Checkpoint 3: Interactive Visualization
The Brave Ducks

Introduction

In this checkpoint, we want to investigate police misconduct allegation categories that include illegal search and use of force. We will implement the D3.js to generate an interactive visualization focusing on misconducts categorized as Illegal-search, and Use-of-force in different demographic areas such as racial and socio-economic status. We want to explore further how socioeconomic statuses coupled with racial demographic plays a role in misconduct allegations. Lastly, we want to gain insight into proportions of cases dismissed in relation to different income demographics of the neighborhood. To be noted, we have splitted middle income neighborhoods into lower middle income neighborhoods ($30,000 <-> $50,000) and upper middle income neighborhoods ($50,000 <-> $75,000).

In this checkpoint, our main intention is to:
1. Use Interactive Packing to group neighborhoods in different socioeconomic status (i.e. high-income, middle-income and low-income neighborhoods) and use color encodings to show the racial composition of police who have committed Use Of Force, and Illegal Search **misconduct** allegations.
2. For our last question regarding the percentage of the **dismissed** cases for all income neighborhoods, we can use an interactive horizontal chart to represent these cases with respect to the income demographic levels. It will give us a better understanding of how many cases are dismissed. Users can use the dropdown menu to sort it in ascending or descending orders.

Question 1 Analysis

1. Use of force
We use circle parking to group the category of use of force in each income neighbor (high, middle, and low) and different races (balck, white, hispanic, asian, and other) to show the

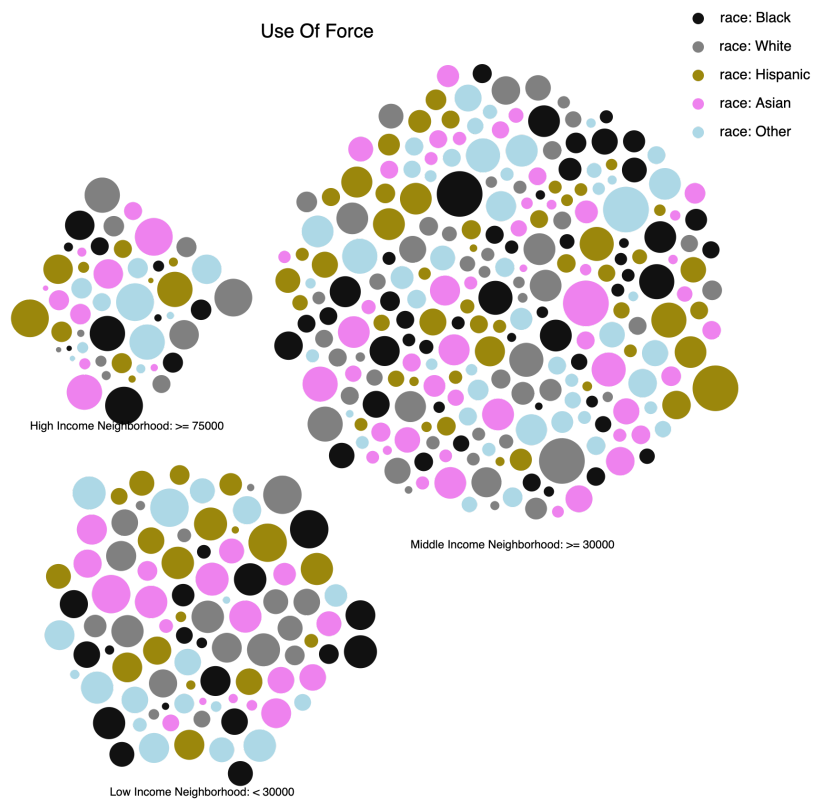in-depth portion in Use Of Force category.

Figure 1: Use of Force Graph

2. Illegal search

We use circle parking to group the category of use of force in each income neighbor (high, middle, and low) and different races (balck, white, hispanic, asian, and other) to show the in-depth portion in the Illegal Search category.
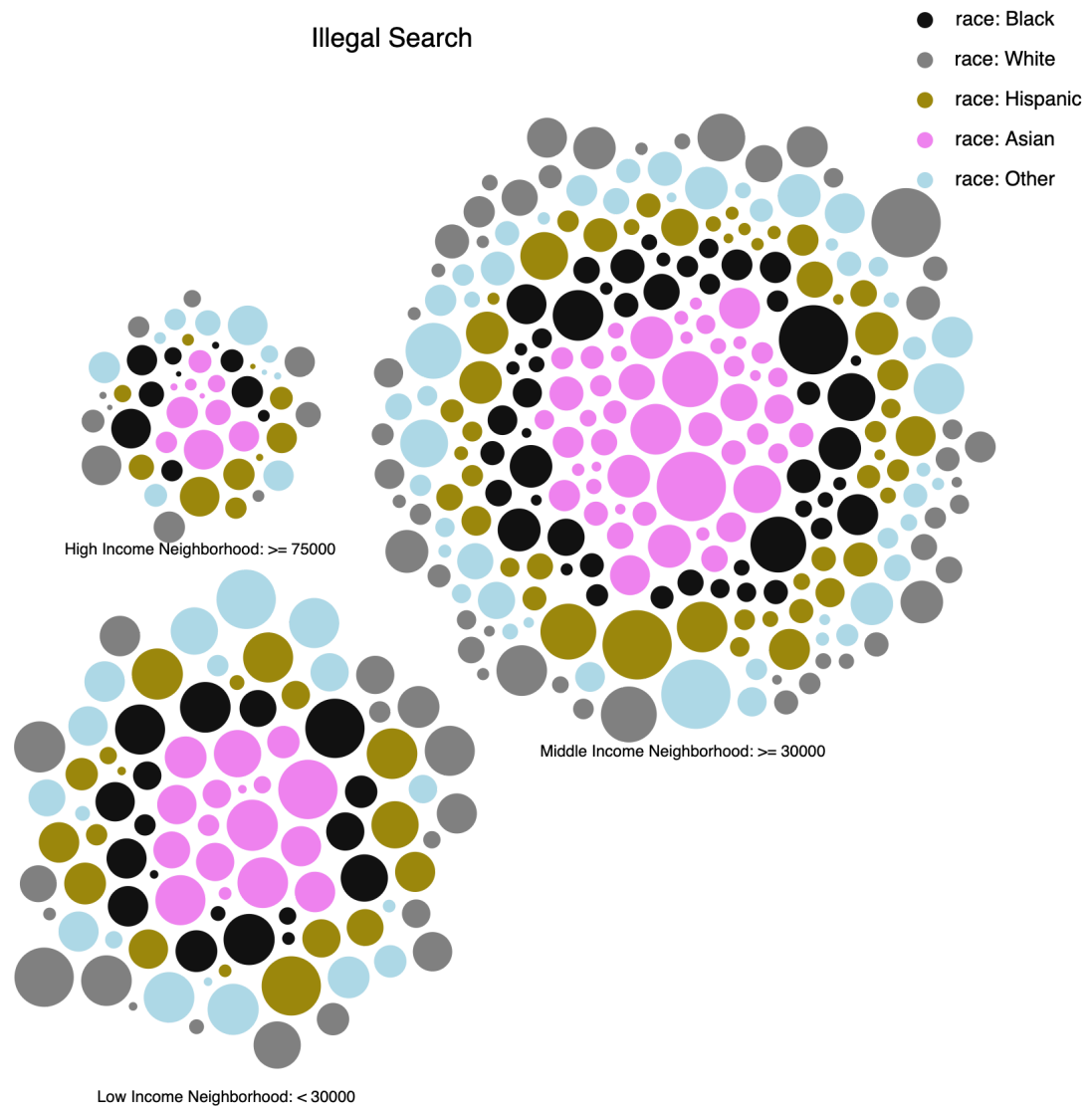
Figure 2: Illegal Search Graph

Question 1 Findings (Qualitative)

From the circle packings we have the following key findings:
- In high income neighborhoods, we see fewer clusters of misconduct counts whereas we see more clusters in low income neighborhoods, followed by middle income neighborhoods. In addition, we see that the police have committed more misconducts in middle and low income Black neighborhoods than high income neighborhoods [1].
- For all misconduct categories, we see that the majority of police committing such misconduct is more common among Asian, Hispanic and White populations in high income neighborhoods. In middle income neighborhoods and low income

neighborhoods, we see that the racial demographic is more majorly Hispanic, White and Black.
- The difference in all three listed categories between minority groups and the others has an increasing trend as the neighborhood goes from low income to high income.

In checkpoint 1, we have only identified the percentage of misconduct cases. In this checkpoint, we delve more into racial demographic of the misconduct cases being committed against the communities. This fits with our theme to see the effect of police misconduct allegations in different neighborhoods with different socioeconomic status and how police misconducts affect the neighborhoods both social-economically and racially. This finding may not lead to the direct conclusion that the certain race group is treated less as a possibility of facing police misconduct, we also should consider the actual racial demographic distribution in different neighborhoods as a factor [1]. Regarding the change in demographic for high income neighborhoods, we hypothesize the systemic racial demographic plays an important role in shaping our graph. In the future, we could adjust our graph as a per capita graph by normalizing the counts with counts per population.

Question 2 Analysis

To answer this question, we use an interactive horizontal bar to see the number of dismissed cases for all income neighborhoods with respect to the lower income, lower middle income, upper middle income and upper income neighborhoods.
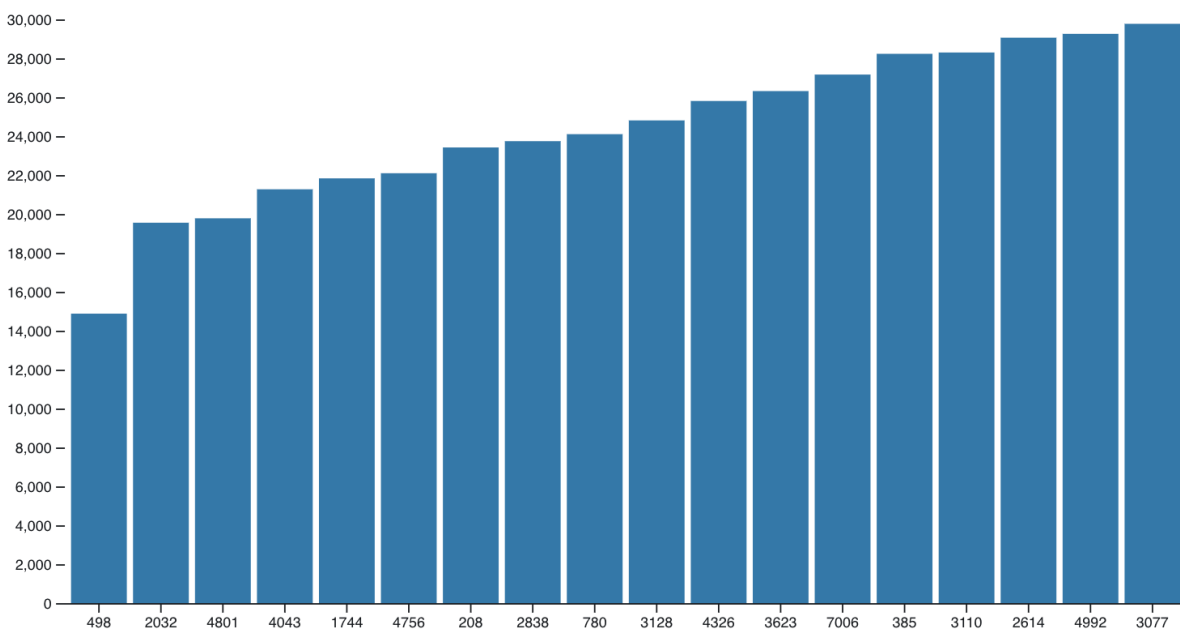
Frequency, ascending ∨

Figure 3: Dismissed Allegations vs. Income Neighborhoods in low income areas
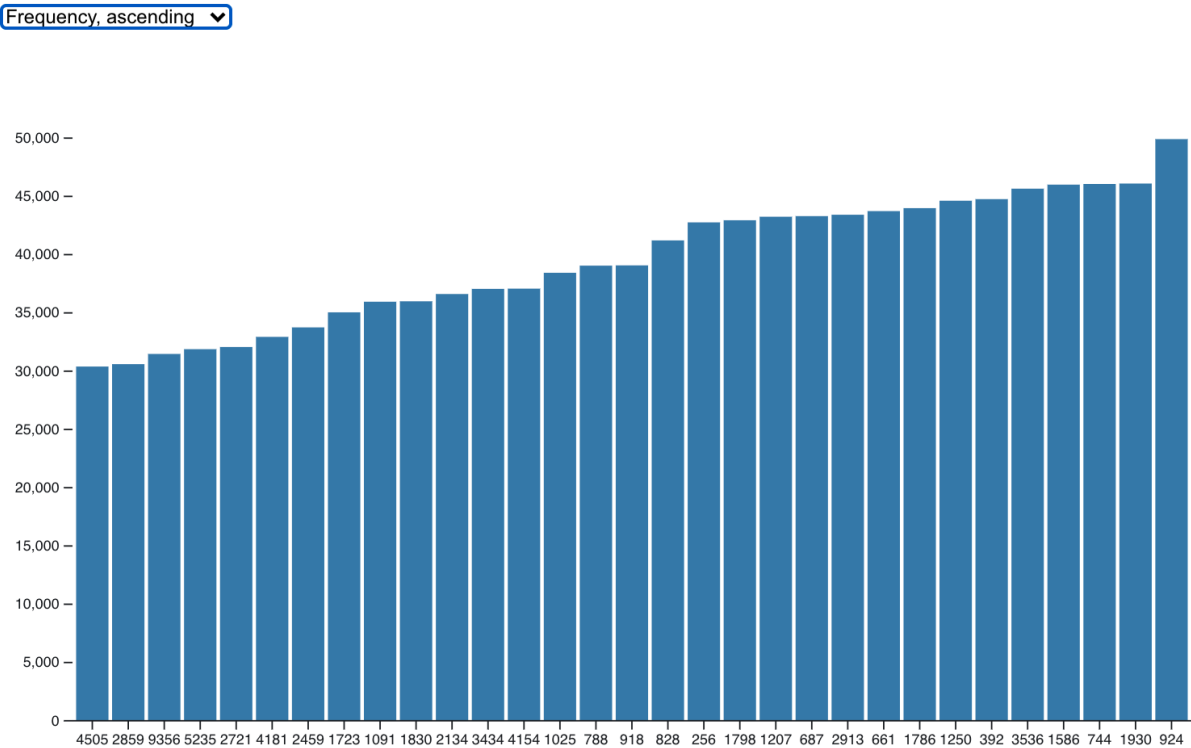
Frequency, ascending ⌄

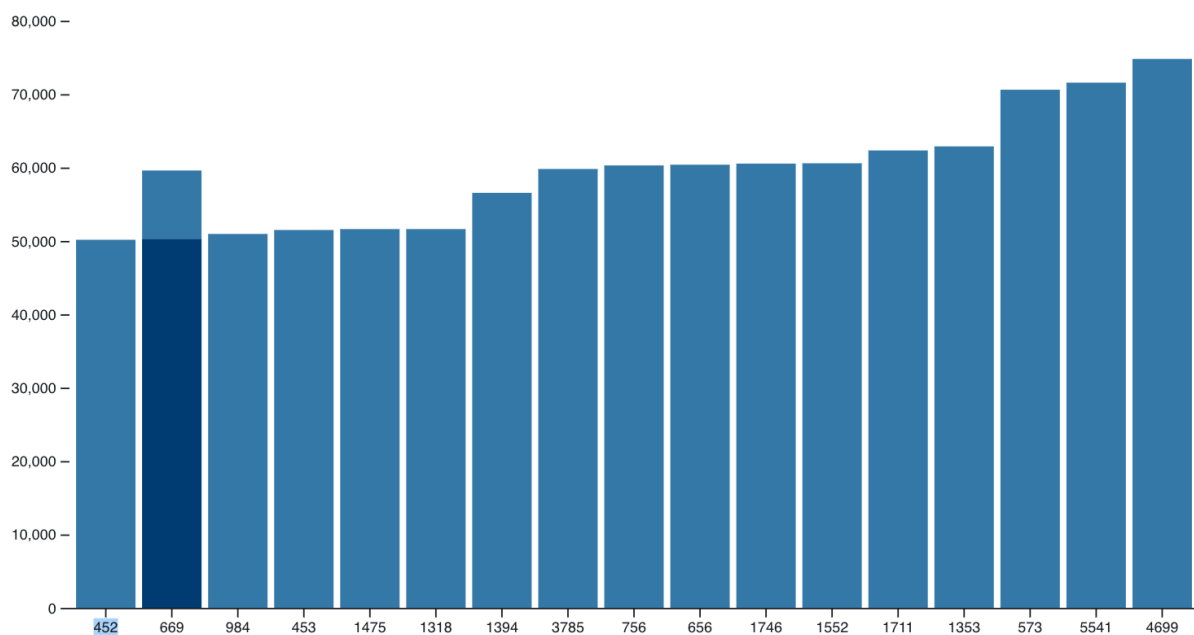Figure 4: Dismissed Allegations vs. Income Neighborhoods in low middle income areas

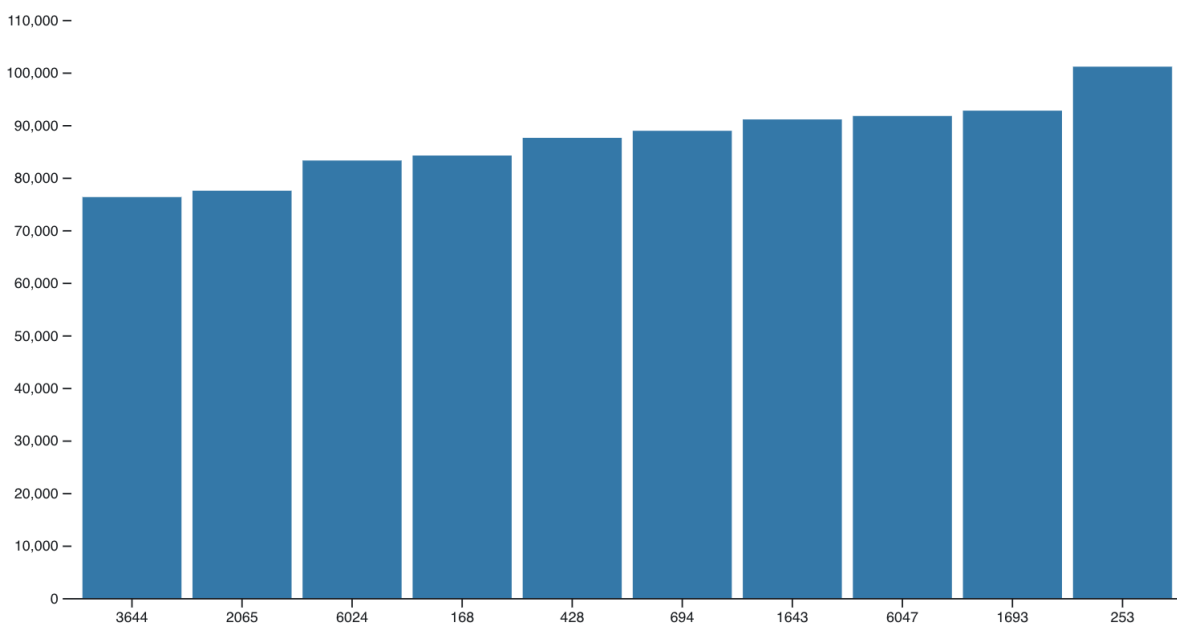Figure 5: Dismissed Allegations vs. Income Neighborhoods in upper middle income areas

Figure 5: Dismissed Allegations vs. Income Neighborhoods in upper income areas

Question 2 Findings (Qualitative)

From the interactive horizontal bar graphs we have the following key findings:
- Most of the dismissed allegation cases reside in lower-middle income areas.
- There are more dismissed allegation cases in lower income and lower-middle income neighborhoods than upper-middle income and upper income neighborhoods.
- The top two most dismissed cases are in lower-middle income, and lower income neighborhoods respectively. This might be the case due to the fact that in these neighborhoods, people don't have access to legal resources, such as lawyers and advisors.
- In the ultra wealthy neighborhoods which have household income (> $100,000), it has the lowest dismissed allegation cases out of all neighborhoods. This might be the case because in these neighborhoods, there is less crime and less corruption happening compared to lower income and lower-middle income neighborhoods. Therefore, police misconducts, such as illegal search and use of force have less applications.

In checkpoint 1, we only identified the number of allegation cases dismissed for lower income, middle income and upper income neighborhoods. In this checkpoint, we expand the middle income to lower-middle income and upper-middle income to investigate further on our claim. In addition, we also use interactive horizontal graphs to allow the users to evaluate the trend of dismissed cases per income demographic in 4 different income neighborhoods either ascending or descending. We have also identified the highest dismissed cases are committed in lower and lower-middle income neighborhoods. It might be due to the fact that people don't have access to legal resources in these neighborhoods. Finally, we also notice that in ultra wealthy neighborhoods, it has the lowest dismissed allegation cases. It might be due to the fact that there is less crime and corruption; therefore illegal search and use of force might not happen as often in these neighborhoods.