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Data 22700 Final Project

Hyde Park Crime: Facts and Patterns

Problem statement

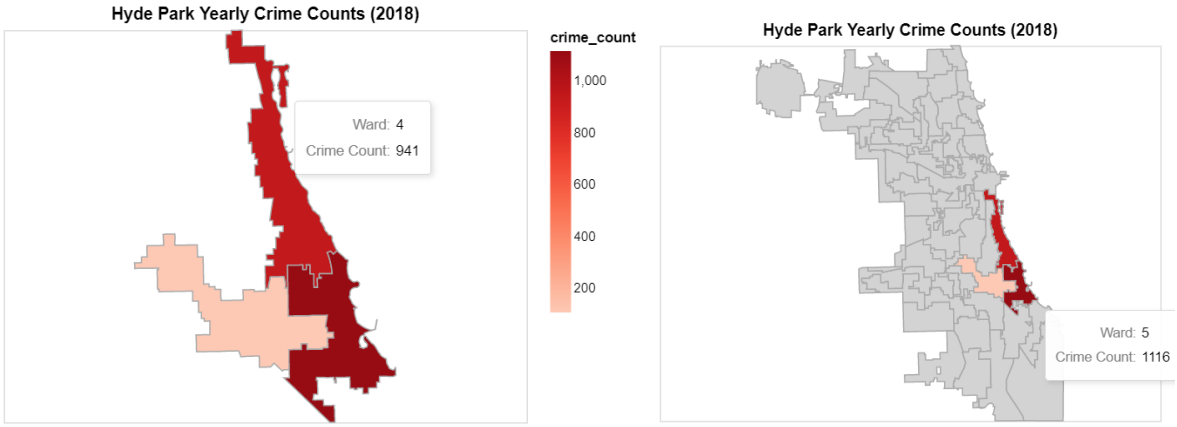
Over the years, crime has been an enduring concern in Hyde Park, Chicago, prompting active involvement from local authorities, including the University of Chicago Police Department. To comprehensively address crime and bridge wealth/status gaps associated with criminal activities, a data-driven analysis of Hyde Park's crime landscape is essential. This report examines a Hyde Park Crime dataset from 2018 provided by UChicago Open Data Portal for its relevance and accessibility, aiming to provide factual insights beyond anecdotal evidence. Such an understanding is crucial for informing policies and fostering a safer and more equitable community.

Findings reveal geographic patterns, with higher crime rates in ward 4 and 5, particularly along ward boundaries. Crime counts remain consistent throughout the year, except for peaks in July and October. Daily patterns show more frequent afternoon and evening crimes, peaking at 5 PM. Surprisingly, despite a robust police force, about 70% of crime types have a greater than 50% chance of going unarrested, highlighting challenges in law enforcement outcomes.

Approach

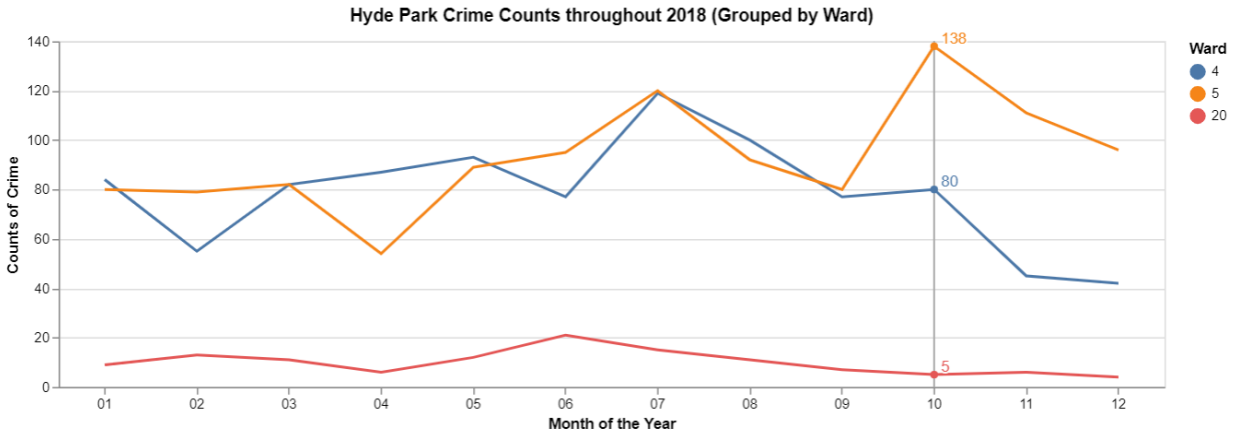
To gain insights into the crime landscape of Hyde Park, this analysis is guided by four key questions: 1. How many crimes are occurring? 2. Where is crime concentrated? 3. When do crimes typically occur? 4. How are crimes treated within the neighborhood? Each question is addressed using different chart visualizations.

1. How many crimes are happening?

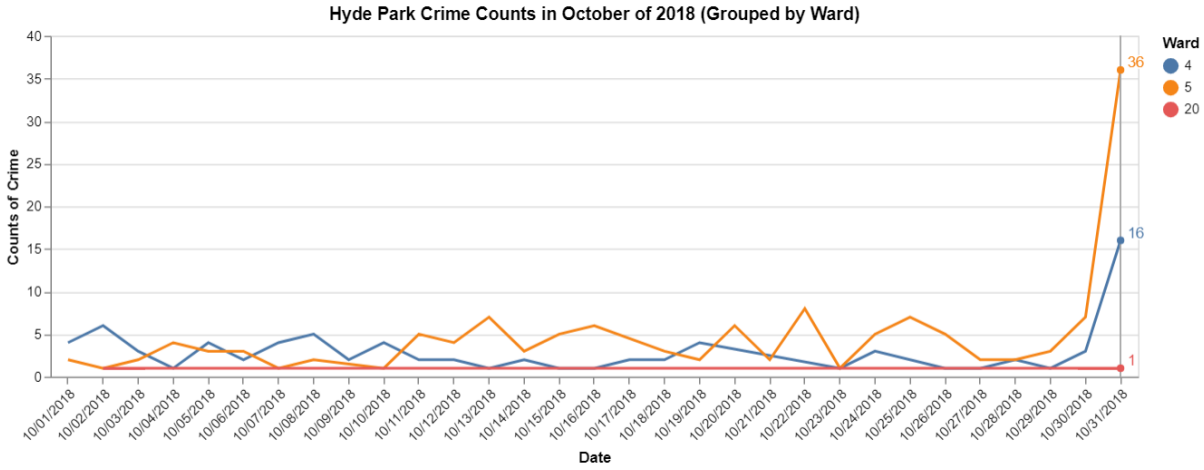


Analyzing crime distribution in Hyde Park reveals higher crime rates in wards 4 and 5, while ward 20 experiences relatively lower crime rates. Ward 4 and 5 reported nearly 1000 incidents annually, compared to approximately 200 incidents in ward 20. A map of Hyde Park's location within Chicago is provided on the right for reference.

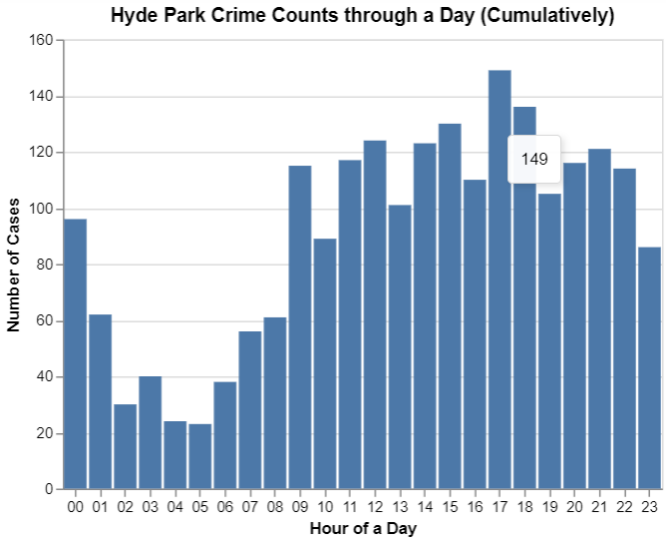
2. When is crime happening?



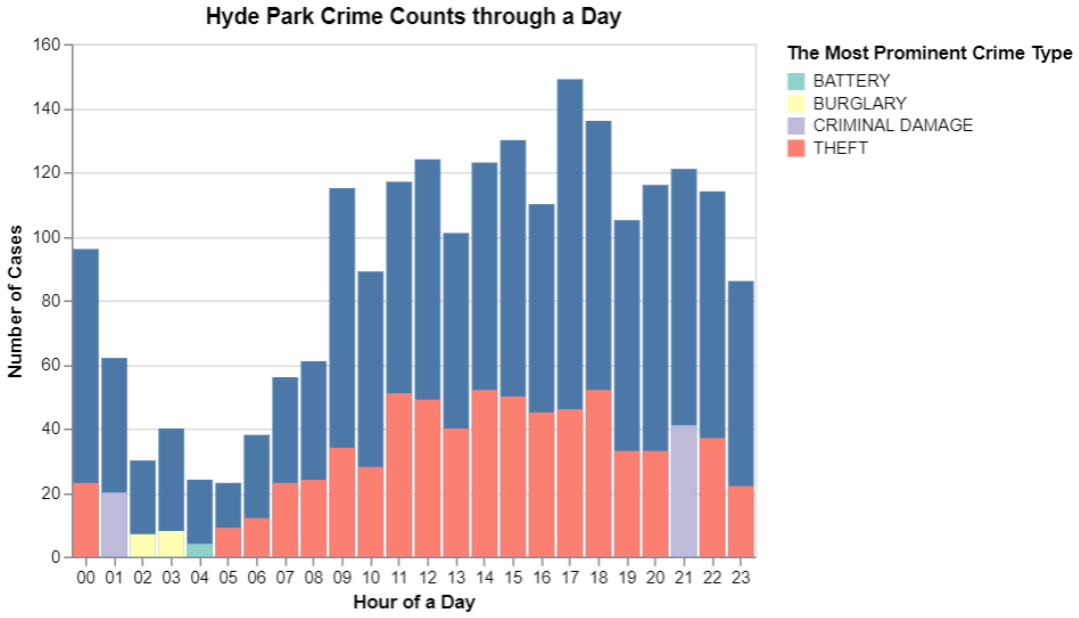
Timing of criminal activities is essential for understanding patterns. This interactive graph (in Jupyter Notebook) reveals consistent fluctuations in monthly crime counts in wards 4 and 5 (between 60 and 100 incidents) compared to ward 20 (around 20 incidents). Two noticeable peaks occur in July and October, with the October spike (138 incidents) raising concerns.



Further analysis of October data reveals that, for the most part, the overall crime count remains low at around 5 incidents. A closer examination of the sharp increase in Halloween incidents indicates that the majority of them are criminal damage to vehicles, indicating a potential Halloween-related riot rather than more serious crimes.

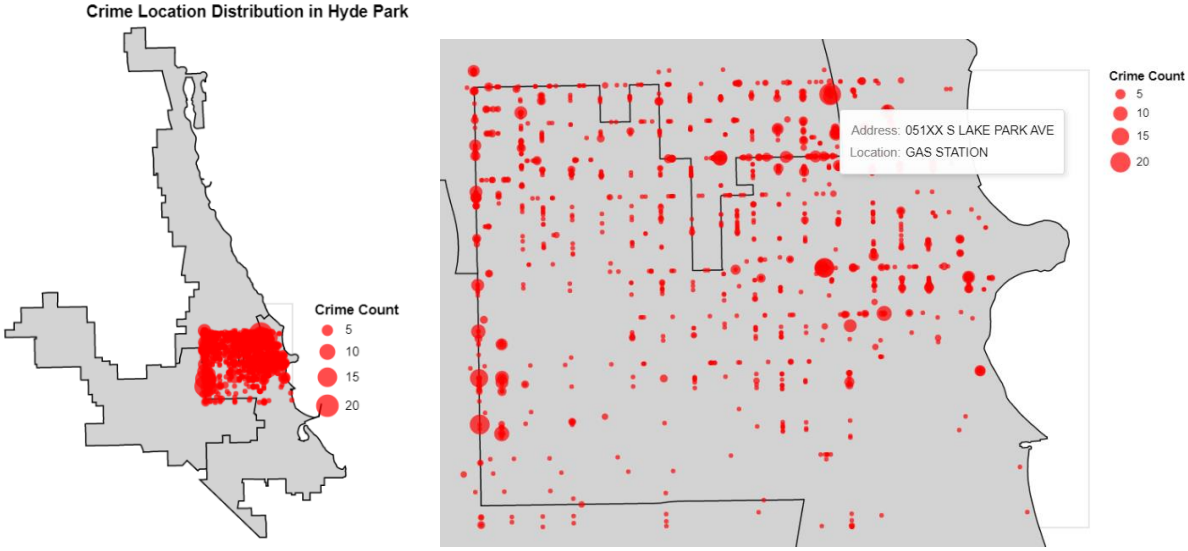


Additionally, exploring the daily temporal dimension reveals that crime counts decrease after midnight, gradually rising throughout the day and peaking in the evening, particularly at 5-6 PM, with 149 incidents happening at 5PM in 2018 in total.



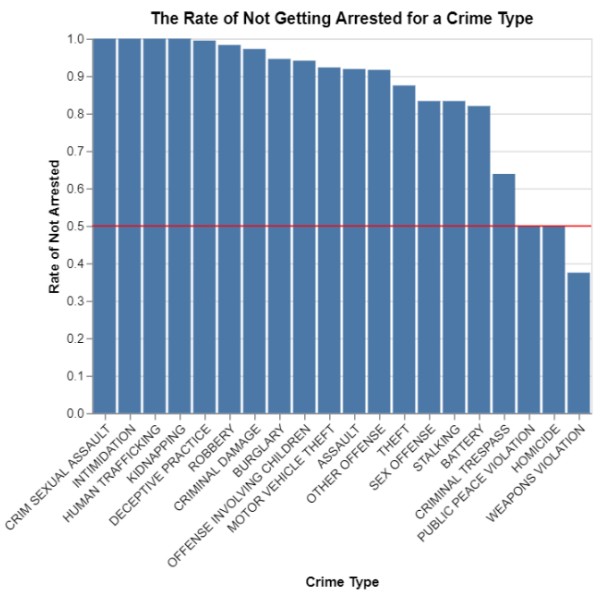
Adding a layer of the most prominent types of crimes that happen in each hour, the graph highlights that theft is the most frequently occurring crime throughout a day.

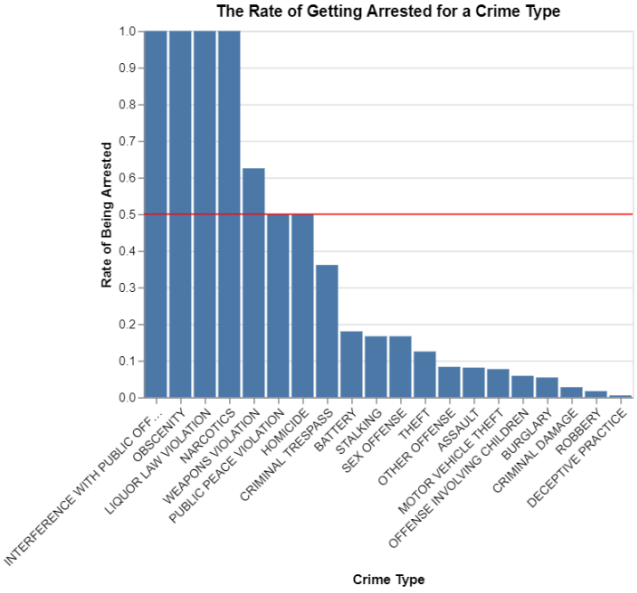
3. Where is crime happening?



Analyzing the spatial distribution of crime incidents in Hyde Park reveals that crime concentrates in the central area, as depicted by the intensity of red dots on the map. Notably, larger dots, indicating higher crime counts, tend to appear in the west, east, and northeast area of the neighborhood, and oftentimes along ward boundaries.

4. Are they getting arrested?





Law enforcement effectiveness in Hyde Park raises concerns. The analysis reveals a high likelihood of criminals evading arrest, exceeding a 50% chance for 70% of crime types—more chance of getting away than flipping a coin. Disturbingly, serious offenses like criminal sexual assault, intimidation, human trafficking, and kidnapping resulted in zero arrests. While some offenses consistently achieve 100% arrest rates, as indicated by the graph on the right, others demonstrate lower rates, often below 50%.

Discussion

Considering all four aspects together, the analysis reveals that the crime rate in Hyde Park is neither alarmingly high nor excessively low. Not all areas of all neighborhoods are dangerous, and not all times are unsafe for walking on the streets. However, it is important to recognize the peak and downfall of crime occurrences and acknowledge the limitations of the dataset, which only covers incidents from 2018. The concentrated clustering of crime incidents in a central area could be due to a collection or sample bias.

Given the diverse range of location types (56) and crime categories (24) and very unevenly distributed instances of each combination, the analysis primarily focuses on descriptive insights rather than causal inferences. Moreover, due to the time limit of one year, it is challenging to draw conclusions about the effectiveness of the police force across the years. Nonetheless, the findings provide valuable insights into crime patterns and their corresponding law enforcement outcomes, contributing to community awareness and understanding.

Conclusion

In conclusion, the analysis of the 2018 Hyde Park Crime Report dataset shows that crime is concentrated in wards 4 and 5, particularly along the ward boundaries. Crime counts remain stable, except for peaks in July and October. The highest crime occurrence happens in the late afternoon, with theft being the most prevalent crime type. Regrettably, there is a high likelihood of criminals escaping arrest in the area.

Reference

Data source: https://ucopendata.netlify.app/#/datasets/hyde_park_crime