

CS506 Team Weekly Scrum Report 6

1. What we accomplished this week:

- Started on Highlights Presentation, Deliverable 3
- Started on Final Report
- Worked on Extension Question

Deliverable Links:

(a) Working file

- https://colab.research.google.com/drive/1gVfObsV1cbzK5XpTjjA9xc1m9cBou1LY#scrollTo=zV_hbsOC55Yq
- https://drive.google.com/drive/folders/1s5SHPEVq_ScGbUmSTzl8JXkjWZlom0p_

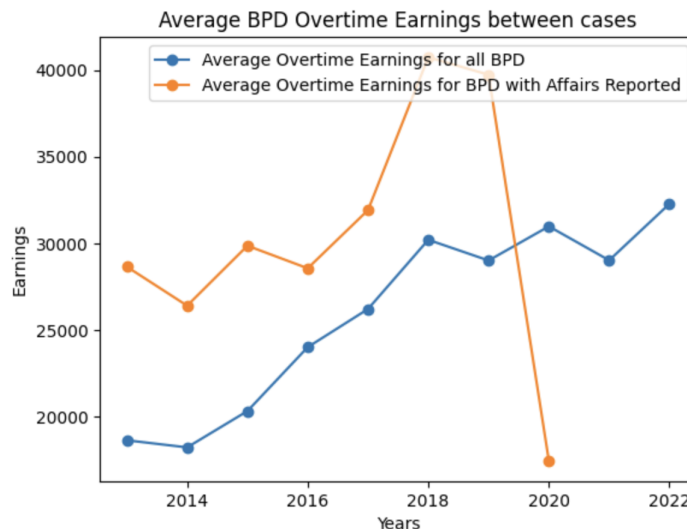
(b) Submit file:

- <https://colab.research.google.com/drive/1dJ3P5AasNUIRPq0264L6uXfQDQEopEwN#scrollTo=8e2yLPxHH93d>

2. Individual team member updates:

[Nurassyl Medeu]

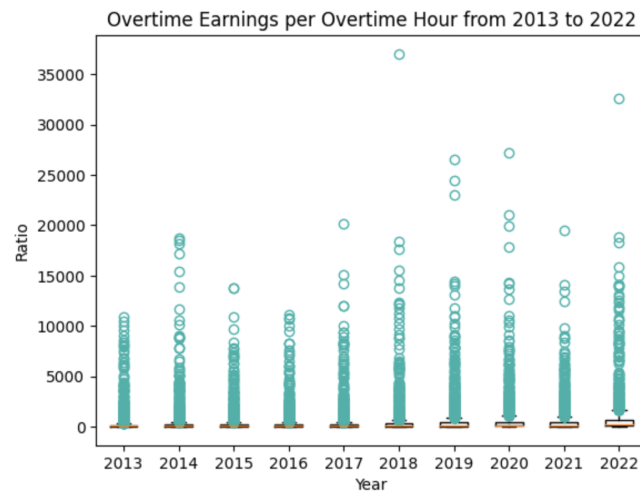
- Tried to implement sentiment polarity of comments toward BPD but the free version only allows to pull 1.5k tweets a month and the basic version is 100\$. For this reason, our team decided to hold off onto this extended project approach
- Started work on Deliverable 3 presentation, by combining all the work done for the extension project
- Created for final report and started working on it
- Analyzed BPD misconduct and overtime earnings relation



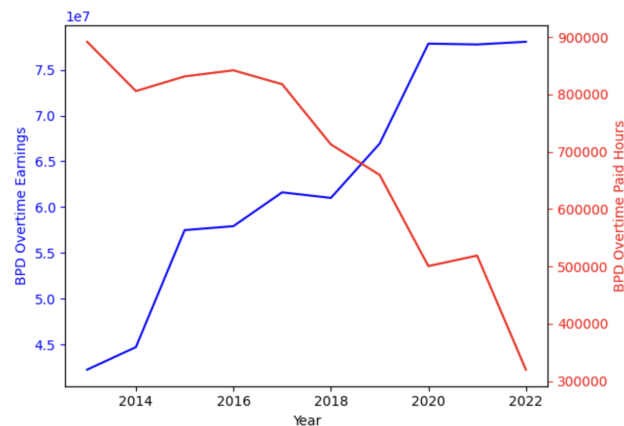
Observations: By the graph we can see that the average overtime earnings for the BPD with misconduct is relatively higher than the overtime earnings of all BPD except year 2020. Thus, forbidding the police who committed misconduct may help decrease the overtime expenditure in general.

[Riva Sun]

- Worked on Deliverable 3 Presentation
- Started the work on Final Report
- Analyzed overtime earnings per overtime hours from 2013 to 2022

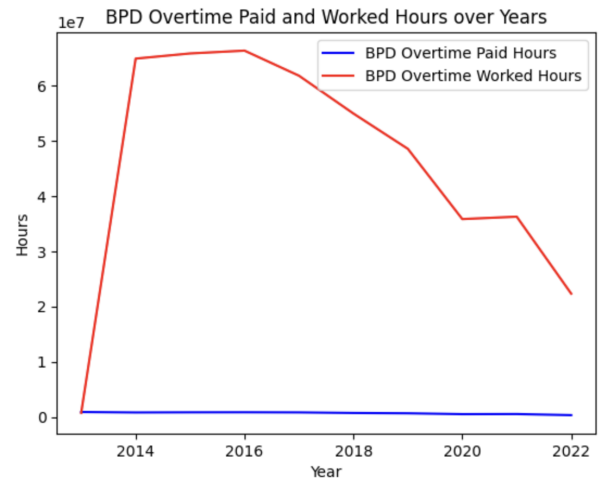
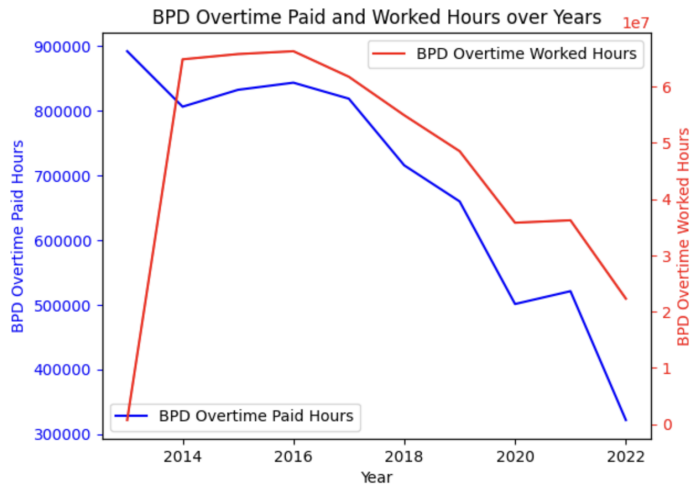


- Analyzed the overtime earnings with overtime paid hours.



Observations: As we can see from the plot, from 2013 to 2022, overtime earnings are increasing yearly, but the number of hours worked is decreasing. This explains the outliers, the huge amount of money paid per overtime hours, in the previous plot.

- Analyzed the overtime hours paid and the overtime hours worked



Observations: Plots above are for the same data, but with different scales. By the plot on the left, we can see that the pattern for the number of hours paid follows the number of hours worked.

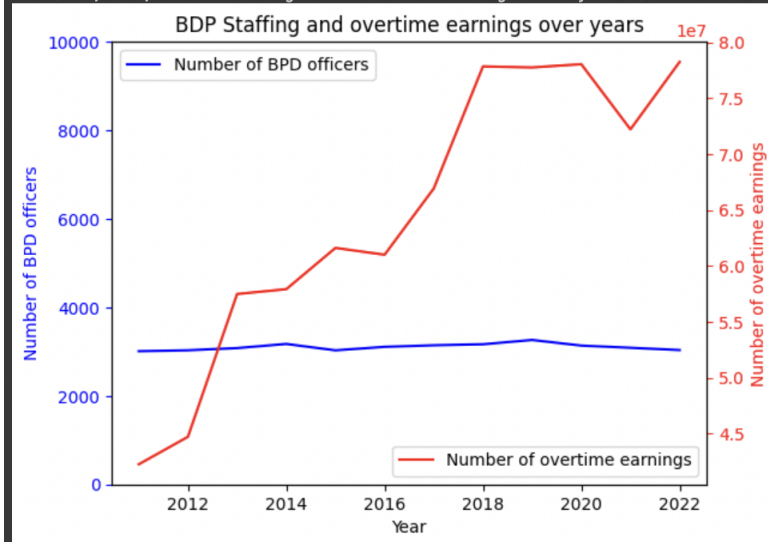
But if we see from the right plot, within the same scale for comparison, the number of hours worked is much smaller than the number of hours paid, indicating that there exists a waste of money in overtime expenditure to BPD.

Conclusion: If the BPD department wants to decrease the amount of waste expenditure, they can consider paying overtime money by using actual overtime worked hours as a counter.

[Truc Duong]

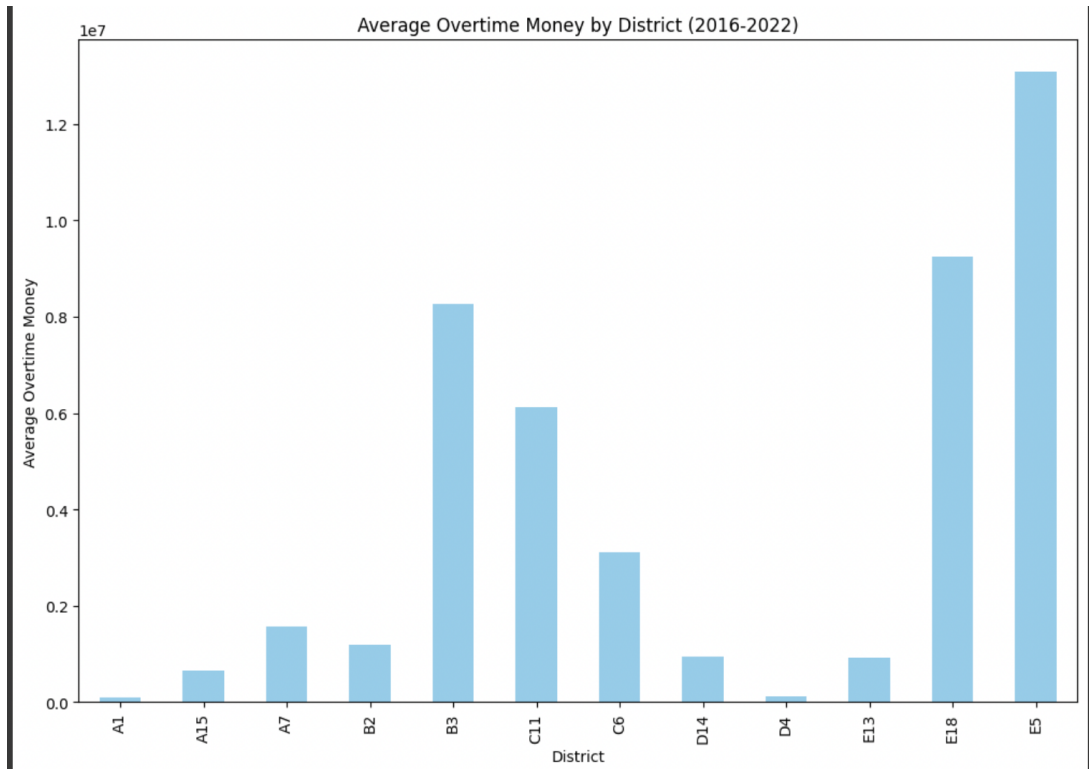
- Analyzed the overlapping is between frequency overtime users and officers who have the highest salaries on the force?
- Analyzed the staffing level within the BPD correlates with the frequency and magnitude of overtime expenditures

Number of Boston police officers over years:
[3010, 3030, 3080, 3173, 3029, 3108, 3143, 3166, 3263, 3136, 3087, 3035]
Number of overtime earnings over years:
[42237500.79000001, 44698730.70999999, 57483767.629999995, 57914605.89, 61608537.989999995,
Text(0.5, 1.0, 'BDP Staffing and overtime earnings over years')]



Observations:

- Graph shows stable BPD staffing at approximately 3000 officers annually.
 - However, a significant growth in overtime earnings is observed on the graph.
 - This indicates that individual officers earned more from overtime.
- > Suggestive of potential short-staffing within the Boston Police Department.
- Initiate and explore ideas for the project extension. Here are some ideas I came up with to work on the project extension:
 - Population Comparison: research and compare the population of Boston with other cities of comparable size. This involved assessing whether the size of the Boston Police Department aligns with the city's population in comparison to other similar cities.
 - Leveraged the available crime rate and district data that my colleague performed analysis on to investigate staffing levels and overtime distribution across different districts. Aiming to identify any correlations between crime rates, staffing per district, and overtime expenditures.
 - Analyzed average overtime money on based on districts:

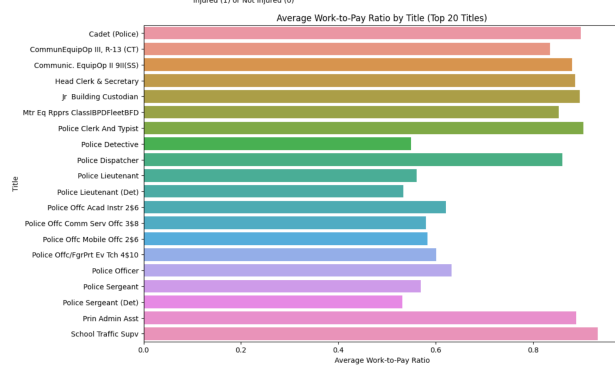
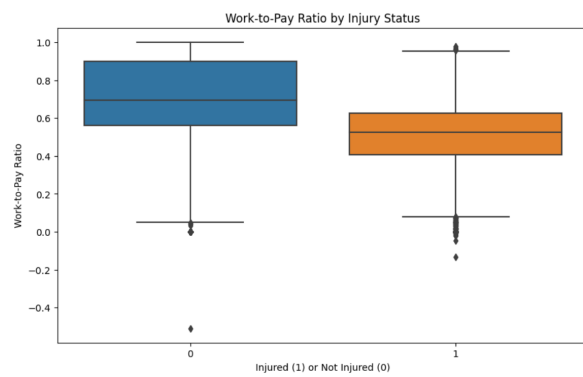
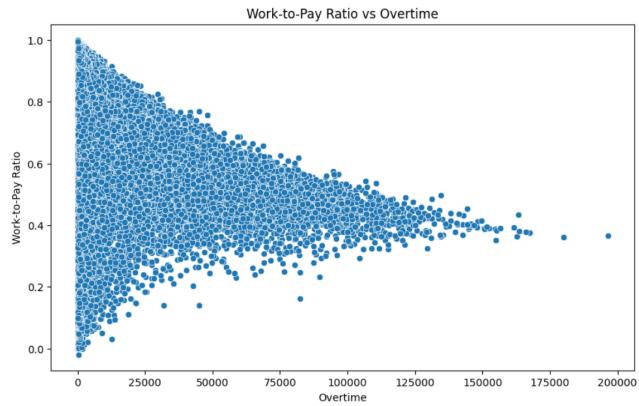


[Can Wang]

-Complete some base questions.

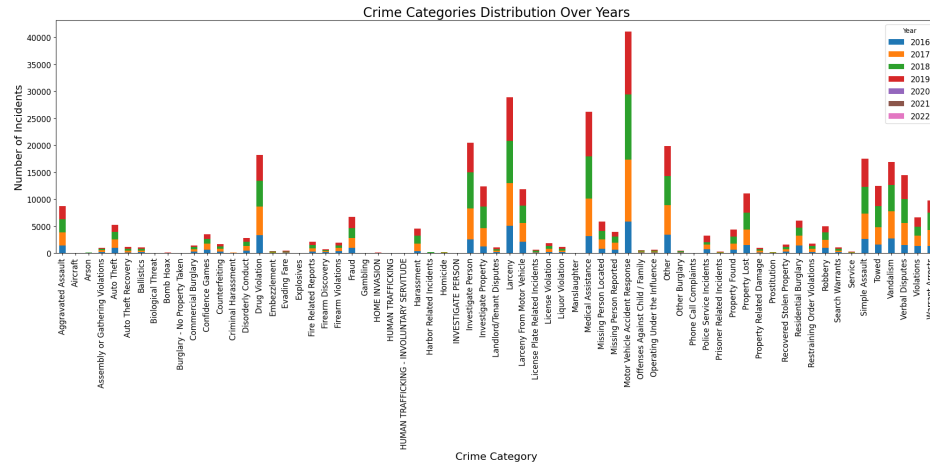
-Are certain officers (e.g., white, old, male, long tenure, high ranking title) more likely than others to have lower worked-to-paid ratios?

(Do not have information related to race or age. Try to use rank and something else instead)

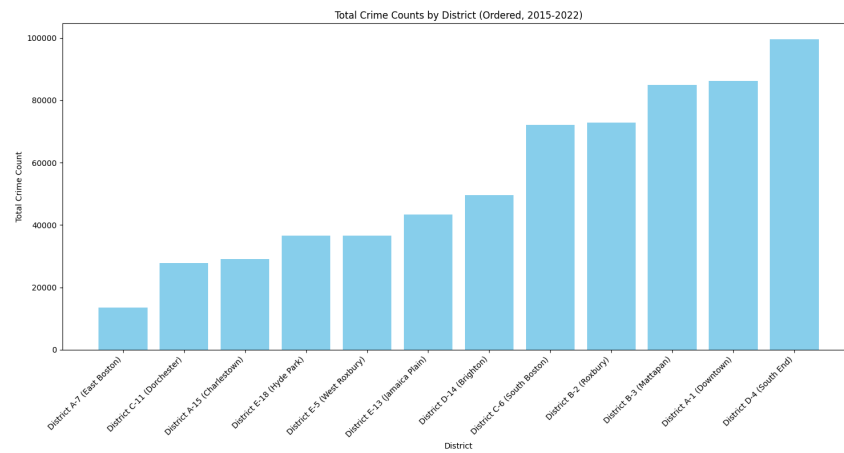


[Al Mbaye]

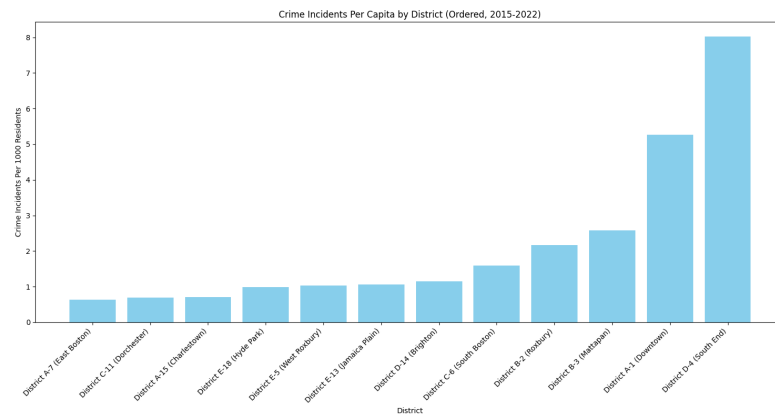
Analyzed crime incident reports over the years by category



-Found total crime incident reports by district from end 2015-2022



-And adjusted for per capita statistics



- Found crime incident reports for the next 5 most populated cities in Massachusetts
 - For Cambridge, obtained data from 2009-2023
 - For Worcester, obtained data from 2023 only (more data needs to be requested)
 - For Springfield, data needs to be requested through mail
 - For Brockton, data for individual years from 2006-2018 is available
 - https://www.opendatanetwork.com/entity/1600000US2509000/Brockton_MA/crime.fbi_ucr.count?crime_type=All%20Crimes&year=2018

- For Lowell, data for individual years from 2006-2018 is available
 - https://www.opendatanetwork.com/entity/1600000US2537000/Lowell_MA/crime.fbi_ucr.count?crime_type=Aggravated%20assault&year=2018
- Found crime incident reports for the 3 cities similar in population to Boston
 - For Washington DC, obtained data from 1990-2022
 - For Las Vegas NV, data for individual years 2017 and 2018 is available
 - More data can be found in annual reports at <https://www.lvmpd.com/>
 - https://www.opendatanetwork.com/entity/1600000US3240000/Las_Vegas_NV/crime.fbi_ucr.count?crime_type=Aggravated%20assault&year=2018
 - For Portland OR, data for individual years from 2015-2023 is available
 - https://public.tableau.com/app/profile/portlandpolicebureau/viz/New_Monthly_Neighborhood/MonthlyOffenseTotals
- Based on the fact that we have Boston data from 2016-2023, the most sensible cities for comparison are Cambridge, Washington DC, and Portland Oregon
 - Other cities require more research

3. Issues or blockers:

- Identified the need for additional data sources to supplement the analysis. Will explore options to address this in the coming weeks.

4. Plans for next week

- Project Extension: Recognized the potential for valuable insights in correlating crime rates, staffing, and overtime. Need to delve deeper into the analysis to uncover patterns and trends.
- Further refine the ideas generated for the project extension, ensuring that they align with the project's goals and objectives.
- Begin collecting relevant data on staffing levels and overtime expenditures per district, building a foundation for the correlation analysis.
- Document the methodologies used in the analysis and any challenges encountered. Maintain clear records for future reference and collaboration.