

# Checkpoint A

## Police Overtime F

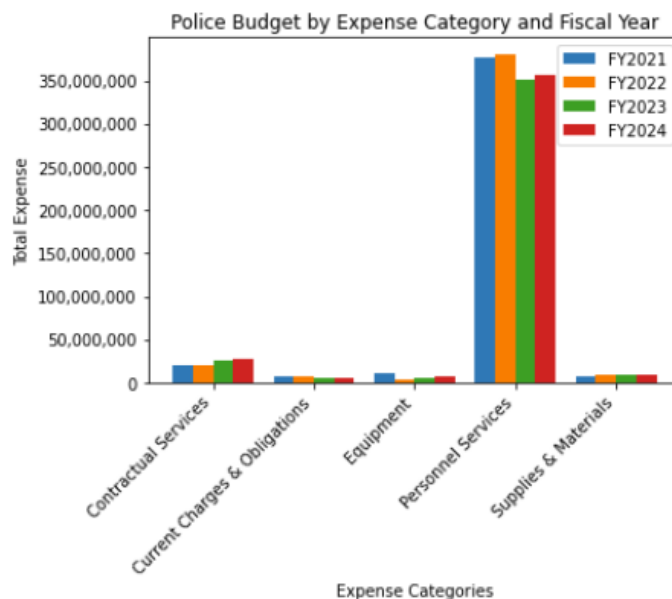
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### Key Questions and Answers:

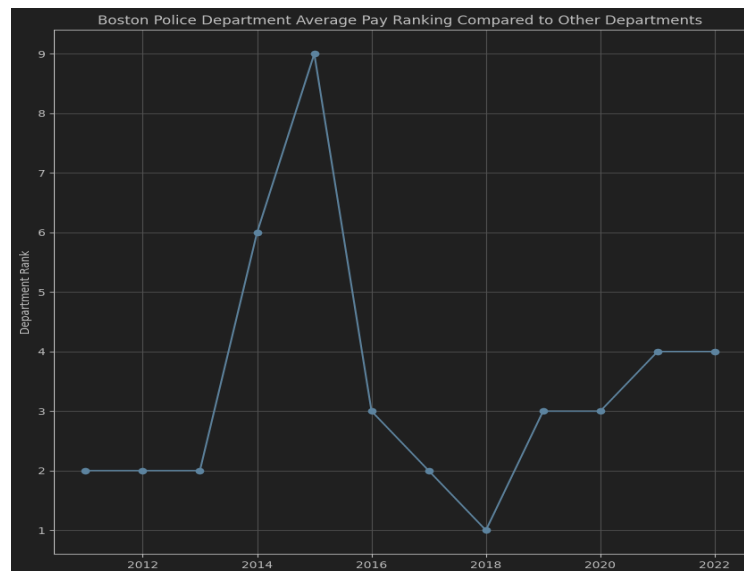
#### 1. Identifying instances of financial excess in BPD spending

To identify where there was financial excess in BPD spending we first looked at how the BPD budget had changed year over year. We looked at data from 2021-2024 as this was available to us from the City Of Boston. In the analysis of this data we found that the budget for 2024 is almost \$18 million dollars less than the budget from 2021. This is a 4.24% decrease in budget. The overall budget was broken up into five categories: Contractual Services, Current Charges & Obligation, Equipment, Personnel Services, and Supplies and Materials. To determine how the budget has changed between these categories, we looked at the percent each category made up of the total budget. We found that the budget for Contractual Services has increased in recent years, as in 2024 it is about 6% of the total budget whereas in 2021 it was 5%. The budget for current charges and obligations has decreased slightly since 2021 with 2024 having Current Charges and Obligations at around 1.5% of the overall budget. Equipment has increased in budget since 2022. Personnel Services has been the majority of the budget for all 4 years and has not changed much. In 2023 and 2024 the budget for supplies and materials has increased slightly from 1.6% in 2021 to about 2.3%.



Next, we looked at where funds have grown and shrunk intra-departmentally. Looking at the gross pay per title we found that Police officers are consistently the highest percentage of the combined pay for BPD employees, this makes sense given that there are more police officers than other roles. Surprisingly of the top 10 highest combined pay roles almost all had an uptick in combined pay in 2018 while many had a downtick in 2021. Police Detective is somewhat of an exception among the top 10 highest combined pay roles as it reached a peak in 2016 and after falling in 2017 has remained consistent.

Lastly we looked at the changes in funding between departments. To do this we looked at earnings data from 2012-2022. From this we were able to see which departments received the highest salaries and therefore the most budget for that category, focusing on the top 10 departments.

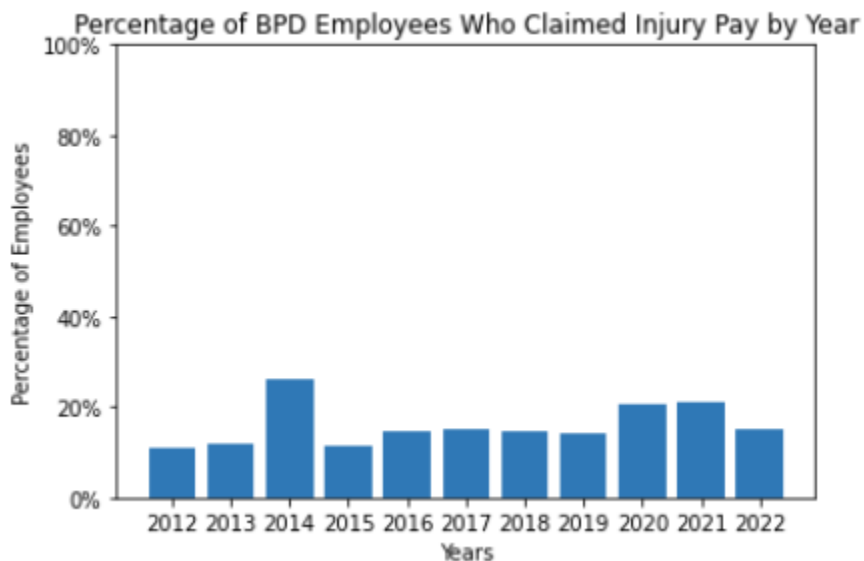


In 2012 the average earnings for all departments were less than, on average, \$120,000. However in 2022 the top department was the Superintendent which earned on average over \$160,000. Additionally using this data we were able to look at the average pay for each department and rank these. From that we could determine how frequent departments appeared. The BFD was frequently ranked one, meaning they had the highest average pay for many years. BPD on the other hand, frequently ranked 2,3,4 and in 2018 ranked first. Lastly we looked at the changes in gross pay. In the past two years (2021-2022) we found that the “Food & Nutrition Service” Departments had the highest gross pay increase of approximately 362.41%.

Next, in order to identify financial excess we analyzed the earnings to determine how BPD paychecks changed from 2011- 2022. We found that BPD paychecks have on average decreased compared to other departments in the past 10 years. Originally the BPD was ranked 49th among city of boston departments by average pay. Over the past 10 years this has gone down to 232th. The average pay however has gone up from a little over 60,000 in 2011 to upwards of 80,000 in the past 3 years. Regular pay has gone up slightly in the past 10 years, while overtime pay has gone up significantly – it doubled from 15k in 2011 to 30k last year.

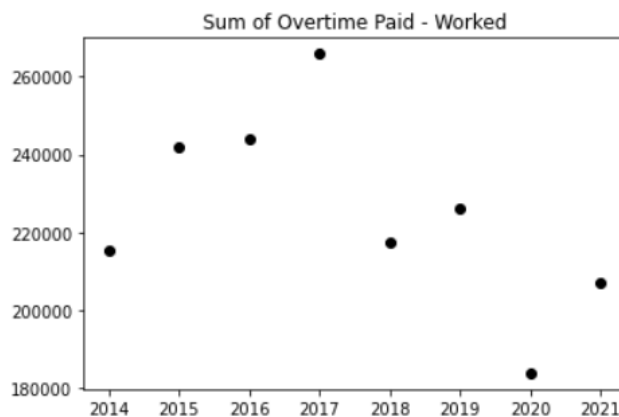
Additionally, we looked for financial excess in Injury Pay. We found that over the past decade the percentage of injury pay has consistently increased, outside of in this most recent year (2022). In 2012 Injury Pay made up about 2% of the total pay, whereas in recent years it

has exceeded 6%. The percentage of officers taking injury pay has also overall increased, especially in 2020 and 2021 and peaked in 2014.

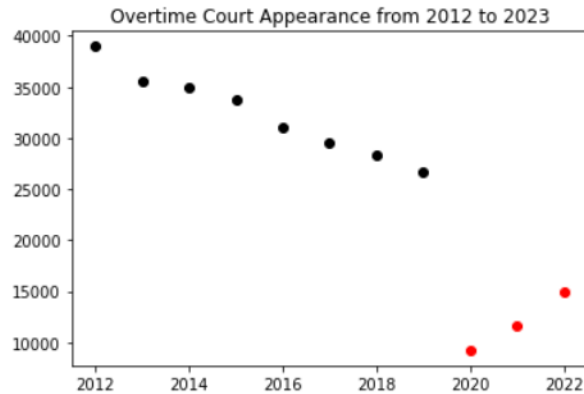


## 2. Characterizing wasteful BPD overtime practices

To find the discrepancy between overtime hours paid compared to overtime hours worked, we analyzed overtime data from 2012 to 2022. The annual difference ranges from 180k hours to 260k hours but no pattern was found. The year of 2017 displayed maximum value and year of 2020 had minimum value. However, overtime data did not have hourly pay for each officer and having the same rank can't guarantee equal pay, we have not yet calculated the discrepancy financially.

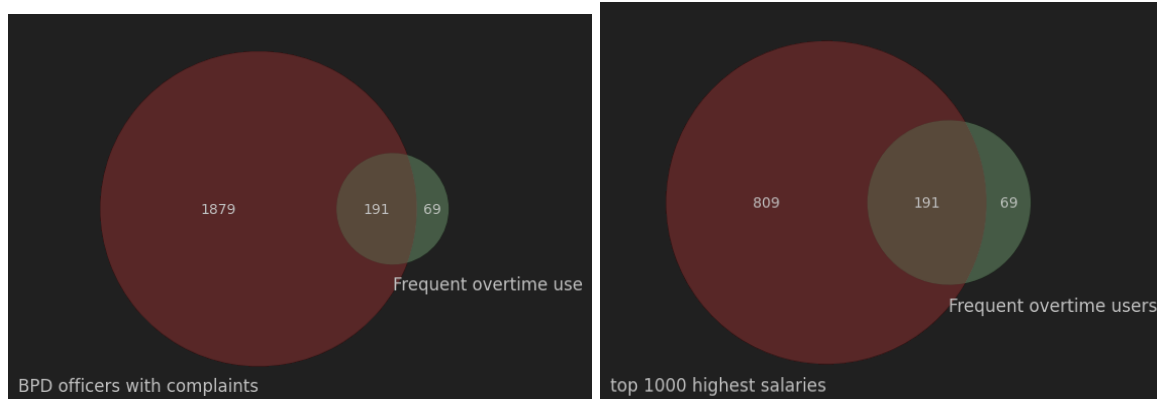


Yearly overtime court appearances (2012-2022) were declining from 2012 (40k) to 2019(27k). After hitting the all-time low of 10k in 2019 due to COVID-19, it is increasing by 3k each year. Distribution of ratios of overtime worked vs. overtime paid is skewing to the right as time goes by. As the data gets skewed, the number of outliers is increasing. Outliers have a ratio of 16.



### 3. Using data to fill in narratives around waste & misconduct by individual BPD officers

We found that there was not a large overlap between frequent overtime users and the Suffolk County police watch list. Similarly, there wasn't a great overlap between the overtime users and the officers who have a record of previous disciplinary action. With there being no overlap between the Suffolk watchlist and the top 10% of officers by average overtime usage per year, and an overlap of only 10% for disciplinary action. We found that the vast majority of officers who were on the list had some form of internal complaints record, with 191 of the 260 checked. We found that 73% of the officers who were frequently using overtime had a salary in the top 1000 salaries in the Boston police. Overall there does appear to be some connection between the officers who took the largest amount of overtime per year and the officers with the highest pay, and with a record of internal and external complaints.



### Challenges, Limitations, and Assumptions:

We have faced a few challenges throughout the project so far. The first challenge we faced was that the earnings data sets do not have a column for the employee identification number. This has been a challenge in our data analysis as there might be officers with the same names. Additionally, this has made it difficult to merge the earnings data with overtime data

when finding overlap between the two. As a result, we have to assume that names are unique in the datasets.

Additionally, when looking at demographic data, the information only goes back to 2022 which is limiting when looking at trends. We found that the demographic data only contains information about race and sex. There was no information about factors such as name, age, title, rank, tenure, and location which has also been very limiting as we can only focus our findings on the race and sex of officers.

We also had to make assumptions about the budget data as it does not have the actual amount of operating budget for the 2023 fiscal year. As a result, this number might not be the final amount and if this changes, the 2024 budget could change as well. In our findings, we have had to assume that this number would not change and that the 2023 budget will be close to the actual expense amount.

## Expected Next Steps and Project Completion Plan:

We expect to focus on the extension project for the remainder of the semester. We have spent a lot of time answering all of the base questions for the project and therefore plan to work the extension portion. To do this, we must first identify the datasets we will use to answer the question. From this we can then perform exploratory data analysis and begin to find trends in the data to then answer our question.

## Extension Proposal:

### Pitch:

Analyzing the impact of Boston Police Department presence and activity on Community Safety and Perception

### Rationale:

This extension explores beyond the specific financial aspects and delves into the impact of police operations on community safety and public perceptions. Given the significant budget allocation to the BPD, it's important to understand how police presence and activities can correlate with crime rates, community safety, and public trust in Boston. This analysis can reveal insights into the effectiveness of police spending and strategies, and whether they align with community needs and perception.

### Questions for Analysis:

- Are the crime rates lower in areas with higher police presence?
  - Are they higher in areas with lower police presence?

- Is there any relationship between police pay (specifically overtime) and improvements in community safety?
  - Are police officers with more overtime in places with higher/lower crime rates?
  - Is there any relationship between the police budget and crime rates in Boston?
  - Are there correlations in pay and crime for police officers?

## Data Sets and Sources

To answer these questions we can look at the earnings and field data which were provided to us. We can also look at the datasets provided by the City of Boston as there are datasets for crime we can look at.

## Data Visualizations

We can cluster the locations in the field data to show areas where higher crime occurs. Additionally we can create heat maps to display criminal activity in different years focusing on years with discrepancies in police presence. Bar charts can be used to compare crime reduction effectiveness across different types of police activities. We can use scatter plots to graph the relationship between police activity intensity with changes in crime rates.

## Additional Information:

It might be useful to look at police field activity, crime rates, and spending throughout the years to see how or if these relationships have persisted over time. We also plan to use statistical models for analyzing correlations between police activities and crime rates.