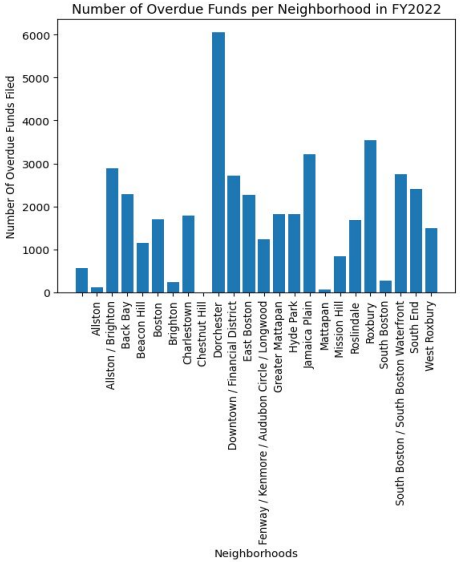
Challenges

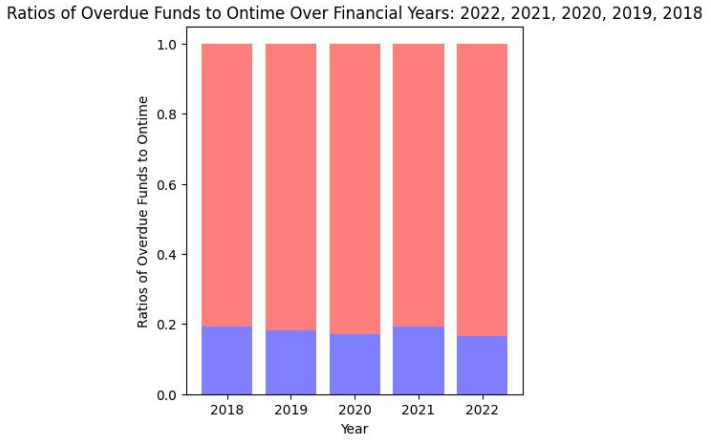
One challenge that we faced was the limited access to data. Our initial idea for the extension project was not able to reach fruition because we were not able to access data of capital investments from years prior. From the survey data, we can see that many Boston residents also want a greater access to the data of the city's budget.

Also, our team planned on analyzing the behavior of the city's expenditure by department. We intended on looking at historical Capital Investment data and determining to what extent a change in leadership impacts the behavior and spending of each department. However, as mentioned under challenges, we were unable to get access to the appropriate data and thus proceeded with the 311 extension project.

Extension Project

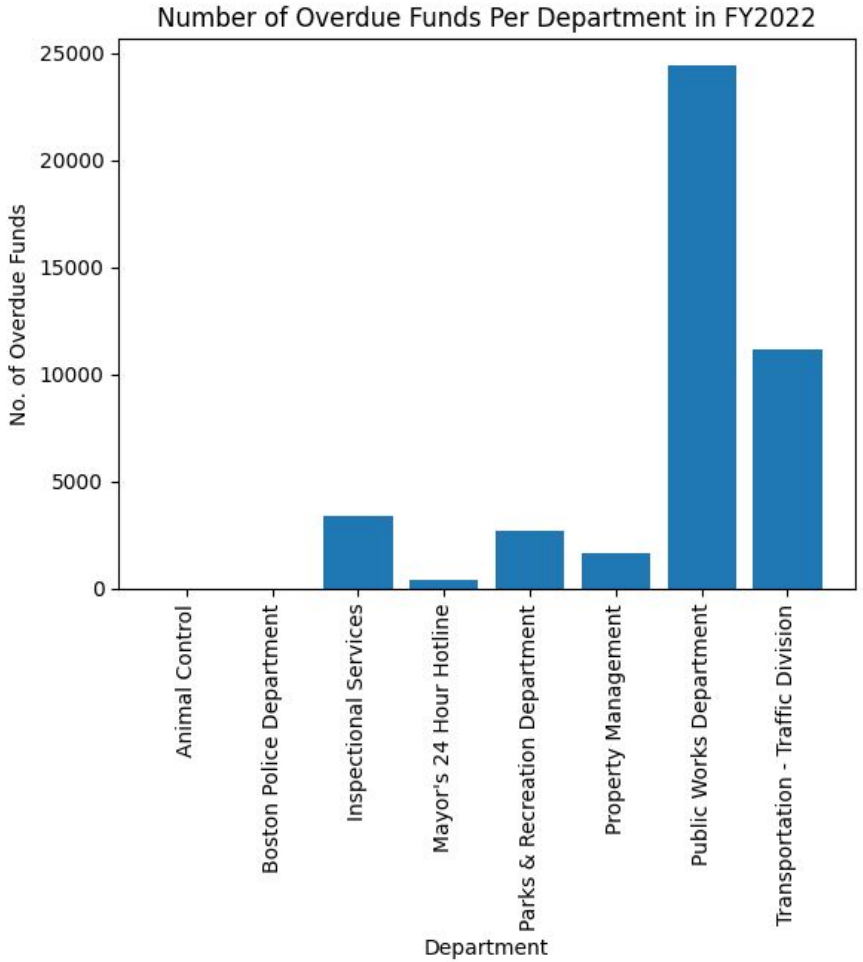
On reviewing the data, we noticed that each request had a column, categorizing the request as either ‘ONTIME’ or ‘OVERDUE’. After walking through the data, we decided to calculate the number of overdue requests per neighborhood. Doing so will help us get a better understanding of which neighborhoods may not be getting sufficient funding, since their service request never got fulfilled. We had data available for years 2011 to 2022, but decided to only use data from the past 5 years to ensure results were as accurate and up to date as possible





We also used the data to figure out which departments need most funding by analyzing the proportions of overdue funds to the number of service requests reported to each department. From the bar plot we can see that the public works department has the largest number of requests reported and largest number overdue requests. Thus, it would be equitable to provide more funds toward the the public works department. We can also see that the Boston Police department and Animal Control department have the least number of overdue service requests. This could mean that the resources provided to these departments are already equitable and do not require major changes.

Animal Control	4
Boston Police Department	2
Inspectional Services	3371
Mayor's 24 Hour Hotline	376
Parks & Recreation Department	2686
Property Management	1621
Public Works Department	24426
Transportation - Traffic Division	11185



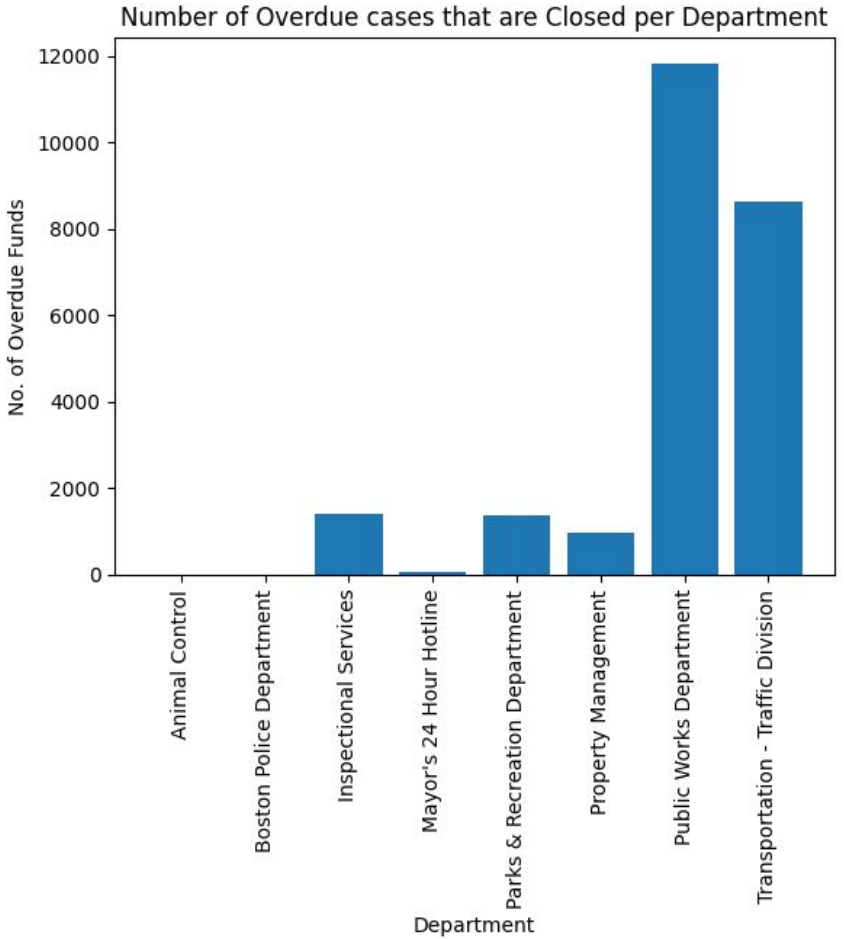
We noticed that the number of service requests placed are much lower than we actually thought by taking into account the 'case_status.' We found that a lot of cases that are reported 'OVERDUE' are also marked 'closed.' This could be because a lot of the reported cases might be invalid or unfixable. Below we can see the difference in the number of overdue cases after accounting for the cases marked close, which gives us a better understanding of the nature of the requests. For example, before accounting for closed cases, we see that the Public Works department has 24426 overdue cases; but after accounting for closed cases, we see that 11830 of th

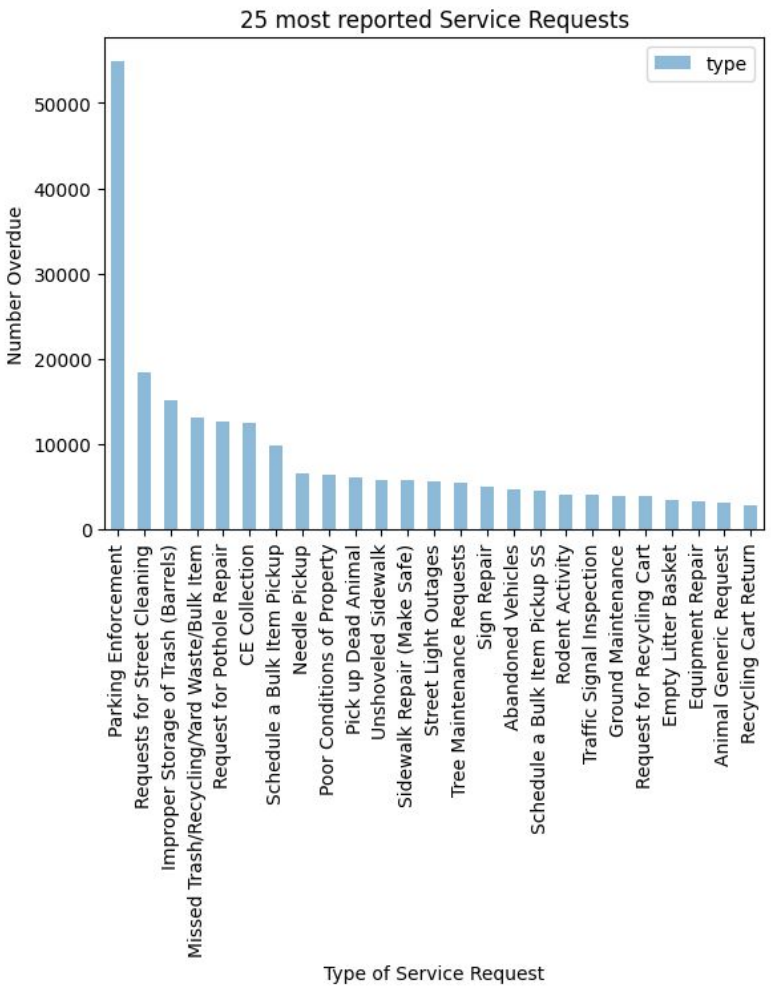
No. of Overdue Cases:

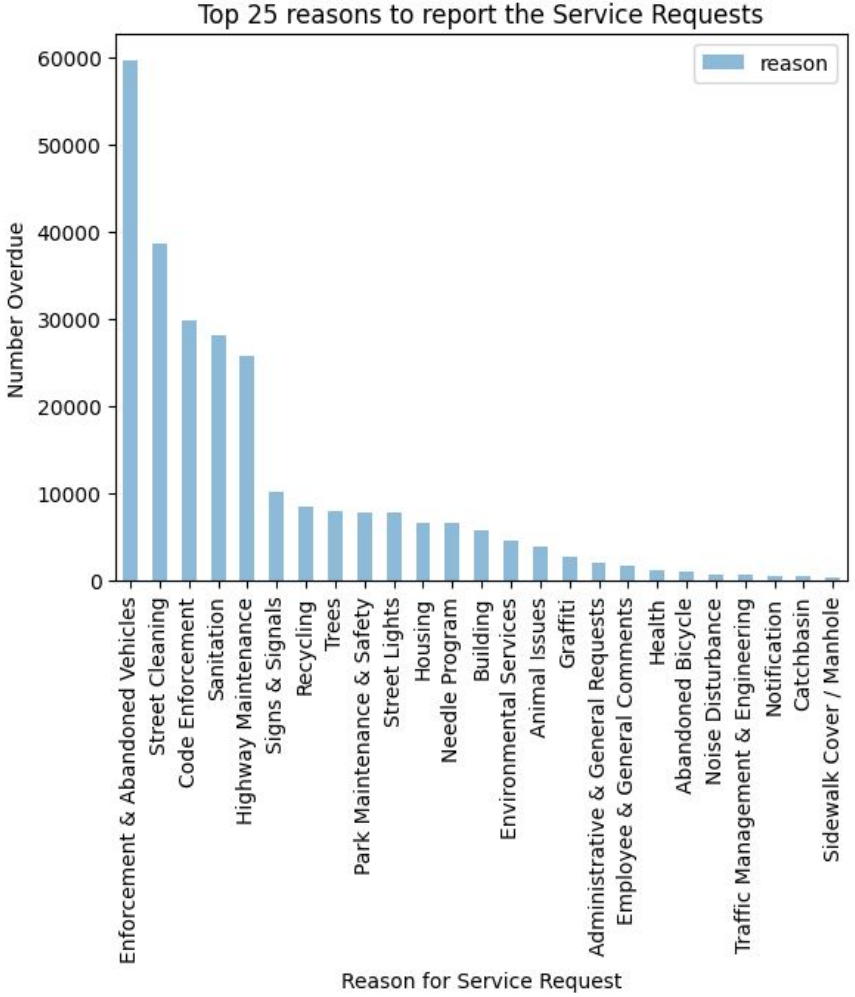
Animal Control	4
Boston Police Department	2
Inspectional Services	3371
Mayor's 24 Hour Hotline	376
Parks & Recreation Department	2686
Property Management	1621
Public Works Department	24426
Transportation – Traffic Division	11185

No. of Closed Cases that are Overdue:

Animal Control	4
Boston Police Department	2
Inspectional Services	1420
Mayor's 24 Hour Hotline	46
Parks & Recreation Department	1376
Property Management	978
Public Works Department	11830
Transportation – Traffic Division	8625

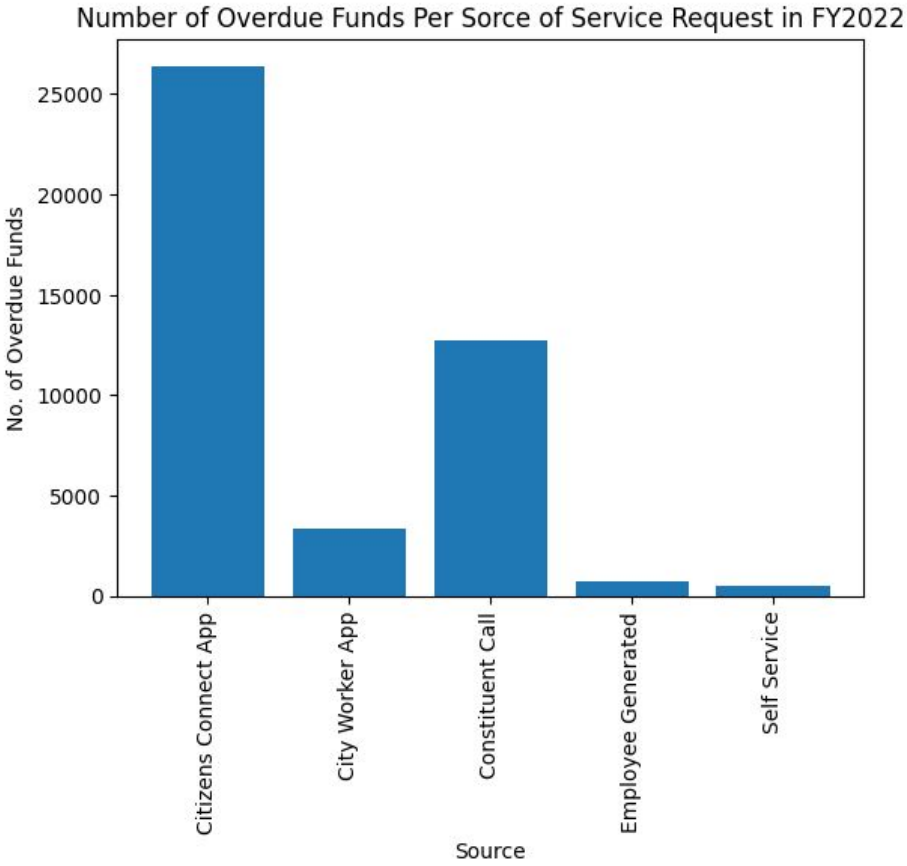



25 most reported Service Requests
type
Number Overdue
0
10000
20000
30000
40000
50000
Parking Enforcement
Requests for Street Cleaning
Improper Storage of Trash (Barrels)
Missed Trash/Recycling/Yard Waste/Bulk Item
Request for Pothole Repair
CE Collection
Schedule a Bulk Item Pickup
Needle Pickup
Poor Conditions of Property
Pick up Dead Animal
Unshoveled Sidewalk
Sidewalk Repair (Make Safe)
Street Light Outages
Tree Maintenance Requests
Sign Repair
Abandoned Vehicles
Schedule a Bulk Item Pickup SS
Rodent Activity
Traffic Signal Inspection
Ground Maintenance
Request for Recycling Cart
Empty Litter Basket
Equipment Repair
Animal Generic Request
Recycling Cart Return
Type of Service Request


Top 25 reasons to report the Service Requests
reason
Number Overdue
0
10000
20000
30000
40000
50000
60000
Enforcement & Abandoned Vehicles
Street Cleaning
Code Enforcement
Sanitation
Highway Maintenance
Signs & Signals
Recycling
Trees
Park Maintenance & Safety
Street Lights
Housing
Needle Program
Building
Environmental Services
Animal Issues
Graffiti
Administrative & General Requests
Employee & General Comments
Health
Abandoned Bicycle
Noise Disturbance
Traffic Management & Engineering
Notification
Catchbasin
Sidewalk Cover / Manhole
Reason for Service Request

Next, we used the data to analyze what mediums are being used to place the service requests and how that relates to the number of overdue funds and requests. As seen from the bar plot, Most service requests are placed through the Citizens Connect Application and constituent calls. Thus it would be equitable for departments to redirect their resources in improving the application to add features that speed up the service request process.

source	
Citizens Connect App	26411
City Worker App	3331
Constituent Call	12737
Employee Generated	734
Self Service	458



Solution

As seen in the above graphs, we can use the latest 2022 data to analyze which neighborhoods had the maximum number of overdue service requests. As seen through the data, Dorchester seems to be the neighborhood that has the greatest number of overdue service requests. To make suitable predictions for a more equitable fund distribution, more funds can be distributed to areas with higher number of overdue service requests, such as Dorchester and Roxbury.