Data Science Seminar - MSAI 339

Checkpoint 2

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Data Visualization

1. Bar graph of civilian unsustained allegations in terms of years in the force of police officer

The bar graph of civilian unsustained allegations in terms of years in the force of police officer shows

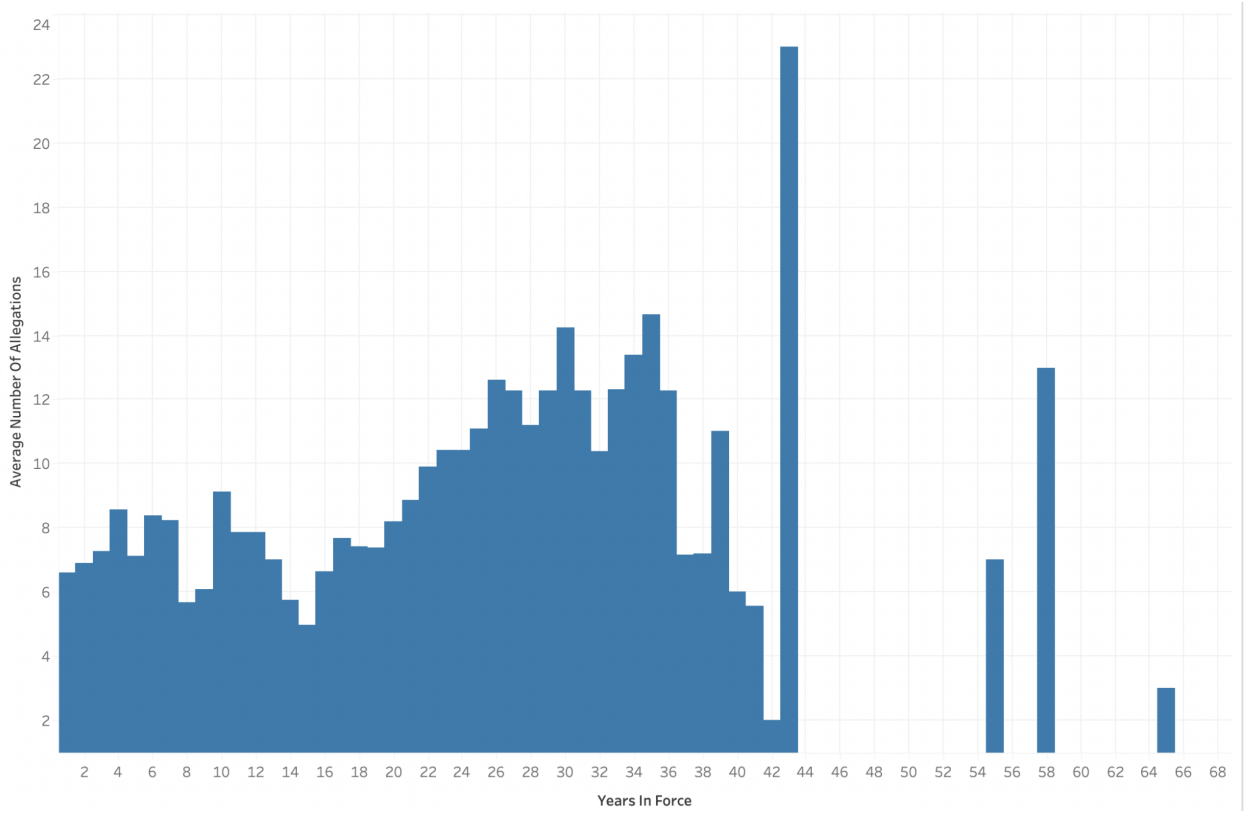

Figure 1: Bar graph of civilian unsustained allegations

Finding:
With this bar graph we can see the average number of allegations for the number of years an officer is on the police force. It seems that we see a fluctuation with the number of years on the force as we go higher until we get to the higher end of the force with veterans who have 20 to 40 years of service on the force. We believe that you can put this trend down to officers who are still in their old ways of policing and have not moved with the new general protocol of policing. However, looking at the general trend we can infer that the longer a police officer is in power, the probability of their misconduct increases. It could be due to various reasons: feeling less liable when committing a misconduct after being around for a long time, having no effective system policies to curb it so they are less fearful of committing a misconduct and even younger officers could possibly hesitate to direct any accusation towards them.

In the bottom half the average number of allegations fluctuate between years of policing. This trend goes more with the opinion that policing is more of an individual matter instead of an

institutional or structural issue. Each police officer has his or her own character and in this modern age of policing, that character and personality plays a part into their policing it seems. It is pertinent for the society to take the matters of each officer on an individual basis and hold partners, colleagues, and contemporaries accountable for not reprimanding the actions of bad police officers. We have outliers in this graph but I believe that their data may not be as accurate because as you become older as a police officer you're not out in the field like you previously were so there is not as much data as there should be and not as much documentation of your previous record with the introduction of new technologies. This is why the averages may fluctuate so much.

Notes about the query result: There are certain entries in the dataset for which the officer's end date in the force is 'null'. If the officer has an active status, we calculate the time period up until the year 2021 and if not, then we calculate the time up until the last effective date in the force. Also, there are instances where the active status is 'unknown' so we do not consider them towards the visualization data.

2. **Heat map of neighborhoods that represent concentration of civilian unsustained allegations per capita when viewed in tandem with the median income of that area. This will help figure out if the income of a civilian complainant correlates with the outcome of an allegation.**

   With these visualizations, our goal is to investigate if there are variables that determine if there is a greater tendency not to support an allegation, using the neighborhood information and if there is also a relationship with the average income of the district as metrics. Specifically, we are curious to know whether districts with lower median income tend to have more unsustained allegation than those with higher wealth.

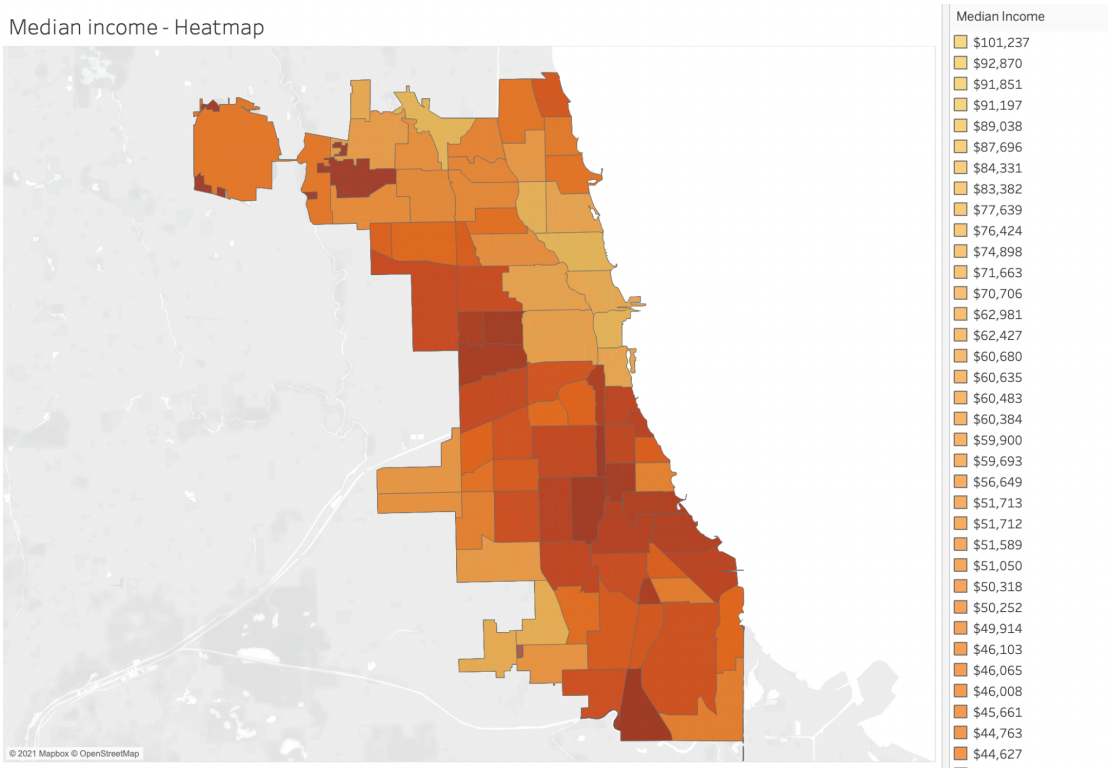

Figure 2: Median income heatmap

It can be clearly seen in Figure 2 that the south of the region has districts with lower income, unlike the north, where Evanston is located, there are the richest people. Comparing this graph with the other heatmap that we see in Figure 3, which shows the ratio of unsustained allegation per capita by neighborhood, it is not possible to establish a clear relationship between both variables. No direct connection is seen between median income and the amount of unsustained allegations.

With this map we can see the median income of the Chicago area. We can notice income disparities in many of the different areas in the city. The northern part seems to be the area with the highest incomes compared to the southside of the city. In this project we use this to see if there is a disparity between areas along the lines of income with the amount of unsustained allegations received. Income is thought to be a good social metric in trying to assess correlations in behavior and custom of specific areas.

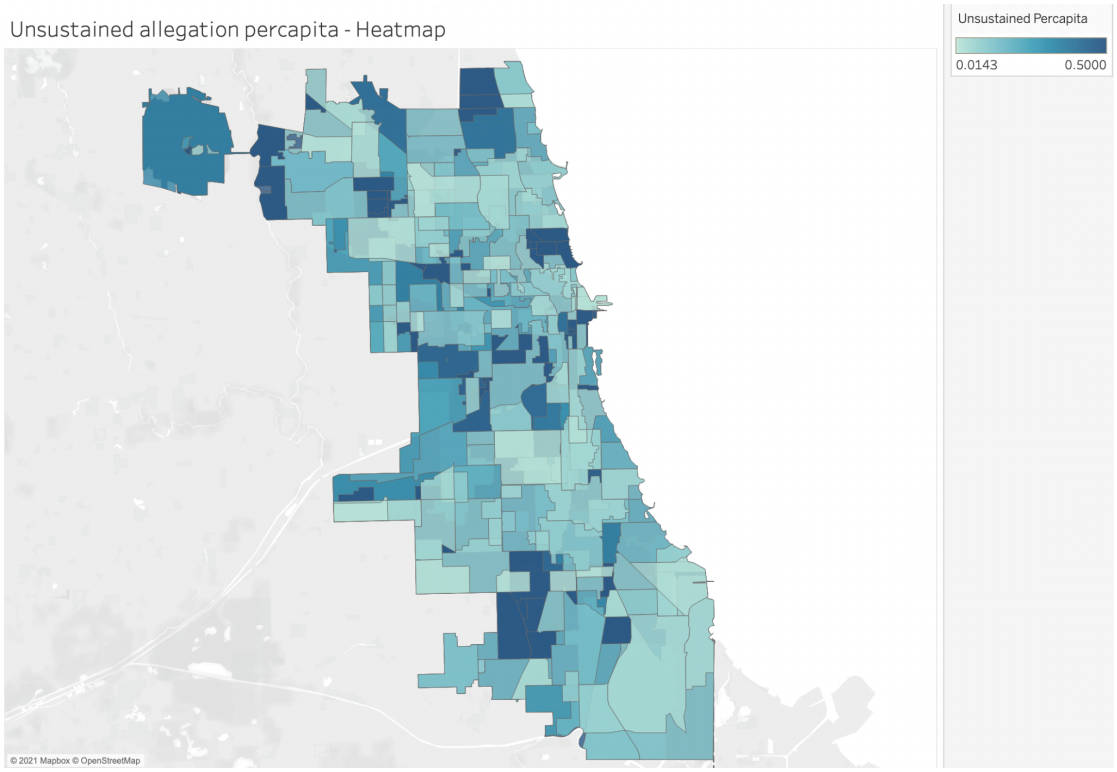

Figure 3: Unsustained allegations per capita heatmap

We see that the disparities in unsustained allegations of the heatmap when comparing the income heat map is generally non existent. We see that areas in the south side of Chicago have less allegations than a lot of parts of the more affluent northside of Chicago and its area. Is this generally because some residents of different parts of the city, disregarding income, may have a better relationship with their police? Does having a good relationship with your police officers take a little bit more than just having a higher income and living in a nicer neighborhood or does it take sincere interaction with the police officers to consult with the wants and needs of the community? It seems that this heat map shows that the amount of money you have may not indicate that you're automatically a good citizen and decent person. The person with higher incomes may have habitual infractions and laws and ordinances that he or she doesn't abide by. Those with higher incomes may have more allegations against police that is not on the topic of police force but on issues of neglect, dereliction of duty, and ineptness compared to neighborhoods with lower incomes that have a high amount of unsustained allegations