

Report v1

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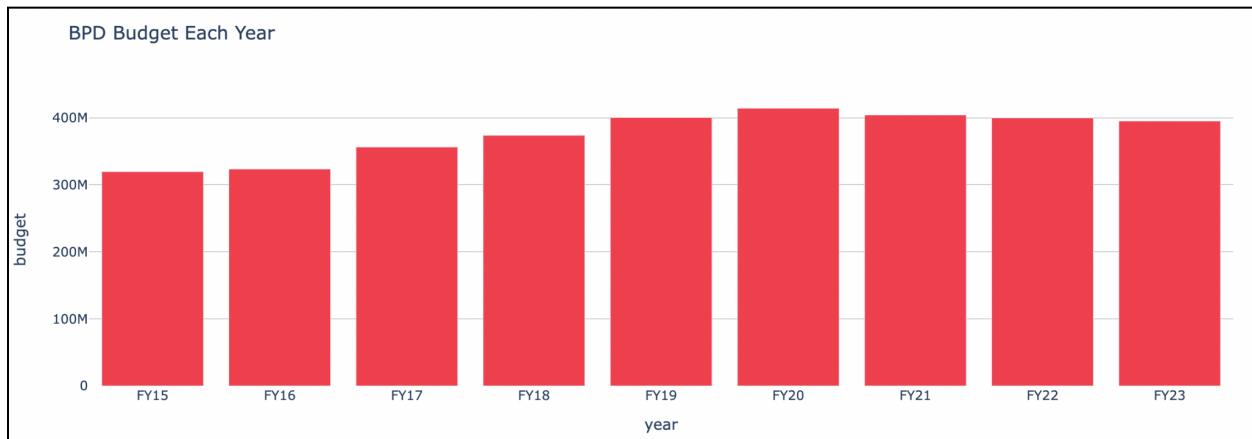
Introduction

Every year a budget is approved and adopted by the City of Boston for its police department. Our goal is to analyze and understand how funds are being allocated to and from the BPD and find any trends. This report will include our team's answers to each of the base questions given to us. Each answer will include a graph as well as an analysis of the associated budget data. The end of the report will also include our updated extension project proposal.

Note: This is a draft. Suggestions and criticism of graphs and the extension project is welcome!

Base Questions

Question 1 – BPD budget (adopted) vs previous years



Analysis:

We can see that the adopted budget has been increasing from 2015 to 2020 but afterwards decreases slightly. In response to calls for a decrease in police spending in Boston, BPD budget has only slightly decreased, remaining mostly the same.

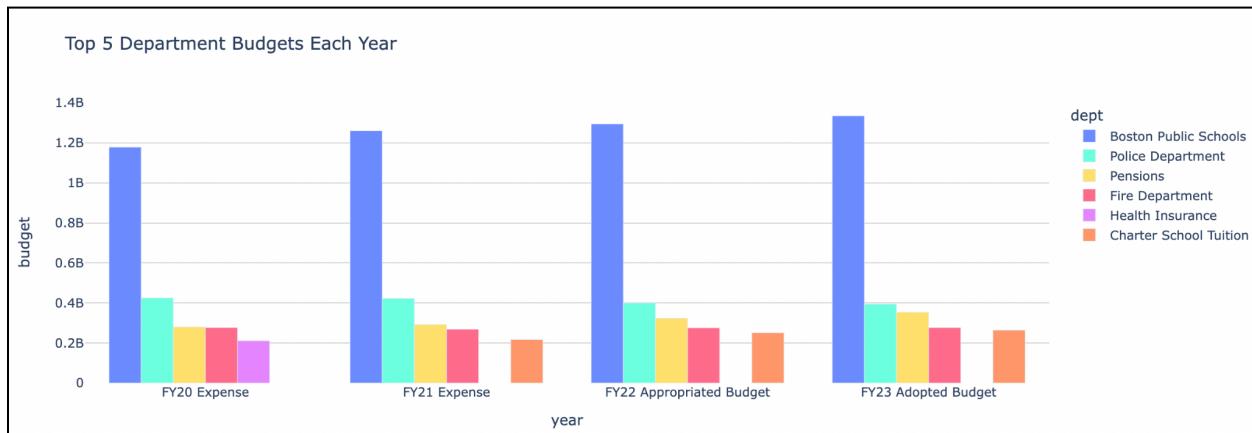
Data source:

Boston.gov operating budget data

Issues / limitations:

N/A

Question 2 – BPD budget vs other departments



Analysis:

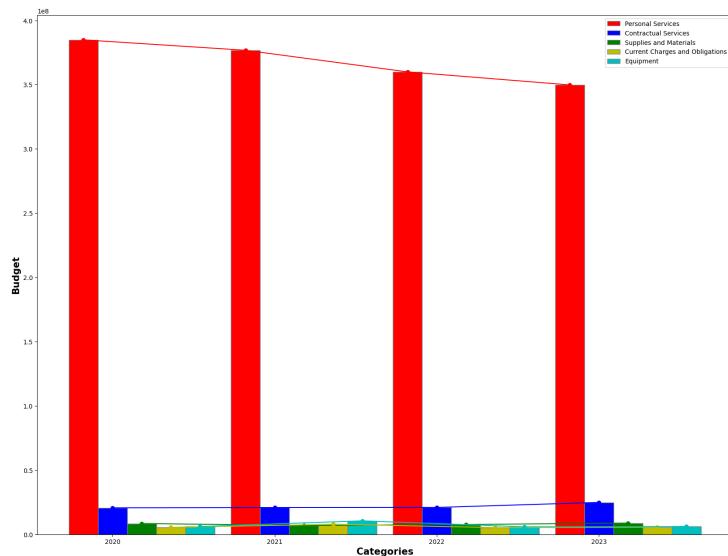
BPD remained the department with the second highest budget each year despite decreases in budget. BPD has the highest budget among “public safety” departments.

Data source: Boston.gov operating budget data

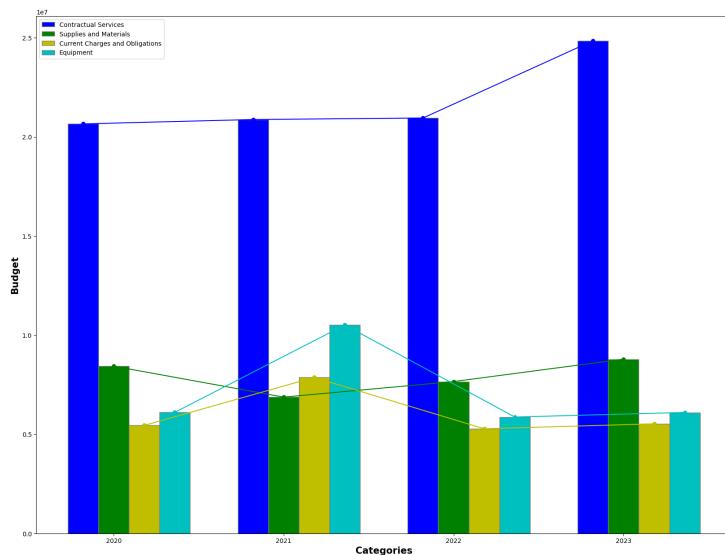
Issues / limitations:

N/A

Question 3 - BPD Budget spend categories + change over time



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Analysis: Personal Services is the category with the highest budget. A lot more than the other categories.

Data source: Boston.gov operating budget data

Issues / limitations: N/A

Question 4 – BPD proposed vs adopted budget (changed measured values)

NOTE: We found it difficult to find proposed budget data so instead we looked at adopted budget vs appropriated budget vs actual expense data. We also believe this will give more useful information on spending throughout the year.

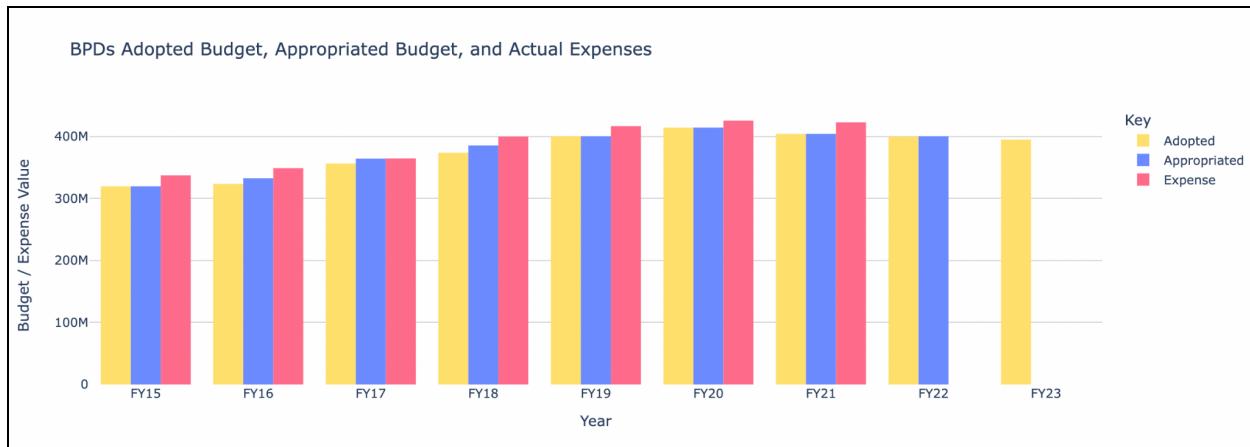
Definitions (clarified by the Budget Director of Boston):

“Adopted budget”: The budget that is initially accepted by the city to use at the beginning of the financial year.

“Appropriated budget”: The budget which includes supplemental budget changes that happen throughout the year.

“Actual expenses”: Expenses calculated after the financial year has ended.

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Analysis:

We can see in each financial year, the appropriated budget either matches or exceeds the adopted budget and the actual expense either matches or exceeds the appropriated budget. In every year measured, actual expenses always exceeded the adopted budget. BPD fails to stick with the budget every year. From FY15 - FY20 it seems like the adopted budget each year is based on the previous year's actual expenses which may help explain the upward trend of adopted budget in those years. We can see that the adopted budget finally stabilizes after FY20 (and even has a slight downward trend)

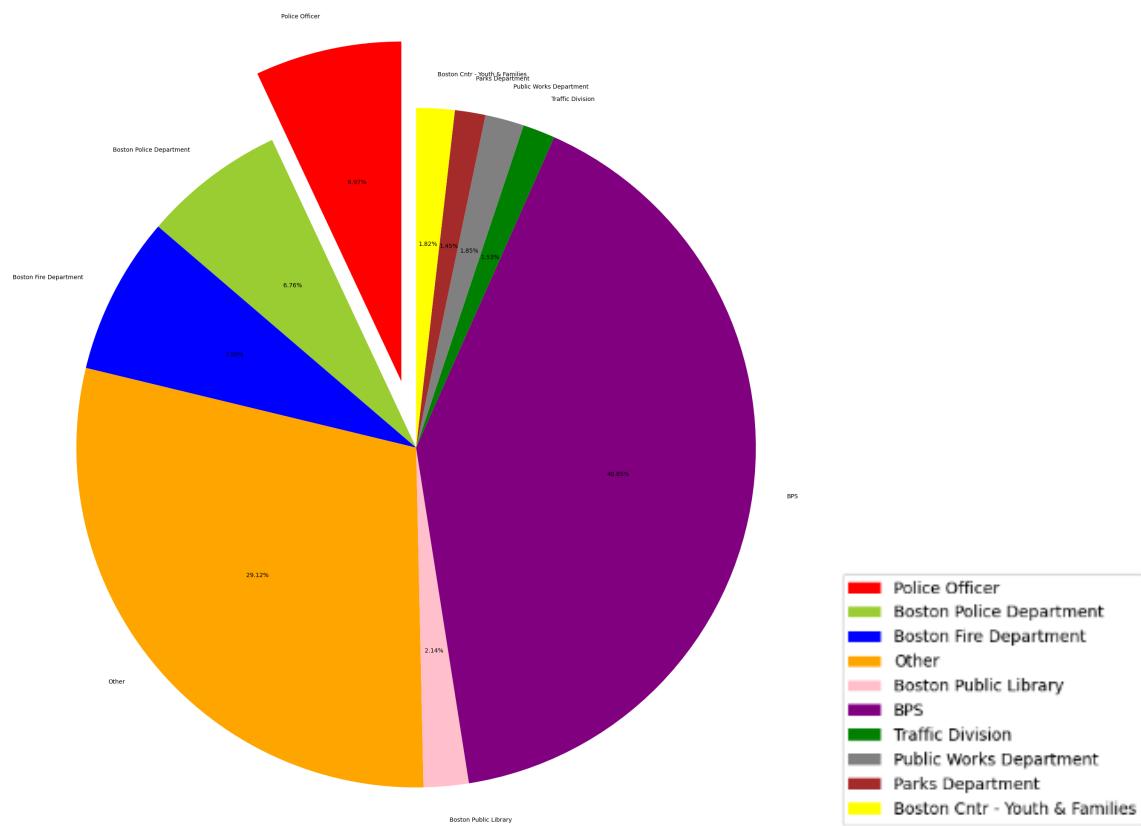
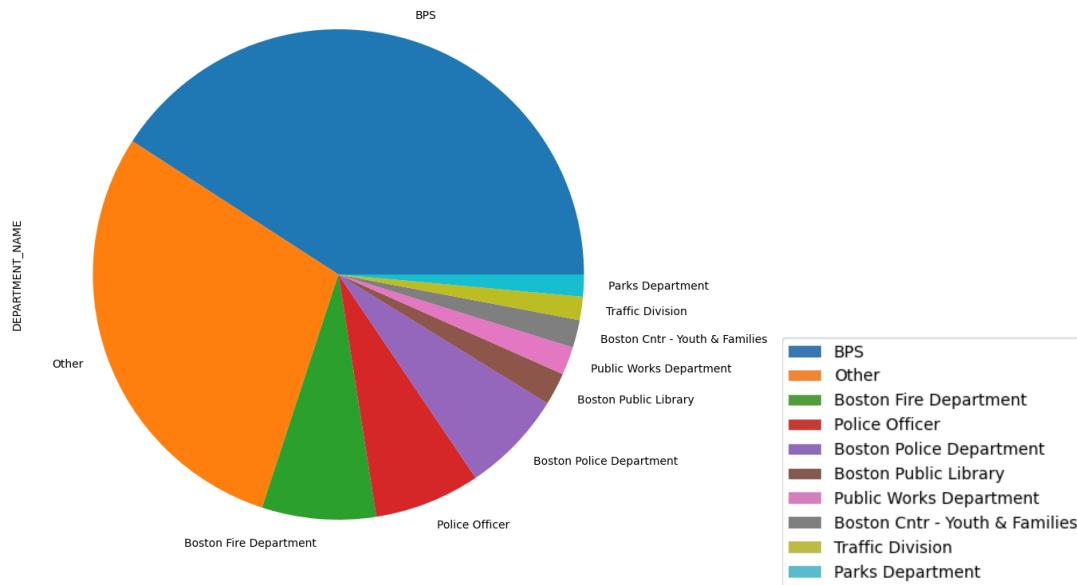
Data source:

Manually collected data from adopted budget report pdf posted on Boston.gov

Issues / limitations:

N/A

Question 5 - Number of police officers (compared to other boston employees)

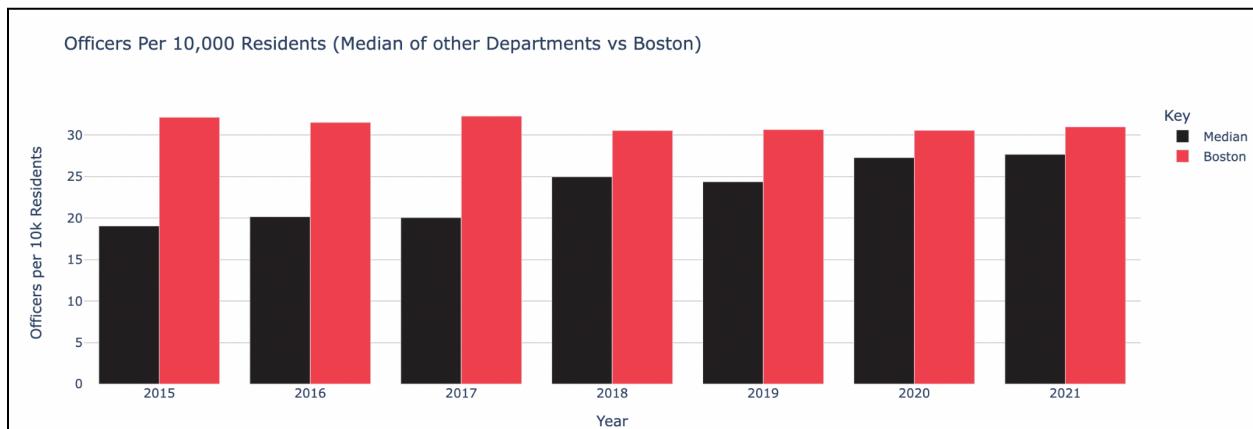


Analysis: There are many jobs with fewer than 100 people, so they are combined as other. Obviously BPS takes a large portion of the employees. And the not all the employee from police department are police officers. The police officer takes a portion of 6.97%.

Data source: Boston.gov operating budget data

Issues / limitations: N/A

Question 6 – Number of BPD officers per 10,000 residents



Analysis:

Boston constantly ranks higher than the median in terms of officers per 10k residents. Boston's officers per 10k pop has decreased slightly over the years but has generally stayed the same. Meanwhile the median has steadily increased (read limitations section).

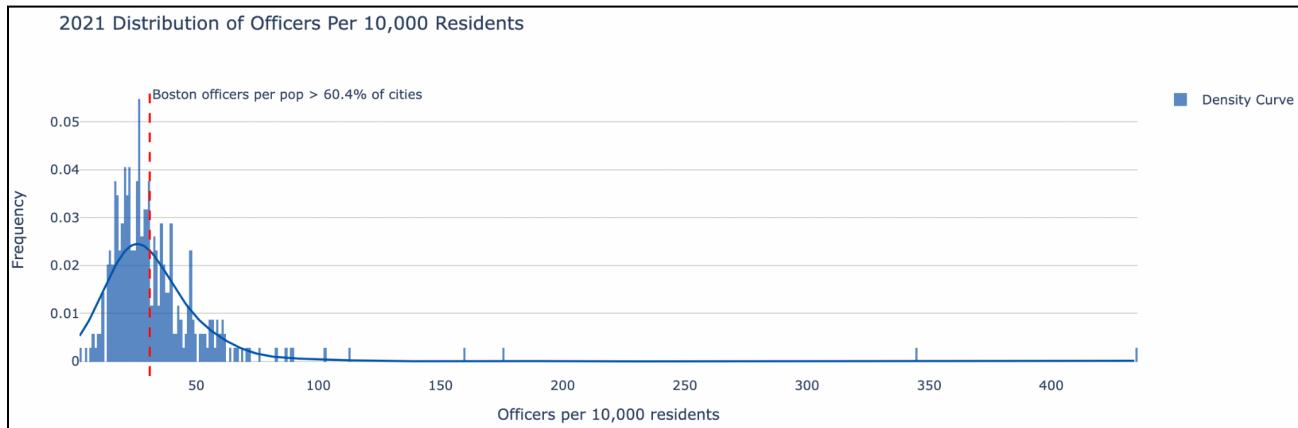
Data source:

FBI Uniform Crime Reporting data

Issues / limitations:

Interestingly, the number of cities which submitted UCR data has been steadily decreasing. This is because UCR is not mandatory! The upward trend of median could potentially be explained by this. Another possible factor is that larger cities (which typically have larger police forces and more resources) may continue to report UCR while smaller cities may have opted out.

Question 6.2 – Another way of displaying the same data



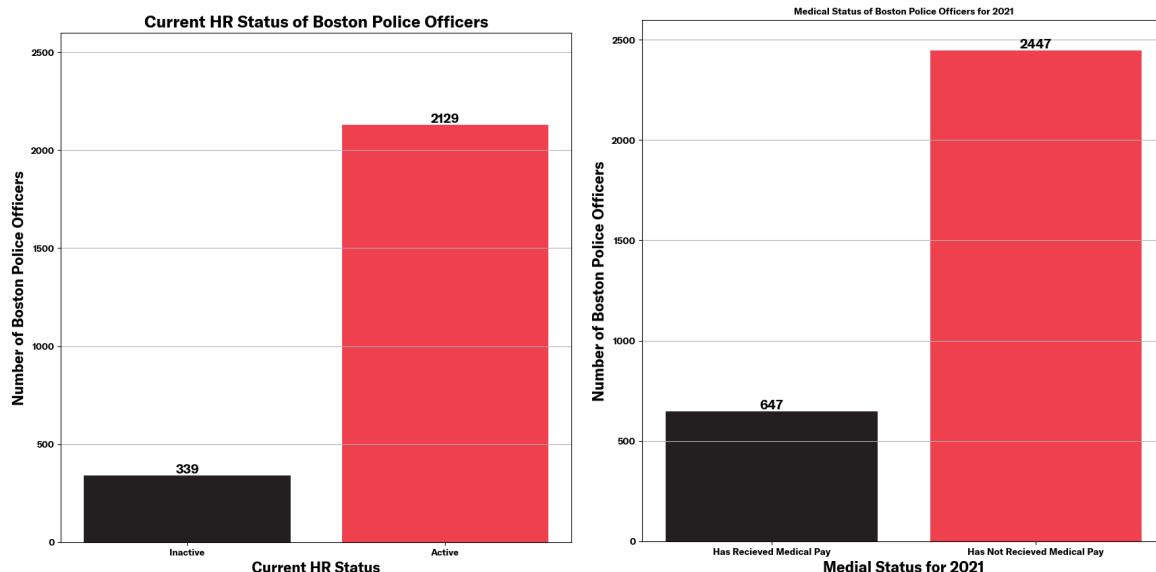
Analysis:

This is a different way of displaying the "Officers / 10k residents" statistic. We are able to see where Boston lies compared to other cities. Boston's percentile is also displayed

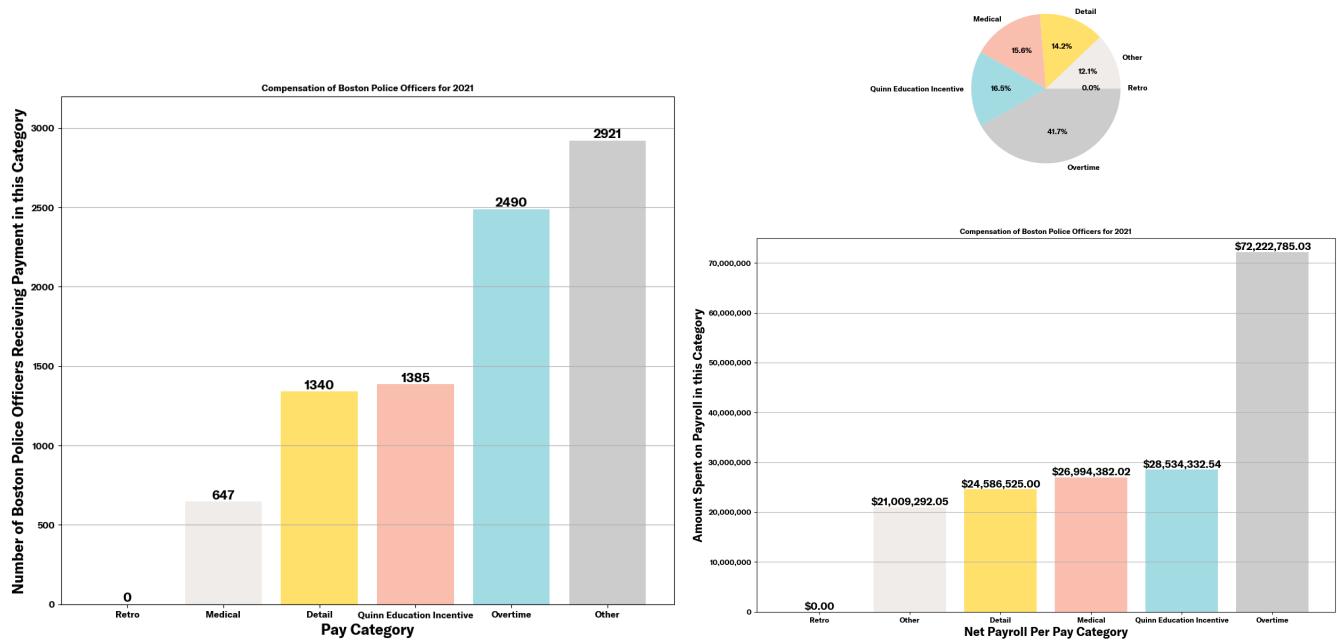
Issues:

- Outliers
- Can only plot values for 1 year

Question 7 - Number of Police Officers Active, Medical Leave, etc.

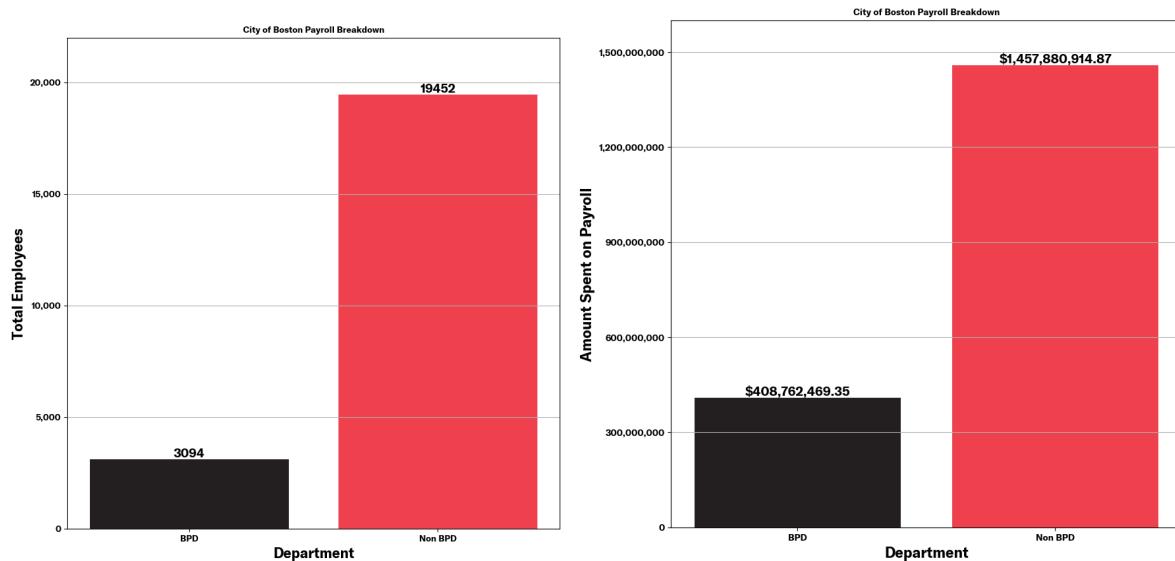


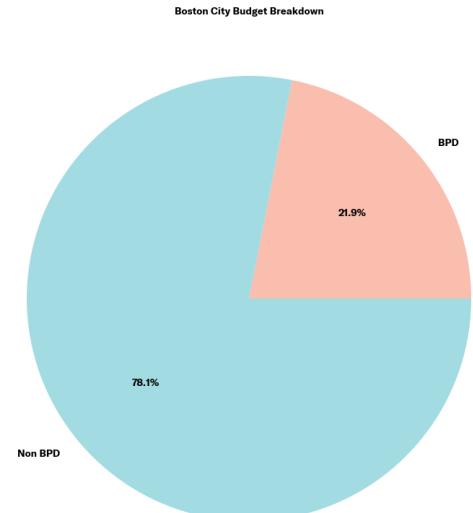
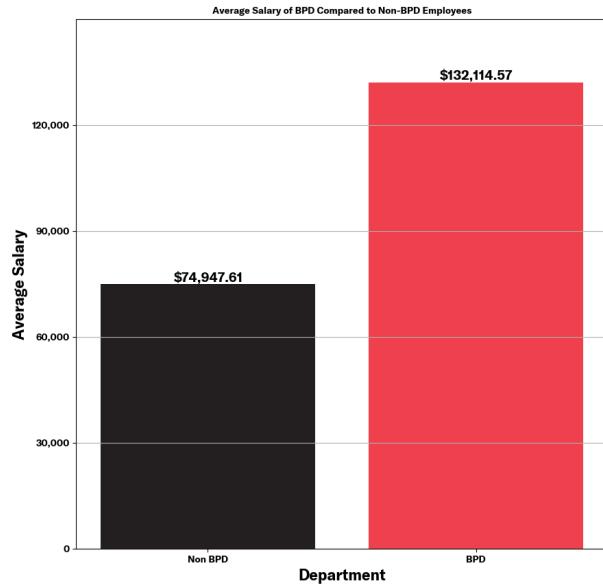
The first graph shows the number of BPD officers active vs inactive, to the right we have a graph showing the number of BPD officers who have received medical compensation this fiscal year.



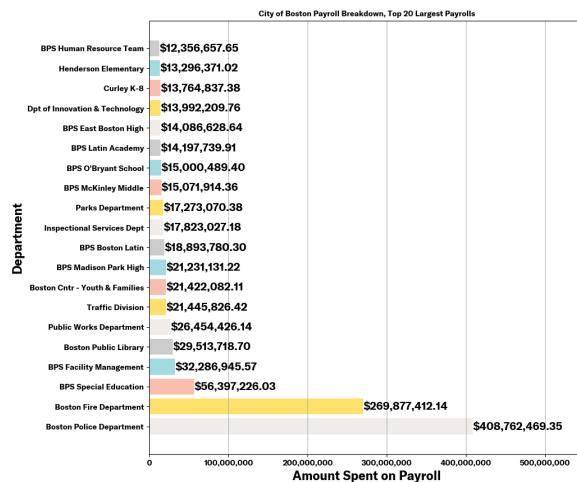
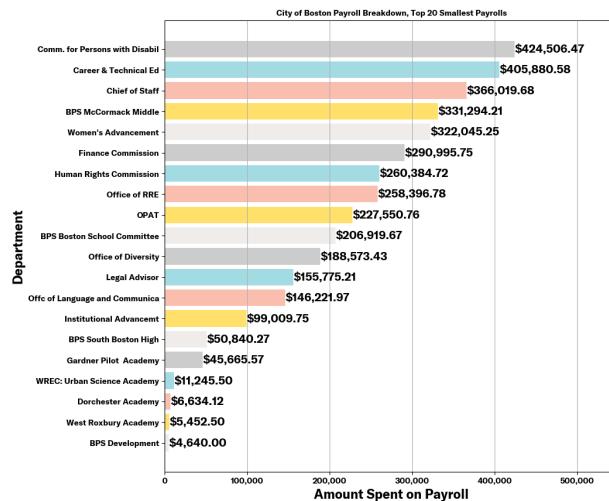
The graph above shows the number of BPD officers receiving payments in the 6 major payment categories. To the right we see that same compensation but in the form of the sum being said to said officers. We can see that the averages for each category will be as expected since each graph follows an almost identical trend.

Question 8 - Employee compensation comparison to non-BPD employees

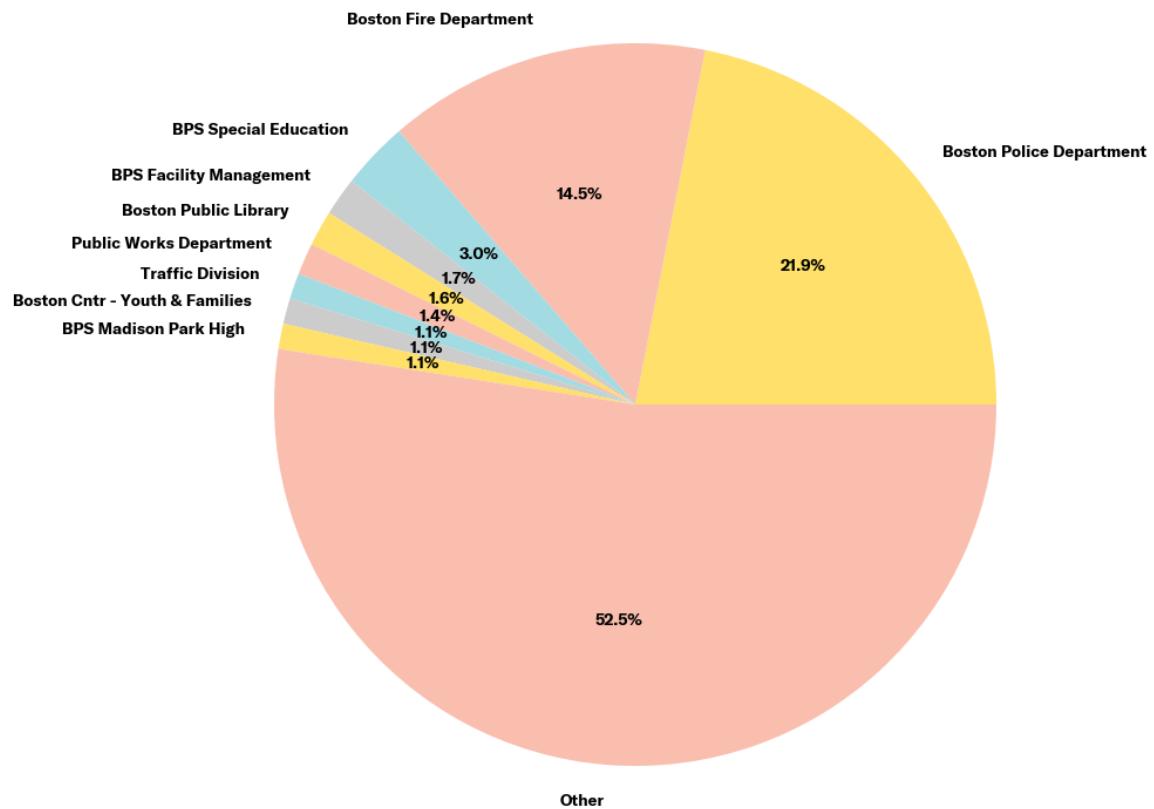




The graph above shows the number of employees in the Boston Police Department vs the rest of the city. To the right we have that same graph but using the sum of the BPD's payroll vs the rest of the cities departments payrolls. On the bottom left we have another graph showing the average salary for a BPD employee vs an employee working for any other department in the city. The pie chart to the right displays this same data however using percentages. From these graphs we can see that a BPD employees average salary is nearly double that of the average salary of an employee working for any other department in the city of Boston.

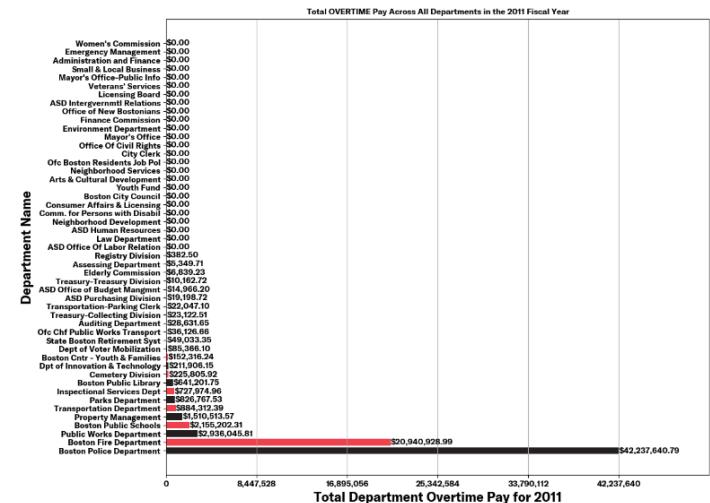
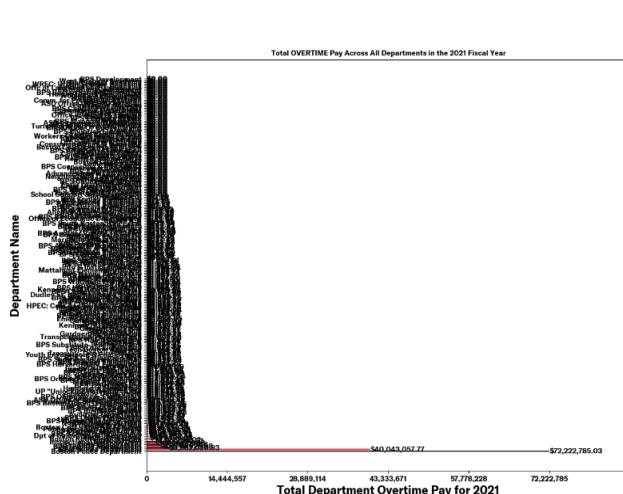
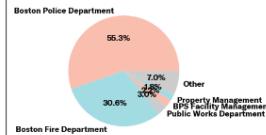
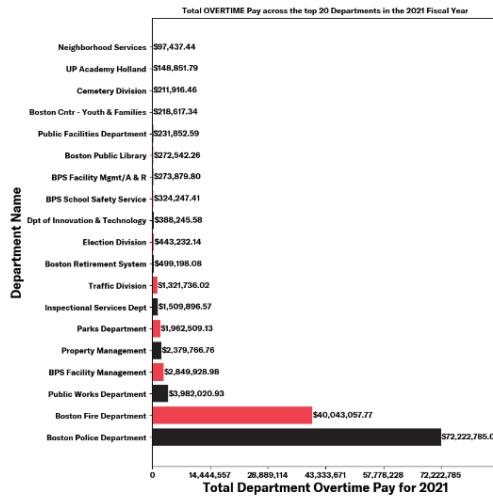


City of Boston Payroll Breakdown, Top 10 Largest Payrolls



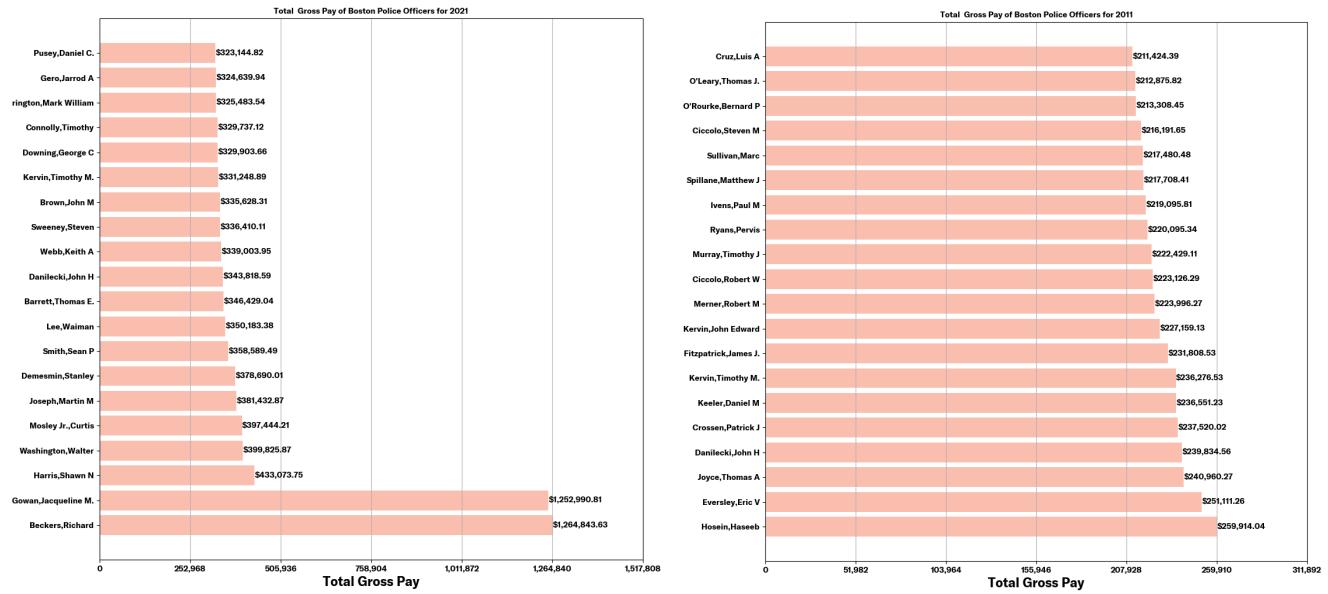
Above we have the 20 smallest total payrolls in the city of Boston for the 2021 fiscal year, to the right we have a graph of the 20 largest payrolls in the city of Boston for the 2021 fiscal year. Below we have a pie chart displaying the 10 largest payrolls with the 10th category being all other departments as a whole. From these graphs we can see the massive size of the Boston Police Department Payroll in comparison to the remainder of the city. Being that the Boston Police Department Payroll makes up over 21.9% of the city's total payroll.

9 - Total overtime of top departments + over time

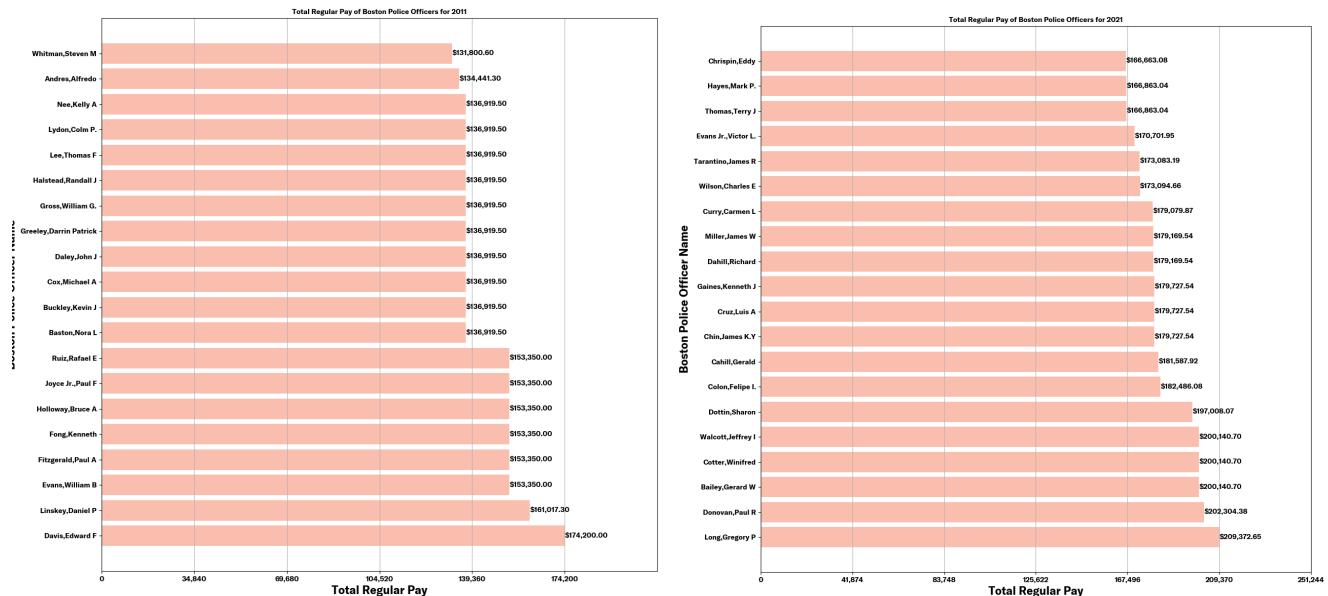


The graph above shows the total amount paid for overtime across the top 20 Departments. To the right of this graph we have a pie chart showing the same data however using percentages rather than the sum of the payroll category. Below we have two graphs both showing the same data as well however with an expanded scope. The graph on the bottom left shows overtime pay across all departments for the 2021 fiscal year, while the graph to the right shows overtime pay across all departments for the 2011 fiscal year. We can see from these graphs that the Boston Police Department's overtime pay makes up over 50% of the city's total overtime pay. Interestingly enough the data for both the top and bottom graphs from 2021-2011 looked very similar as we can see with the bottom graphs. As a result I choose to neglect all other years, however the graphs are present in the github repository.

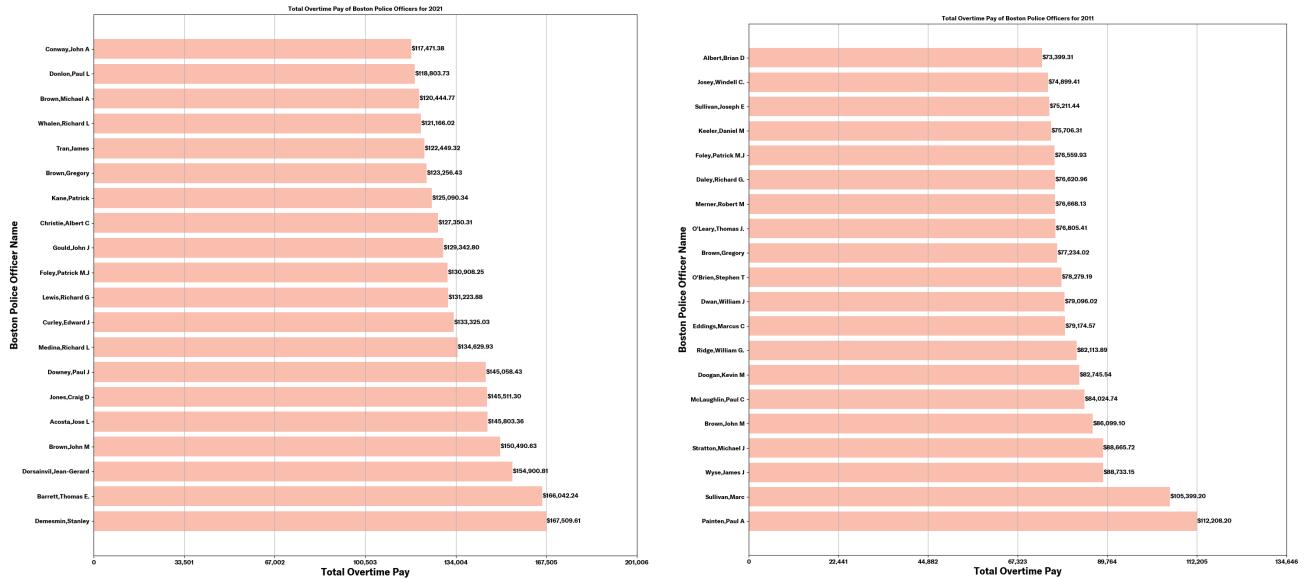
12 - Top 20 Earners (OT, Base, Other)



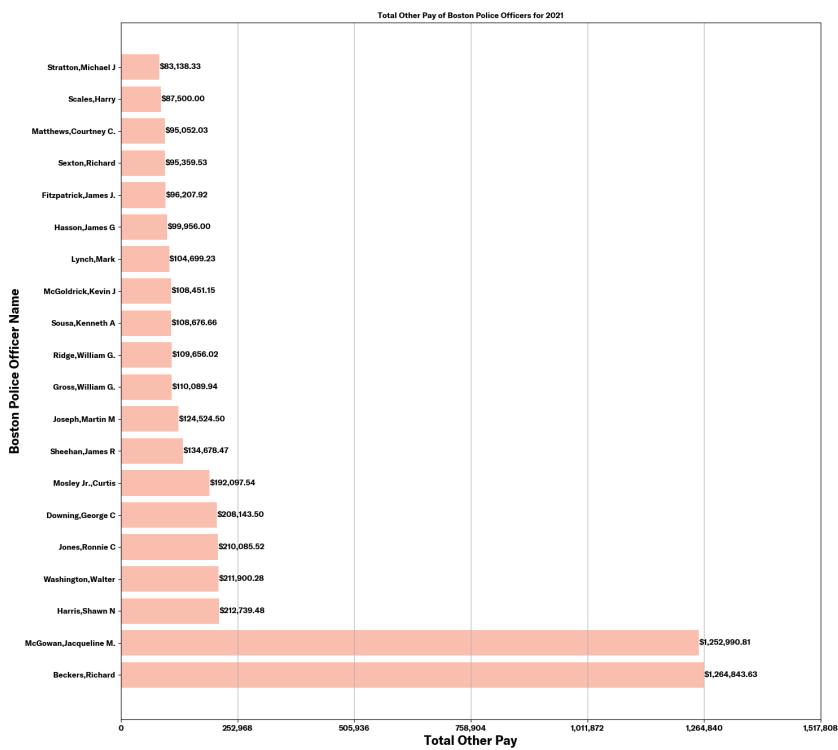
Above we have graphs displaying the total gross pay for Boston police officers for the 2021 and 2011 fiscal years. The 2021 data has 2 obvious outliers that are only present in 2021, these outliers are better displayed in the graphs below.



Above we have graphs displaying the total regular pay for Boston police officers for the 2021 and 2011 fiscal years. The outliers mentioned above are not yet displayed, showing that regular pay is clearly not the source of these outliers.

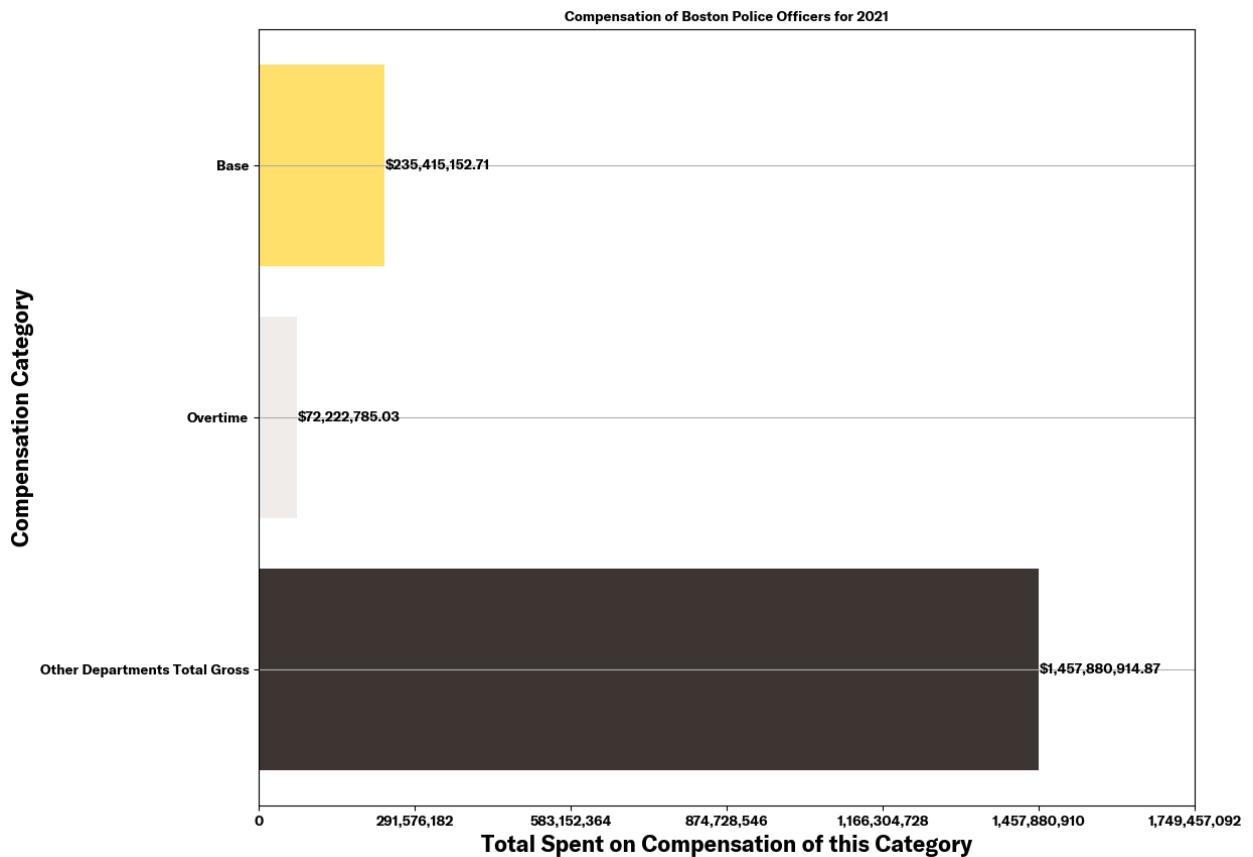


Above we have graphs displaying the total overtime pay for Boston police officers for the 2021 and 2011 fiscal years. The outliers mentioned above are not yet displayed, showing that regular pay is clearly not the source of these outliers.

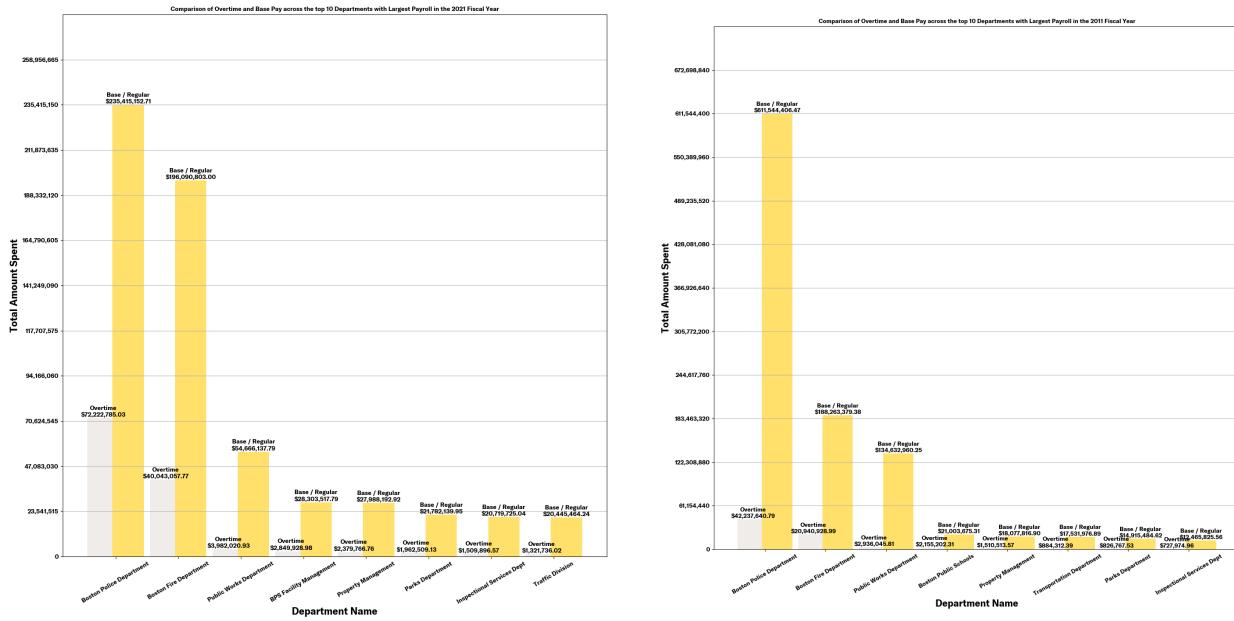


Above we have a graph displaying the total other pay for Boston police officers for the 2021 fiscal year. We can clearly see that the source of the outliers is due to this other pay category.

14 - High level overtime analysis (base salary vs. overtime vs. other departments)



This graph above shows the compensation of Boston Police Officers for the 2021 financial year, broken down by base pay and overtime pay of BPD officers vs total gross pay of all other departments of the Boston city. We can see that the base pay of BPD officers is roughly 16% of the total gross pay across all other city departments.



This graph above shows the compensation of Boston Police Officers for the 2021 financial year, broken down by base pay and overtime pay of BPD officers vs total gross pay of all other departments of the Boston city. We can see that the base pay of BPD officers is roughly 16% of the total gross pay across all other city departments.

Updated Extension Project Proposal

- We want to look at police overtime hours worked at the Massachusetts Avenue and Melnea Cass Boulevard homeless encampment.
- This article [here](#), talks about how the millions of overtime pay used on policing could have been attributed to health and recovery services.
- Mayor Wu has made a statement [here](#) on the strategic direction to improve systems of care for the homeless. She aims to :
 - “decentralize services and strengthen the continuum of care”
 - Lower barriers and increase access to health services
 - Provide pathways to permanent housing
 - Homeless are firstly moved homeless to transitional housing
 - Guests at the transitional housing are connected to behavioral health, medical care, and housing navigation
 - Finally they are moved to permanent housing
 - More info on operation [here](#)
 - City government website has a dashboard for the progress made so far [here](#)
 - Contains syringe returns, treatment data, housing data @ Mass & Cass
- NOTE: Previous mayor has made a attempt to provide similar services but it ultimately made little progress
- What WE want to do is to use the police OT hours data and see if those hours correlate to treatment data and housing data at Mass & Cass. The information gained from this project could give us an indicator of whether police presence at Mass & Cass is effective

or not. We can also pinpoint certain dates when important events occurred (eg. when the city began transporting homeless to low-threshold housing) to measure the effectiveness of those events.

- **Datasets needed:**

- **Police OT hours**
 - **ISSUE:** Even if we get it, it will need to be data for THIS year since that is when the changes have been happening
 - **ALTERNATIVELY:** We can use 2021 data to look at how OT hours changed that year vs previous years but it won't be as effective since we do not have mass/cass data for those years
 - **Data from Mass/Cass dashboard** → If we can get original data, it would be better but we are able to manually get the data from the dashboard too
- **Visualizations:**
 - Line graphs which show for example the police OT hours worked per week vs substance treatment placements