

Final Report

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Base Project

Analysis of City Assistance Programs and Businesses Licenses

What is the goal of the project?

The city allocates money to various funds designed to offer relief and support to benefit residents and businesses in Boston. Councilor Mejia wants to understand whether these benefits are being distributed equitably and if the money the city said they were going to spend has reached and impacted the people they said it would serve. The goal is to assess whether the money is going and if it is being equitably distributed.

Project Motivation:

Through the project, we can ensure whether the individuals and businesses that are in most need of the funds are getting them. This would help to reduce inequality and provide relief to those in need.

What is the background needed to understand the project?

To understand the project, a good understanding of the demographics of Boston is required. A good understanding of the datasets such as Relief Funds, Licenses and Capital Budget is also required.

Questions to be answered in Analysis:

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

The code could be found from

<https://github.com/minnnh/ds-councilor-mejia-city-services/blob/team1/fall22-team-1/deliverable2/deliverable2.ipynb>

We analyzed the business assistance data during the pandemic.

We firstly analyzed the populations of different jobs in Boston. We could find that the job type "Noninstitutionalized population" has the highest population and then is "College/University student". The job type "Other institutional facilities" has the lowest population.

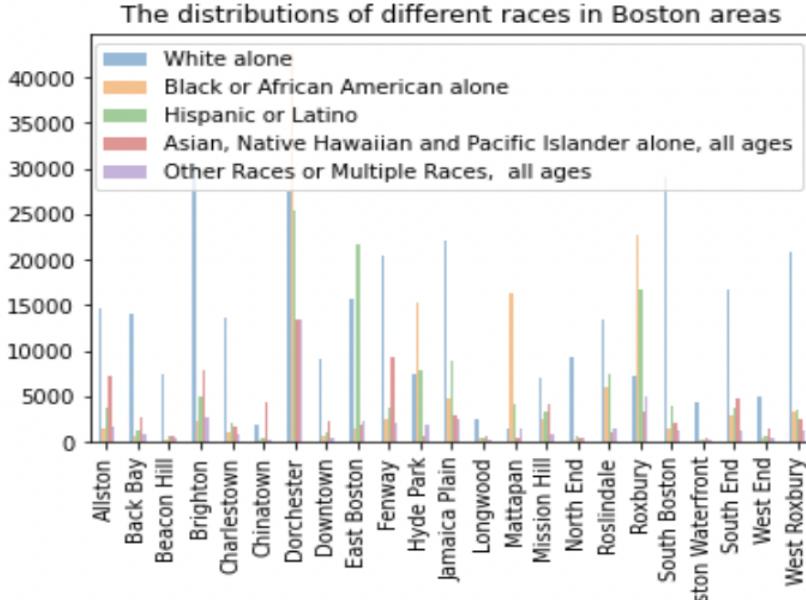


Fig 1

Then, we analyzed the distribution of different races in Boston areas, and visualized the distribution in a bar chart. From the result, we found that the population of "White alone" is the largest in the Boston area, while "Asian, Native Hawaiian and Pacific Islander alone, all ages" has the lowest population. Since the gap between the population of "White alone" and other races is large, especially the race of "Asian, Native Hawaiian and Pacific Islander alone, all ages", there might be a risk of the distribution of relief funds between different races. From our analysis, we found out that Mattapan has the highest black population - 68.29% followed by Hyde Park - 49.96%, Roxbury - 41.52%, and Dorchester - 34.95%. For the LatinX population, we find that East Boston has the highest percentage - 50.38% followed by Roxbury - 30.47% and Roslindale - 25.09%. (Fig 1)

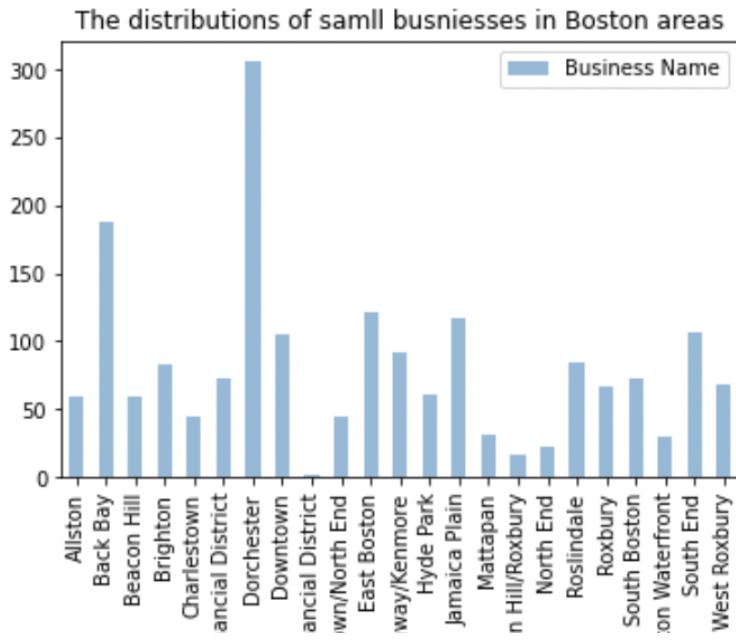


Fig 2

We also analyzed the distributions of small businesses in Boston areas, and visualized it in a bar chart. The result showed that Dorchester has the most small businesses, and then is Back Bay, while Downtown/ Financial District has the least number of businesses. (Fig 2)

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

The code could be found from

https://github.com/minnnh/ds-councilor-mejia-city-services/blob/team1/fall22-team-1/deliverable2/rental_assistance.ipynb

We analyzed the rental assistance data during the pandemic.

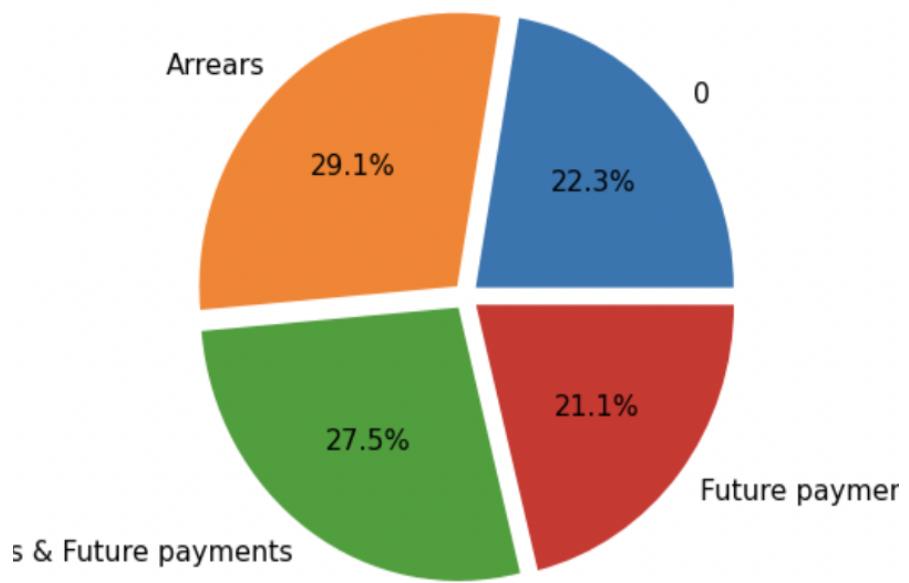


Fig 3

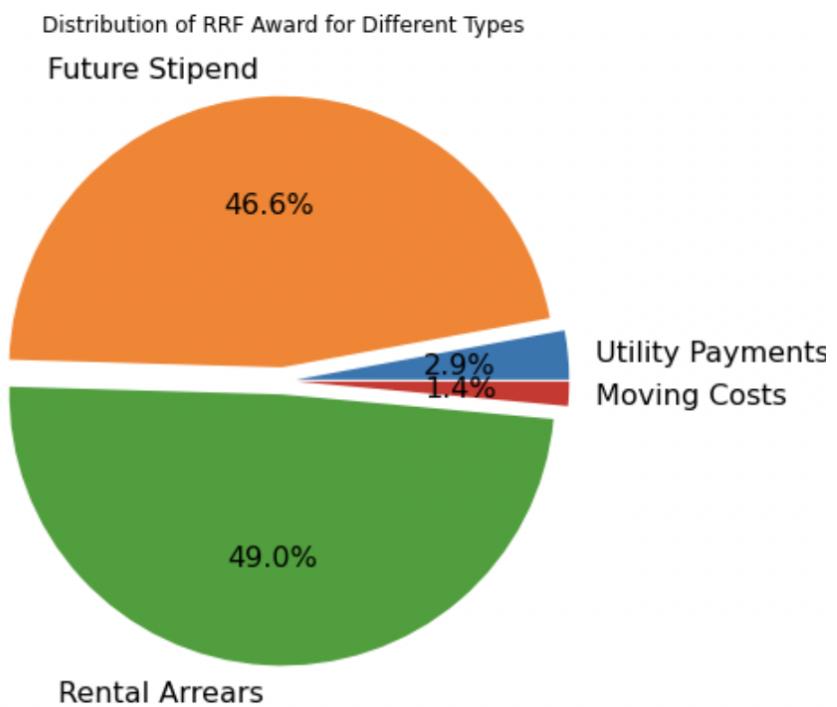


Fig 4

We firstly analyzed the distribution of RRF award amounts for different RRF types, and visualized the distribution in a bar chart. We found that, from Oct20 to Mar21, the funds to ‘Arrears’ are highest, and then are ‘Arrears & Future payments’ and ‘Future payments’. The difference between their distribution is not that big. (Fig 3) From April21 to Sept21, the award to ‘Rental Arrears’ and ‘Future Stipend’ are highest, while the award to ‘Utility Payments’ and ‘Moving Costs’ is lowest. (Fig 4)

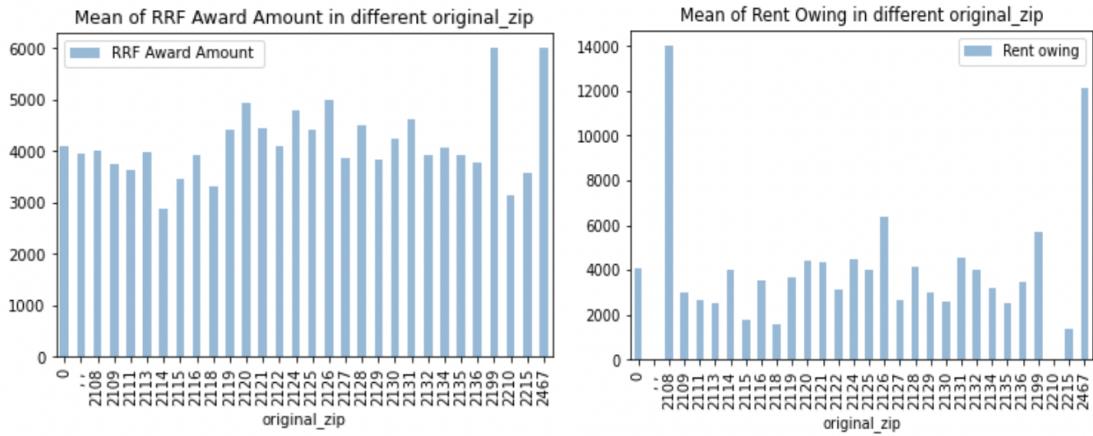
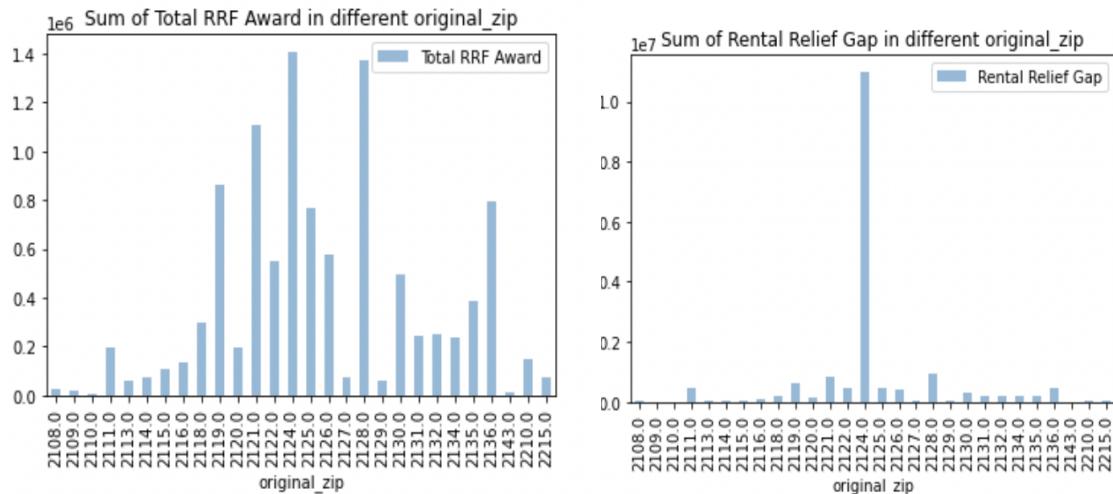


Fig 5



Then, we analyzed the distribution of RRF and the rent owing for different zips. From the data Oct20 to Mar21, we could see that zip 02199 (Prudential) and 02467(Fort Hill) have the highest funds, and zip 02114(Downtown) and 02210(South Boston) have the lowest funds,while zip 02108(Beacon Hill) and 02467(Fort Hill) have the highest rent owing, and zip 02210(South Boston) has the lowest rent owing. (Fig 5) From the data April21 to Sept21, we could see that zip 02124(West Lower Mills) and 02128(East Boston) have the highest funds, and zip 02110(South Boston) and 02143(Prospect Hill) have the lowest funds, while zip 02124(West Lower Mills) has the highest amount of rental relief gap. (Fig 6)

We also analyzed the difference between RRF amount and the owing amount in different zips. We found that zip 02124(West Lower Mills) has an extremely big difference compared to the differences in other zips.

3. Where are the city's economic development licenses? Which communities are benefitting?

Which communities are being left out?

The code could be found from

https://github.com/minnnh/ds-councilor-mejia-city-services/blob/team1/fall22-team-1/deliverable2/rental_assistance.ipynb

We analyzed the city's economic development licenses in the Food, Alcohol, Cannabis field.

For Food (Fig 7) and Alcohol Licenses (Fig 8), Boston has the highest amount of licenses while Chestnut Hill and southend have the lowest amounts of licenses. (Fig 9) For Cannabis Licenses, Dorchester has the highest number of licenses while Mission Hill and Westend have the lowest.

(Fig 10) The distribution for general licenses are similar to food and liquor licenses, meaning the food and alcohol industries have a higher impact on the overall economy development.

Alcohol Licenses Per City

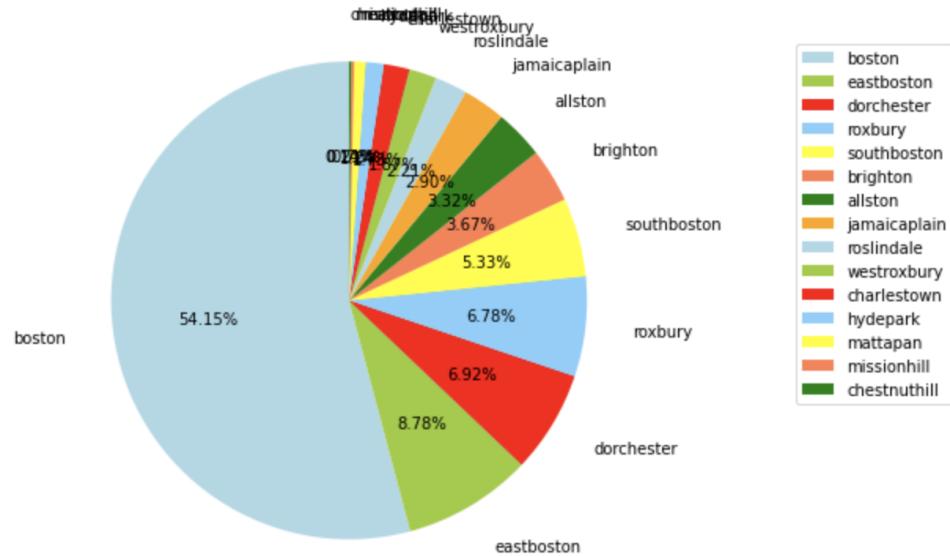


Fig 7

Food Licenses Per City

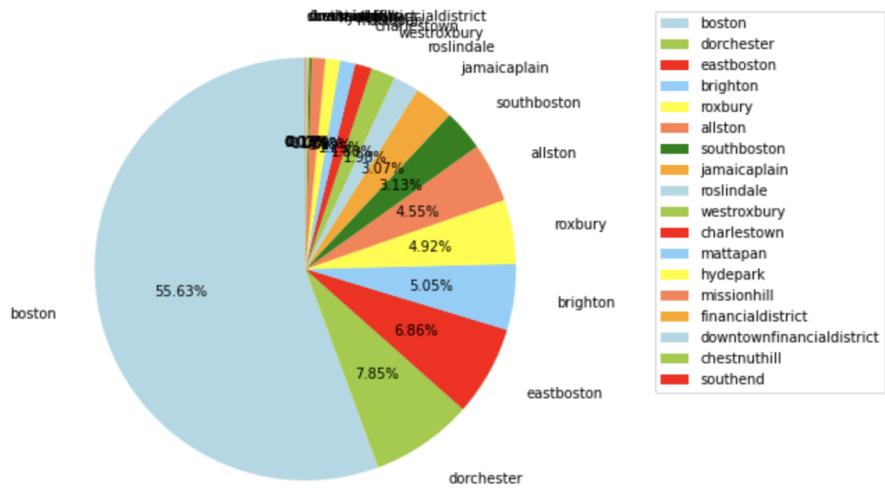


Fig 8

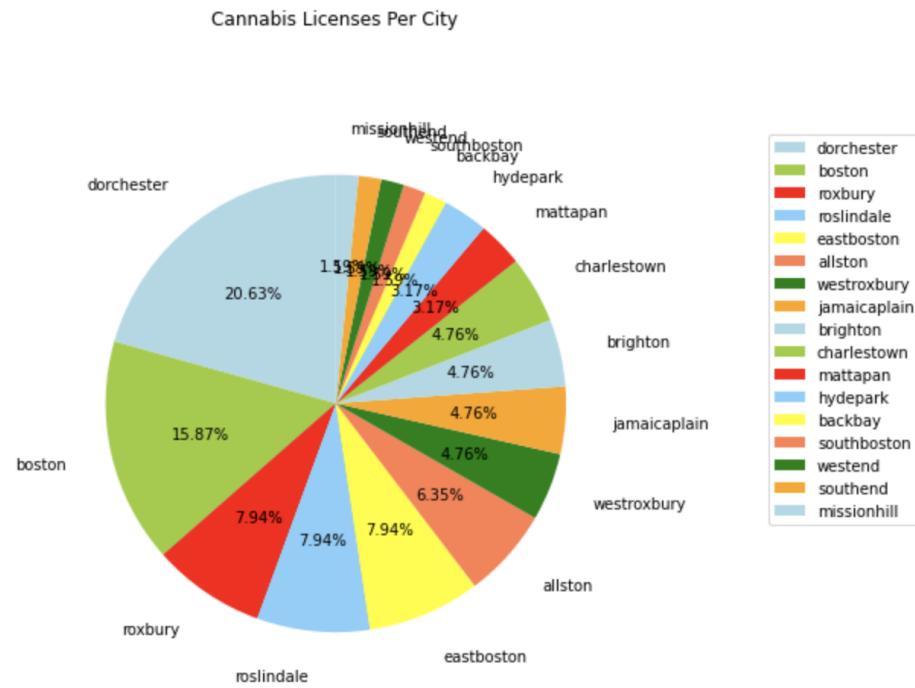


Fig 9

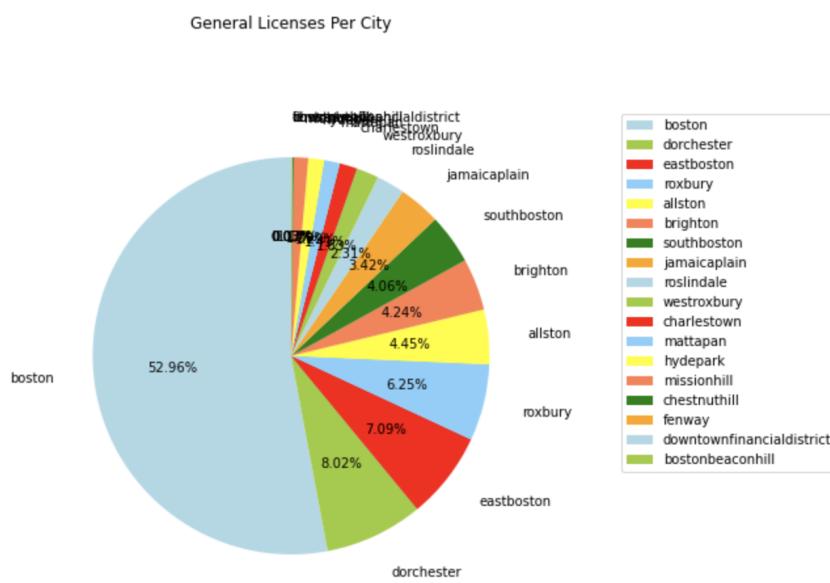


Fig 10

Boston, Dorchester and East Boston benefitting the most, while Chestnut Hill, Mission Hill and Hyde Park are being left out. This may be due to population distribution, since most of the licenses are concentrated in Boston downtown.

311 Extension Project

We analyzed the data of the RRF request.

The code could be found from here

<https://github.com/minnnh/ds-councilor-mejia-city-services/blob/team1/fall22-team-1/deliverable3/extension.ipynb>

The data is from

https://docs.google.com/spreadsheets/d/1mkJNNcycuFPszIi8pat7VAm_N6Fka3J/edit#gid=2021455318

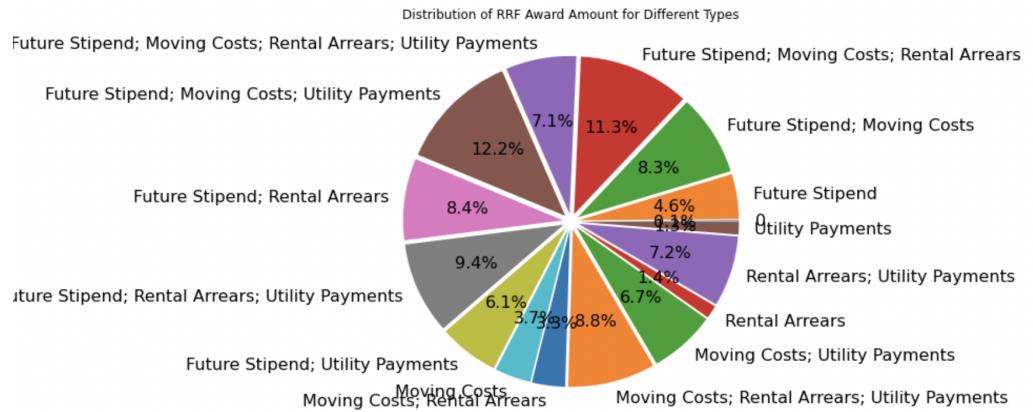


Fig 11

- We firstly analyzed the distribution of RRF award amounts for different types. From the graph above, we could find that 'Future Stipend; Rental Arrears; Utility Payments' has the highest funds and then is 'Future Stipend; Rental Arrears', whose number of funds is really close to the highest funds. The 'Rental Arrears' and 'Utility Payments' have the lowest funds, which are 1.3% and 1.4% respectively. (Fig 11)

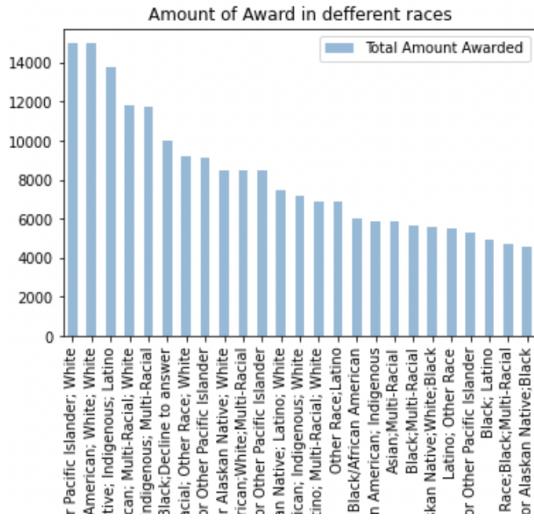


Fig 12

- Then we analyzed the distribution of the amount of awards in different races. From the graph above, we could find that the race combination of 'American Indian or Alaskan Native; Black/African American; Indigenous; Native Hawaiian or Other Pacific Islander; White' has the largest amount of awards, and then is "Black/African American; White; White". (Fig 12)

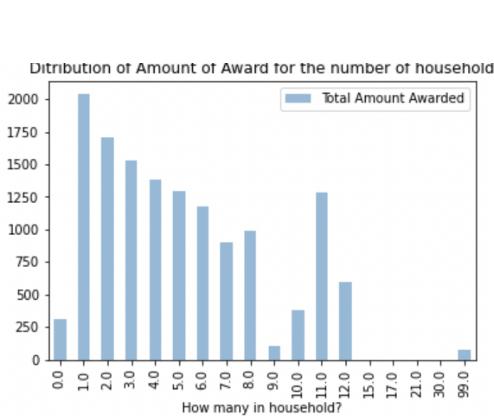


Fig 13

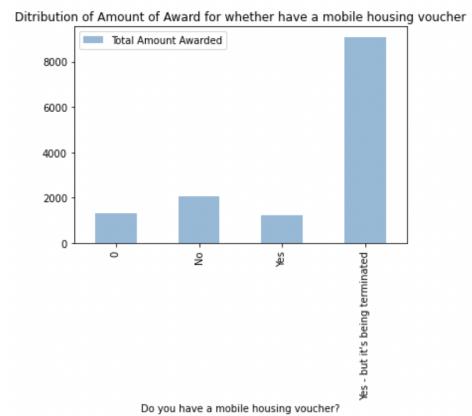


Fig 14

- We also analyzed the distribution of home ownership level. For the distribution of the amount of award for the number of households we found that the household of 1 has the highest funds and then is 2. (Fig 13) For the distribution of the amount of award for whether to have a mobile housing voucher, we could find that the type of 'Yes but it's being terminated' has the highest funds. (Fig 14)

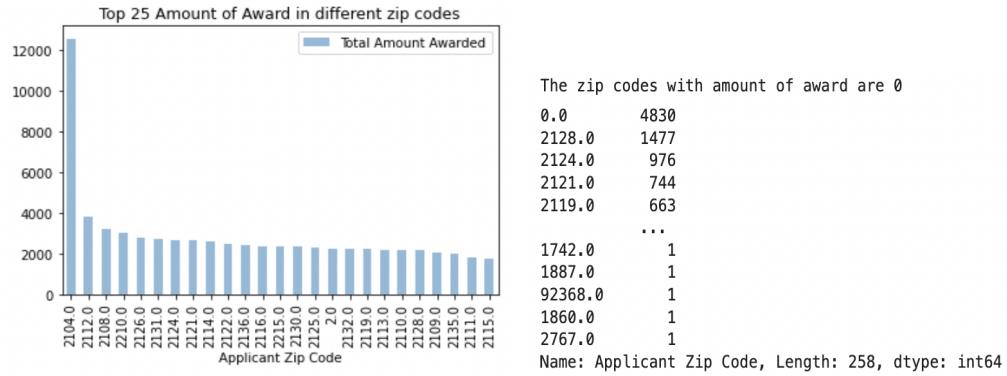


Fig 15

- The graph above is the distribution of the amount of awards in different zip codes. From the result, we could find that the zip code 2104 has the highest number of awards, While more than 250 zip codes didn't receive awards. (Fig 15)

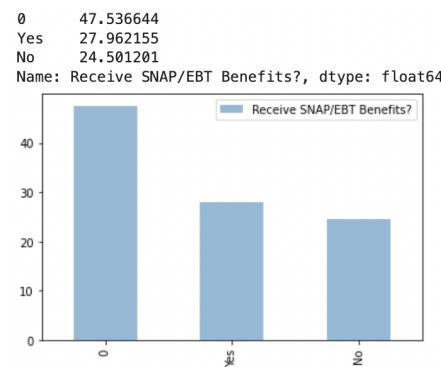


Fig 16

- We analyzed the distribution of whether the cases have received SNAP/EBT benefits or not. From the result we could find that the percentage of cases that have received

SNAP/EBT Benefits is 27.96%, while the percentage of cases that have not received SNAP/EBT Benefits is 24.5%. (Fig 16)

Ineligible	29.927938
Awaiting tenant materials	26.261091
Approved	25.736556
Tenant non-responsive	9.534781
Landlord and tenant non-responsive	2.500123
0	2.166773
Opted for RAFT	1.024560
Awaiting landlord materials	0.995147
Pending New Lease	0.524536
Pending approval	0.480416
Opted out	0.401980
Pending offer letter	0.142164
Landlord refused participation	0.127457
Landlord non-responsive	0.102946
In recertification	0.044120
Transferred/referred	0.014707
None	0.014707

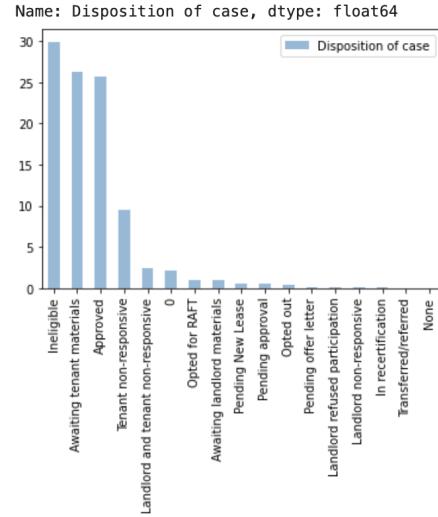


Fig 17

- We also analyzed the distribution of the disposition of cases. From the results above we could find that the percentage of the cases that have been Approved is 25.73%, while the cases that are 'Landlord refused participation' is 0.142%. (Fig 17)

We analyzed the data of the 311 Service Requests

The code could be found from here

The data is from

<https://data.boston.gov/dataset/311-service-requests/resource/81a7b022-f8fc-4da5-80e4-b160058ca207>

- We firstly analyzed the most popular types of service requests in the neighborhoods of Boston.

It can be seen that the most popular types of service requests are Parking Enforcement, Requests for Street Cleaning, Improper Storage of Trash (Barrels), Missed Trash/Recycling/Yard Waste/Bulk Item and Request for Pothole Repair.

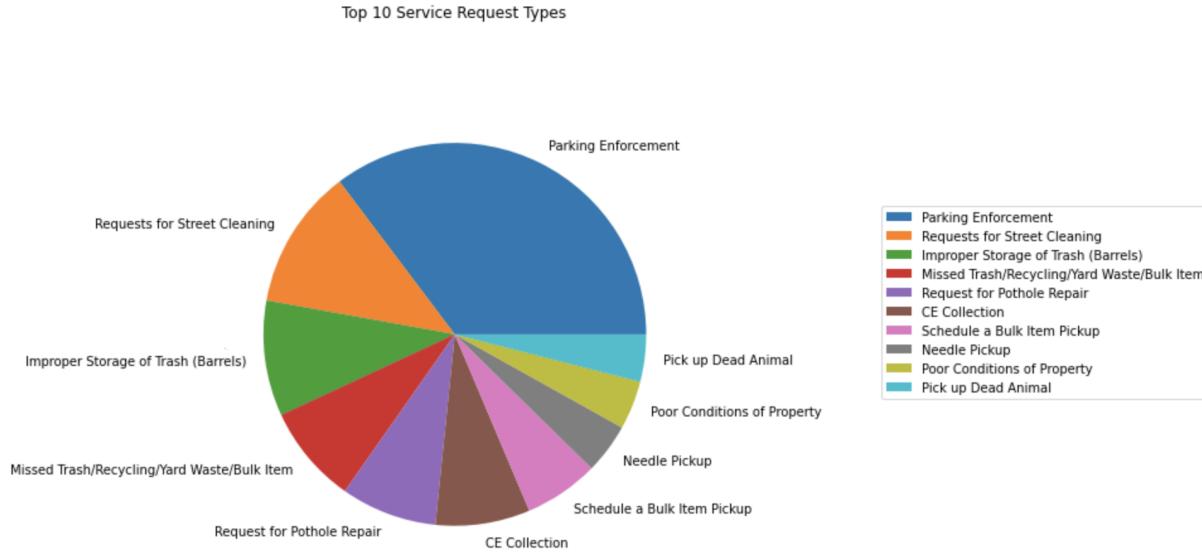
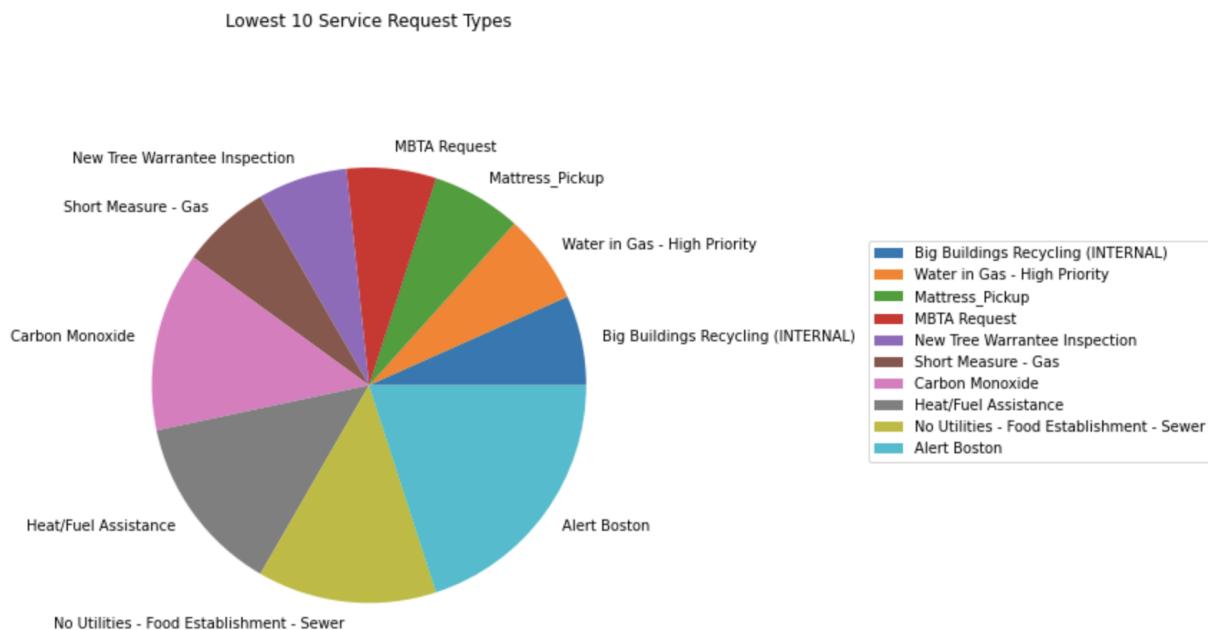


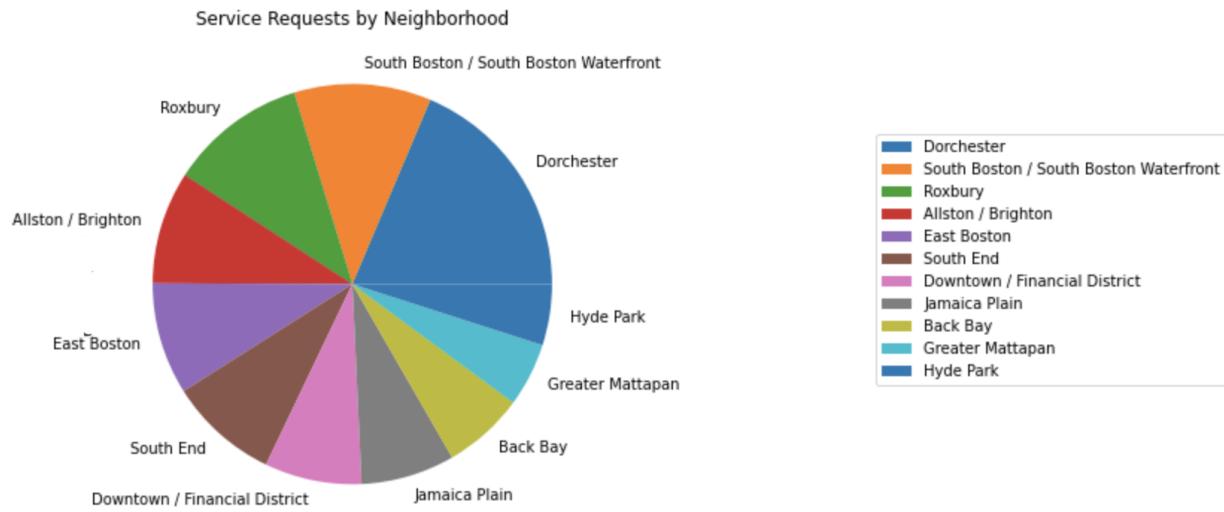
Fig 18

- Then we analyzed the least popular types of service requests in the neighborhoods of Boston.

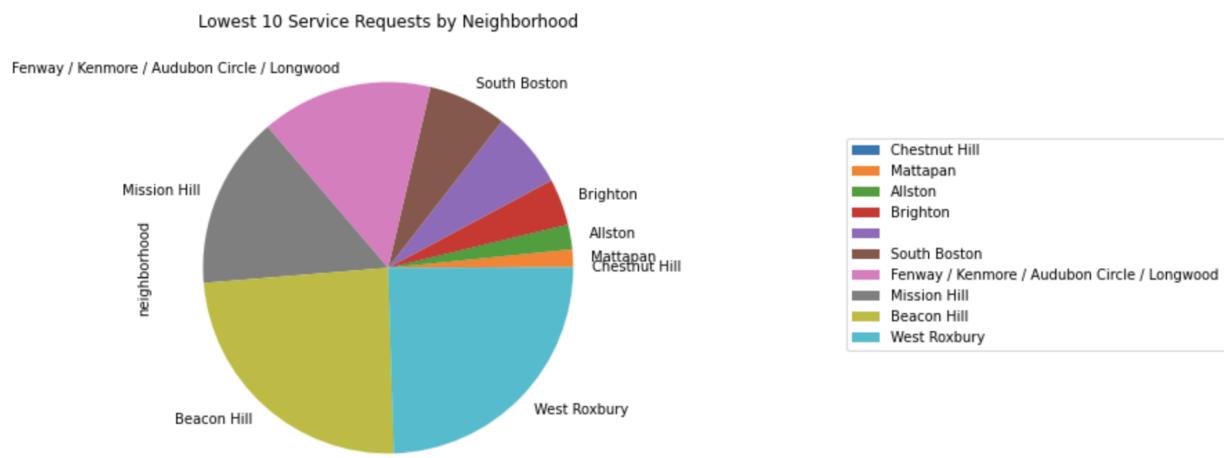
It can be seen that the least popular types of service requests are Mattress_Pickup, Short Measure - Gas, New Tree Warrantee Inspection, MBTA Request and Big Buildings Recycling (INTERNAL).



- We also analyzed the amount of service requests from each neighborhood. From the result below we could find out that Donchester requests most of the services, which is followed by South Boston and Roxbury.



- The figure below shows the amount of service requests from each neighborhood. It can be seen that Chestnut Hill requests least of the services, which is followed by Mattapan and Allston.



- We also analyzed the differences in these types of service requests based on the racial demographics of the community.

Question: Who is getting served quicker, slower, what are the characteristics of communities being served best and slowest ?

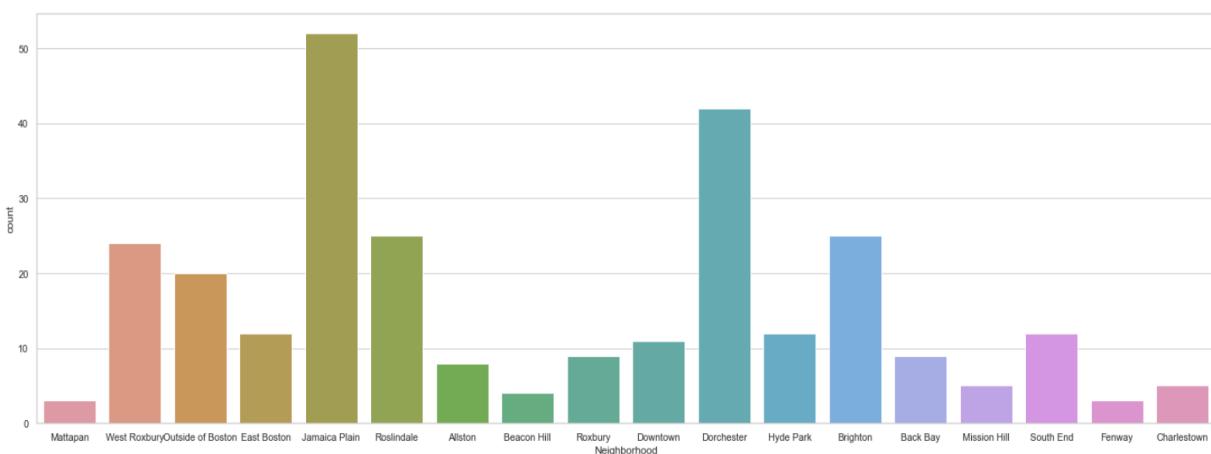
Donchester, South Boston and Roxbury are getting served quicker, while Chestnut Hill, Mattapan and Allston are getting served slower. The characteristics of communities being served best are that they typically require a lot of parking enforcement and street cleaning, probably because they are more densely populated and have more streets.

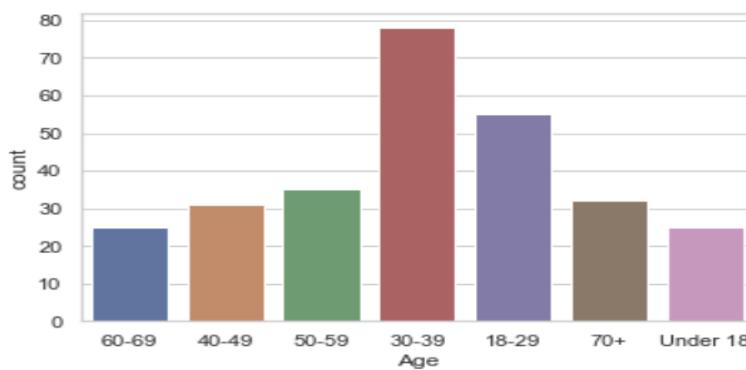
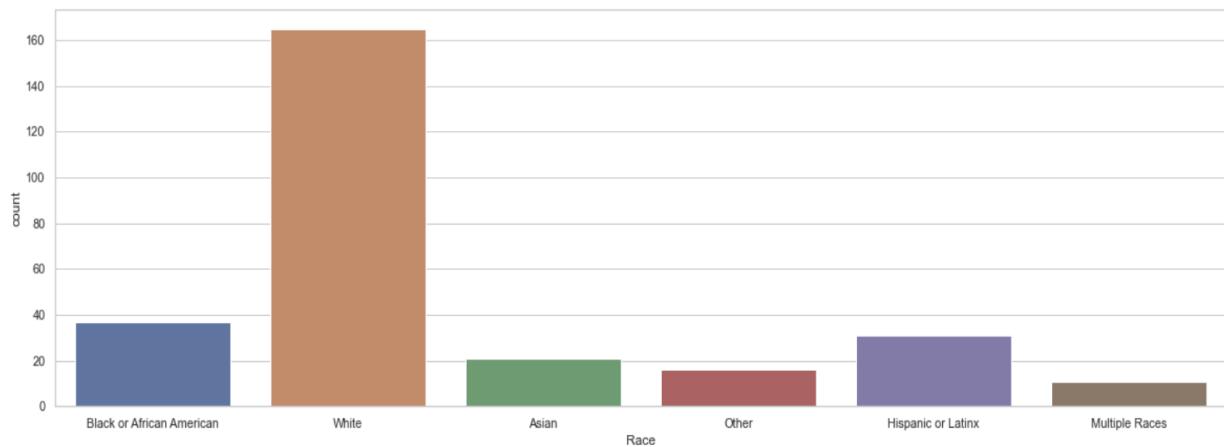
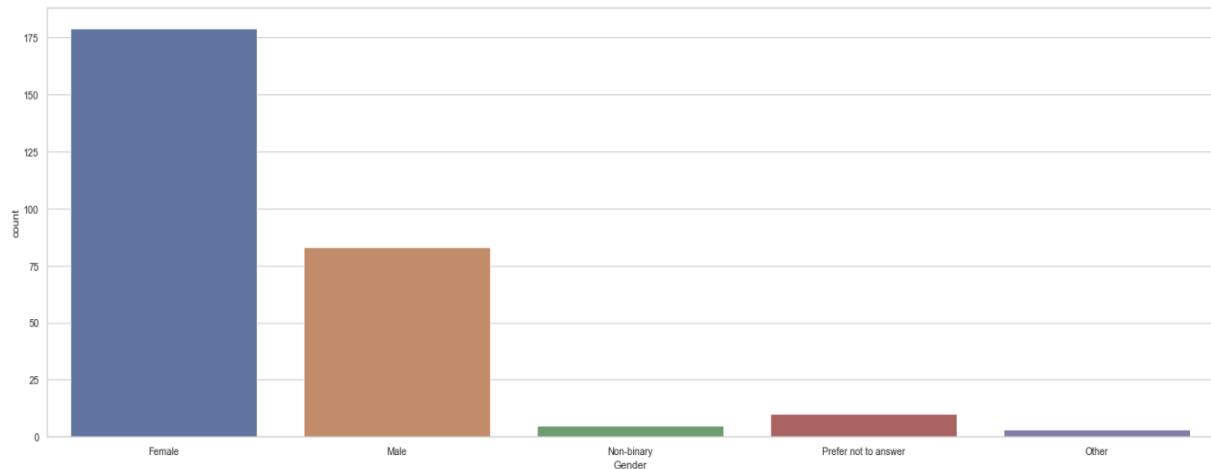
Analysis of Participatory Budgeting

The dataset can be found here: <https://data.boston.gov/dataset/fy23-budget-survey-data>

We analyze the responses of BIPOC residents of Boston to see what they want to see in terms of budget priorities.

First, we analyze their demographics:

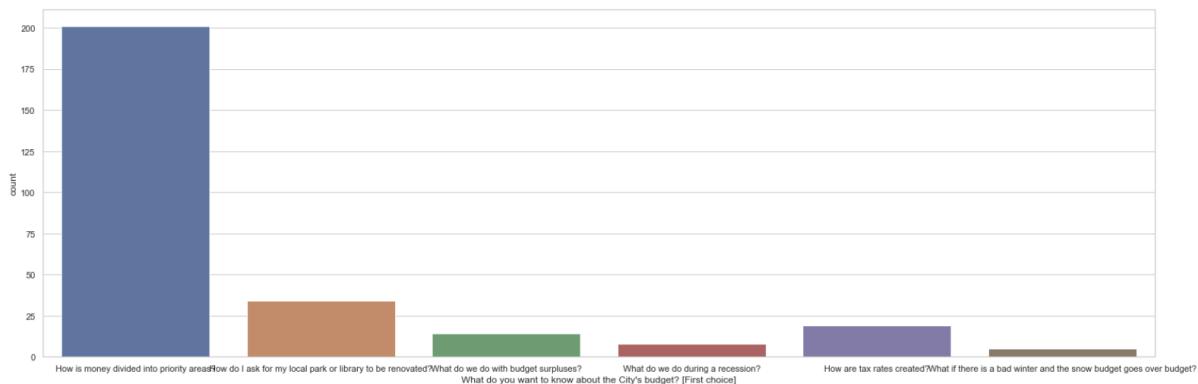




From this, we see that most responders are from Jamaica Plain and Dorchester. The number of females are almost twice that of males. Most of the people are White, followed by Black which is less than one-fourth

of the White population. For the age demographic, the 30-39 has the highest respondents followed by 18-29.

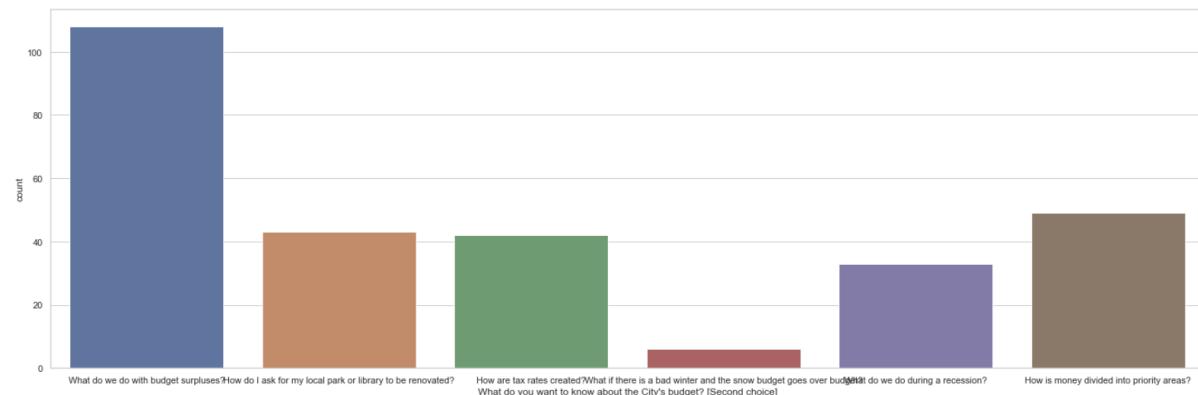
Next, we analyze their responses to the questions to see what their expectations and concerns are in terms of the budget.



Question: What do you want to know about the City's budget? [First Choice]

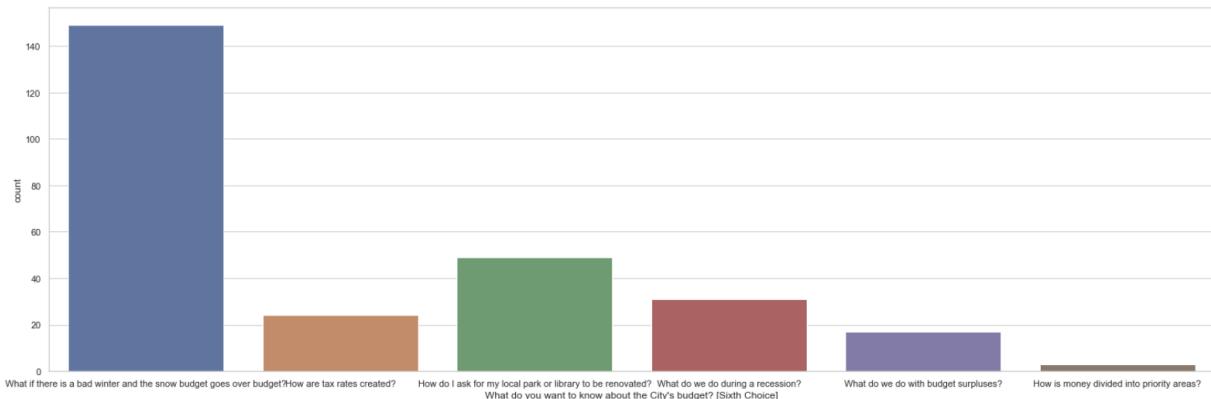
A huge majority want to know how the money is distributed in priority areas as their first choice.

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|: <AxesSubplot:xlabel="What do you want to know about the City's budget? [Second choice]", ylabel='count'>
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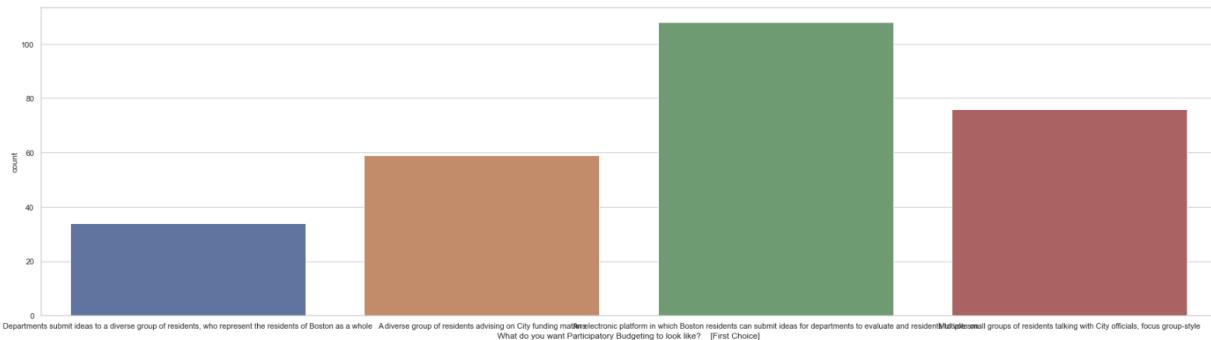
Question: What do you want to know about the City's budget? [Second Choice]

They are second most interested in knowing what budget surpluses are being used for.



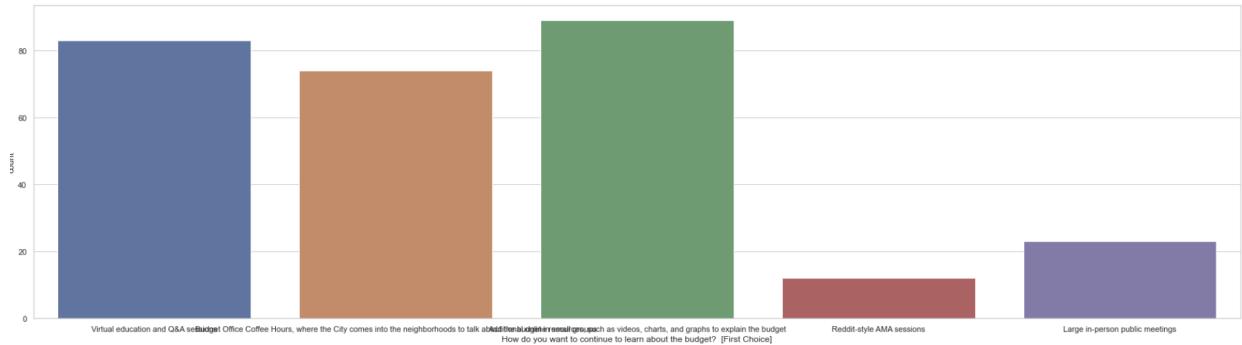
Question: What do you want to know about the City's budget? [Sixth Choice]

They are least interested in knowing what would happen if there were to be a bad winter and the snow budget goes over budget.



Question: What do you want Participatory Budgeting to look like? [First Choice]

Most respondents want an electronic platform in which Boston residents can submit ideas for departments to evaluate and residents to vote on. This is followed by wanting multiple small groups of residents talking with City officials, focus group-style.



Question: How do you want to continue to learn about the budget? [First Choice]

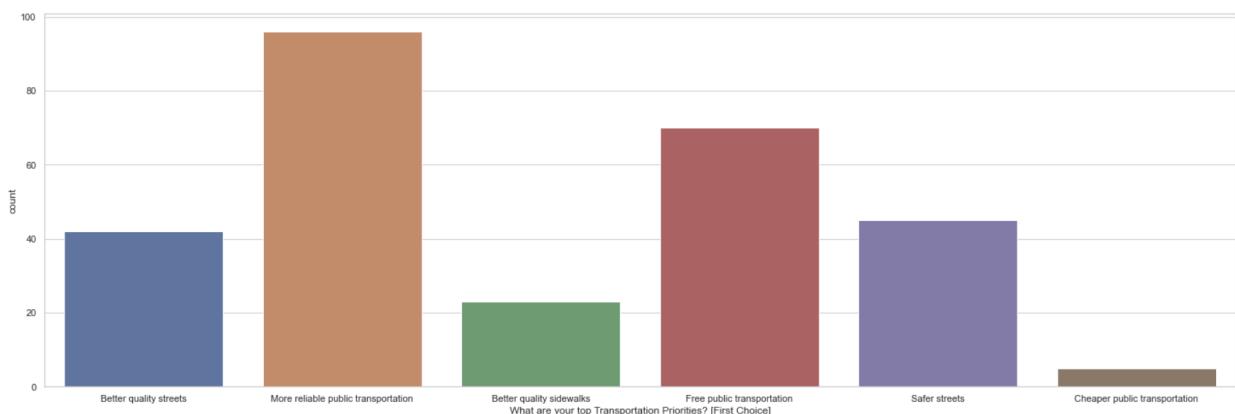
There are three close answers to this. They are (in order of priority):

Additional online resources, such as videos, charts, and graphs to explain the budget,

Virtual education and Q&A sessions,

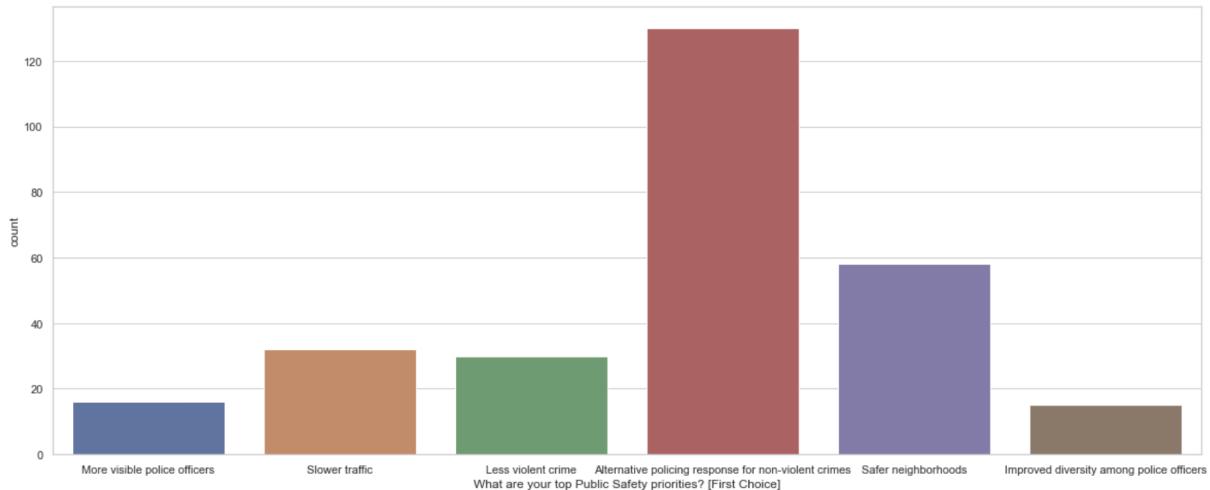
Budget Office Coffee Hours, where the City comes into the neighborhoods to talk about the budget in small

groups



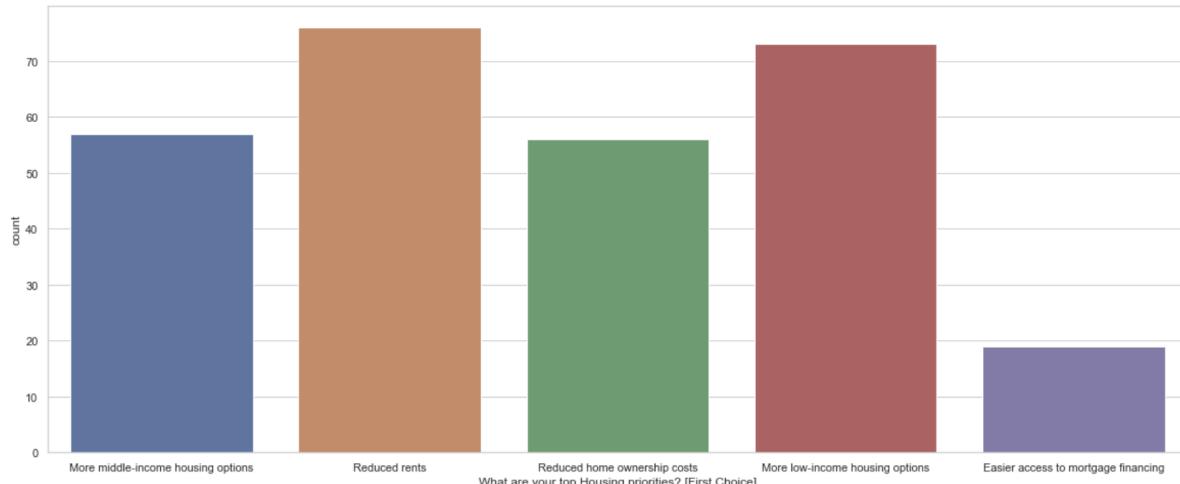
Question: What are your top Transportation Priorities? [First Choice]

Most residents expect more reliable transportation followed by free public transportation and safer streets.



Question: What are your top Public Safety priorities? [First Choice]

Most residents want to see alternative policing response for non-violent crimes. This is followed by the need for safer neighborhoods.



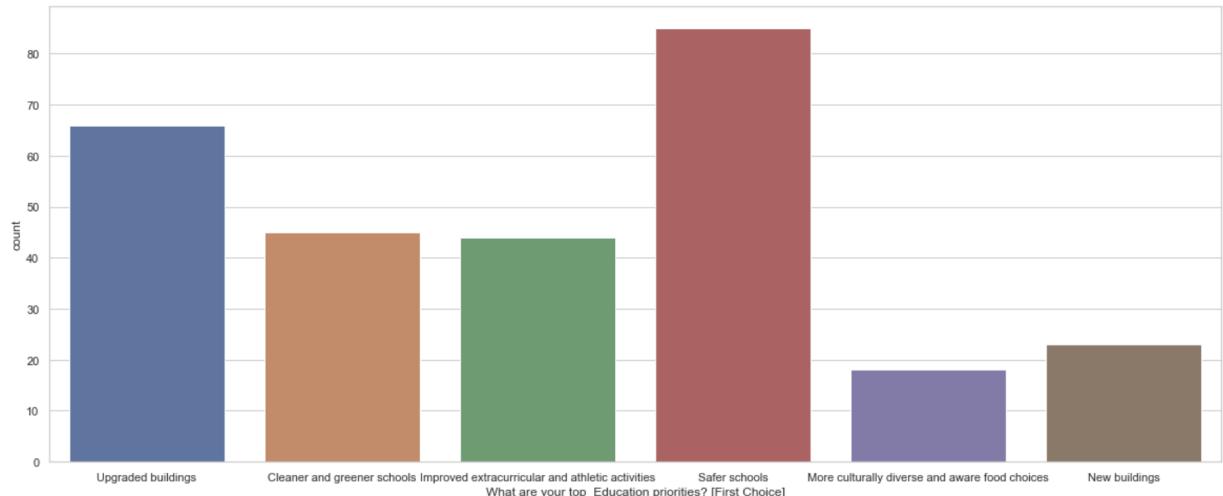
Question: What are your top Housing priorities? [First Choice]

Again, there are three close responses here. They are in order of importance:

Reduced rents,

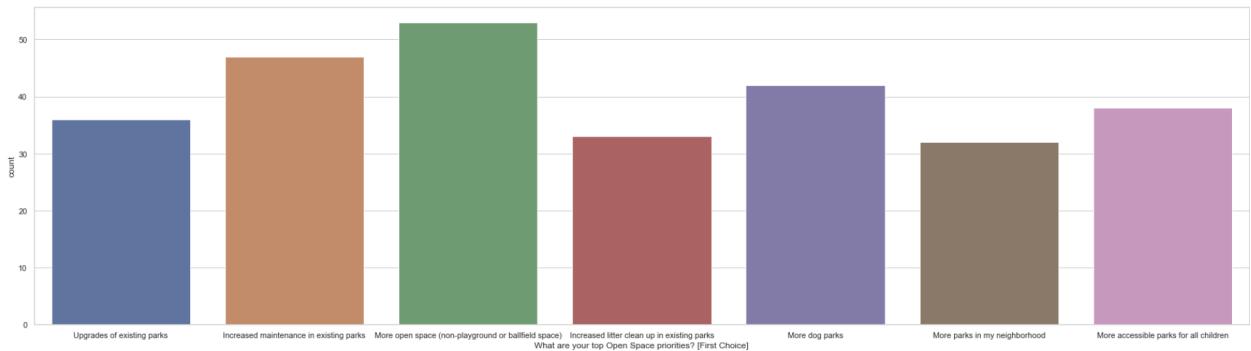
More low-income housing options,

More middle-income housing options



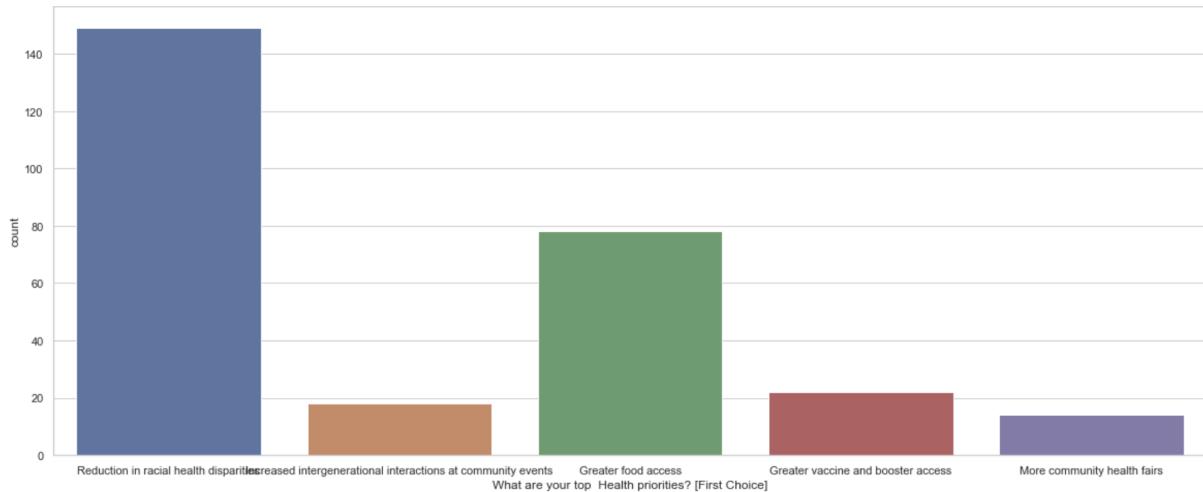
Question: What are your top Education priorities? [First Choice]

Most residents are looking for safer schools when it comes to education priorities. This is followed by upgraded buildings.



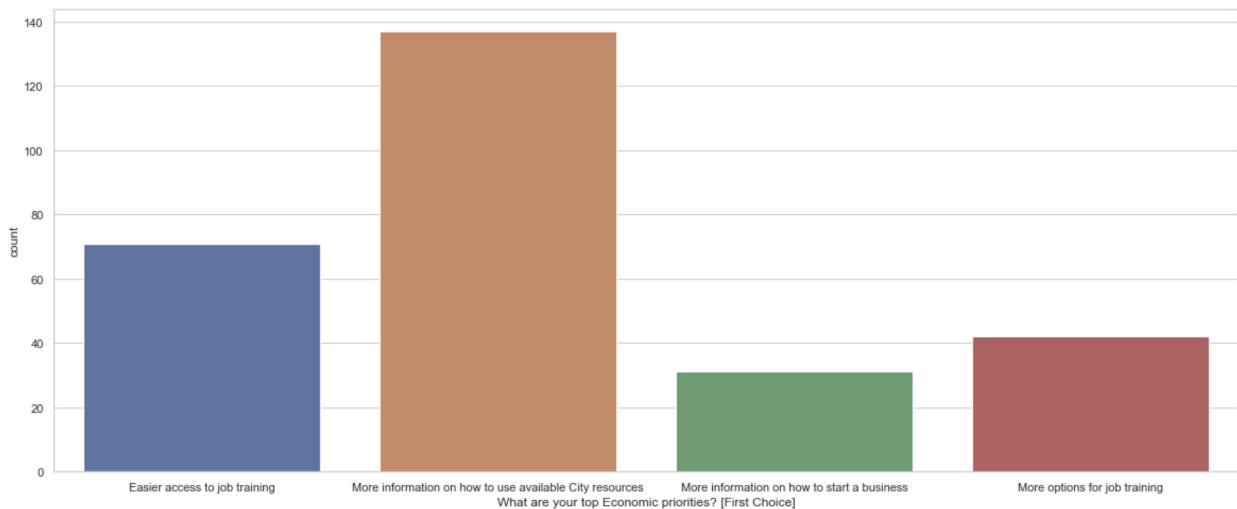
Question: What are your top Open Space priorities? [First Choice]

This has scattered responses. Most want more open space (non-playground or ballfield space). This is followed by increased maintenance in existing parks.



Question: What are your top Health priorities? [First Choice]

A clear majority wants a reduction in racial health disparities. This is followed by greater food access.



Question: What are your top Economic priorities? [First Choice]

Most residents want more information on how to use available city resources.