An Investigation into Racial Bias within NYPD Misconduct: Allegations and the Impact on Officer Rank

I. Introduction

I.I Summary

Following our initial exploration of the database, we were interested in the correlation and intersection of several key variables: the ethnicity of complainants, the ethnicity of police officers, the types of complaints, police officer rank, and the percentage of substantiated complaints. After delving into the database further, we found that the majority of police officer and complainant interactions were interracial and that there were far more complaints from Black citizens than any other demographic. The excessive number of complaints from Black citizens, followed by Hispanic citizens led our team to examine other variables that might confirm the presence of racial bias within the New York Police Department (NYPD). We decided to focus our research and analysis on the type of complaints citizens reported distributed over complainant ethnicity. Finally, we were also interested in investigating the rank of officers accused of misconduct over time.

I.II Research question

Throughout our investigation, our research and analysis were driven by our motivation to discover an answer to our guiding research question. Do NYPD officers use excessive force of authority against people of color (POC) at disproportionate rates and, if so, how is this reflected in their career progression within the department?

I.III Potential impact

Exposing racial bias and misconduct of police officers, and pointing out specific situations and actions that were condemned by New York City's Civilian Complaint Review Board (CCRB) will allow policymakers to specifically target these areas within the NYPD.

Additionally, investigating police officer rank over time will reveal how civilian complaints affect officers' careers; it will also give insight into the importance given to these complaints by the NYPD. Our investigation will uncover how many officers moved up in rank despite serious civilian complaints of misconduct against them. Furthermore, it will disclose how many officers are still employed after receiving an inordinate number of complaints. This may demonstrate the need for a neutral third party to determine suitable consequences for continued police misconduct.

I.IV Findings

Based on our analysis of the data, we found that Black citizens placed by far the most complaints of any ethnicity group, followed by Hispanic citizens, and this sharp increase in complaints placed by Black citizens occurred within the past 20 years. Additionally, there is a clear increase in the number of complaints starting around the early 2000s. We could not draw any conclusions on the number of complaints received by police officer ethnicity over time.

We also noted that the beginning of complainant ethnicity recording coincides with a sharp increase in official complaints reported against the NYPD. Police use force against Black and Hispanic populations at disproportionate rates, but has improved over time, suggesting that the NYPD has reduced their discriminatory use of force.

As for the effect of the two reform policies, it is difficult to determine whether they were effective themselves in reducing discriminatory treatment by the NYPD police force, as there are many different factors that likely influence this trend. And finally, we noted that a complaint from a person of color is less likely to affect the career progression of an officer than one from a White complainant.

II. Related Work

The media has highlighted striking NYPD misconduct over recent years, and numerous studies have followed suit investigating current issues and research needs within police accountability, the impact of NYC's police reforms, and analyses on these specific policies in the context of claims of racial bias. The Human Rights Watch describes the NYPD as "a deeply entrenched system that prevents meaningful scrutiny and allows officers and police departments to commit abuses with impunity" (HRW). For instance, the June 2020 Mott Haven protests demonstrate NYPD's "excessive use of force, violations of the rights to free expression and peaceful assembly, arbitrary arrests and detentions" (HRW). Renowned scholar Dr. Rashawn Ray found that "Black officers are sanctioned more harshly than white officers for similar misconduct" (Brookings). Focusing more specifically on the NYPD, in the paper "The New York City Police Department, its Crime-Control Strategies and Organizational Changes, 1970-2009," authors examine the NYPD over a period of more than 30 years, focusing on the primary events – both in the city and in the department – that have shaped and influenced the organization, its philosophy, structure and crime-control strategies over that period of time.

III. Methods and Analysis

Our team used the following ProPublica dataset titled Civilian Complaints Against New York Police. This dataset contains 40 years worth of complaints filed against New York police officers, between 1980 and 2020. The variables of interest to our investigation include complainant ethnicity, police officer ethnicity, the type of complaint and officer rank over time. The following sections explore the significance of these variables in our analysis. Our analysis begins with an exploration of complainant and police officer ethnicity (Subsection III.I), followed by an analysis of complaint type, contact reason, and the use of excessive force against people of color (Subsection III.II), and finally an examination of the impact of complaints on officer rank (Subsection III.III).

III.I Exploration of Complainant and Police Ethnicity Data

In order to obtain a better understanding of the information presented in the database, we generated several graphs to demonstrate the distribution of complainant ethnicity and police officer ethnicity over time. The following graphs illustrate clear patterns for our analysis and aid the visualization of our findings. Please note that the bars do not intersect, i.e., the numbers for each ethnicity are represented only by that groups' corresponding color, and not by the overall size of the bars.
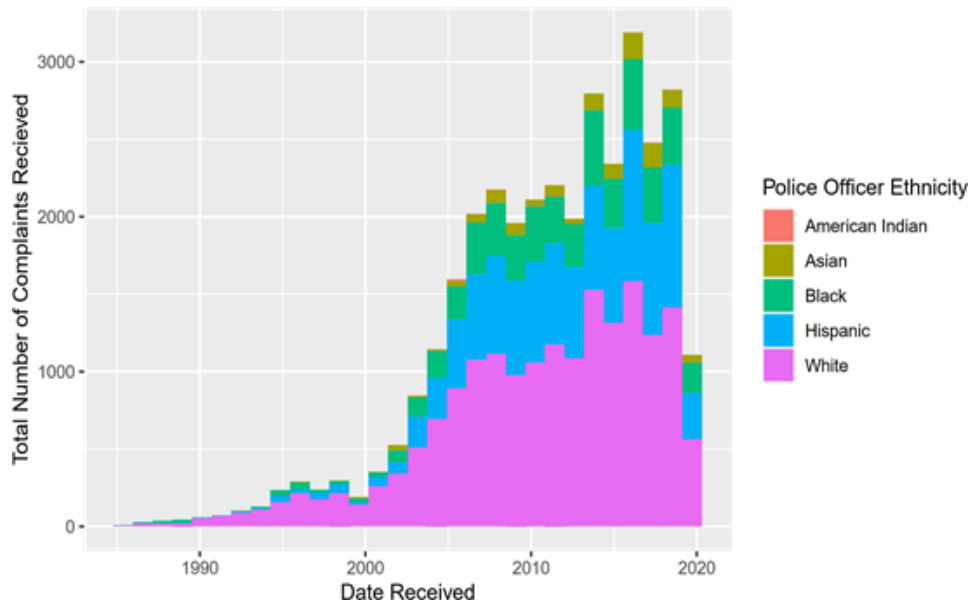
Figure 1. **Number of Complaints Placed by Complainant Ethnicity Over Time**
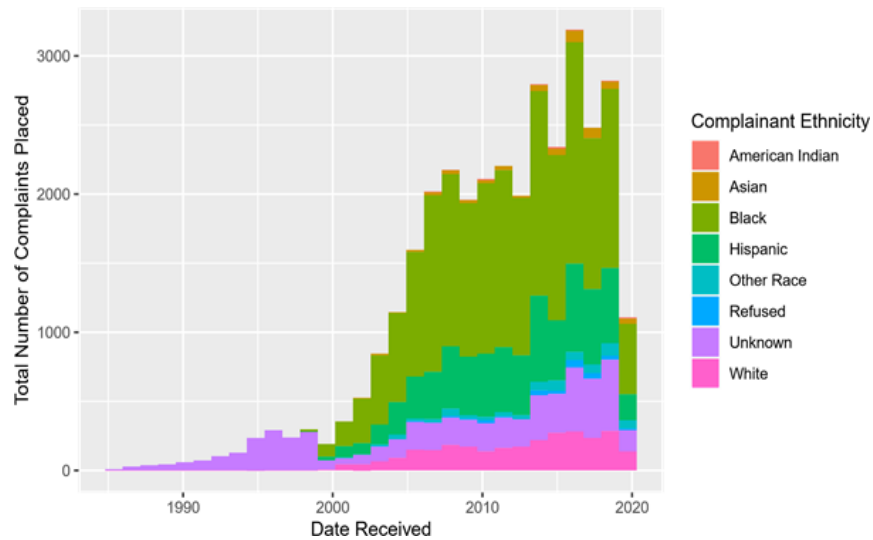
Note. Figure 1 displays the total number of complaints placed by citizens belonging to different ethnic groups against the New York police from 1980 to 2020.

During this 40 year period, a total of 33,358 complaints were placed against the New York police. Black citizens placed 17,114 complaints, by far the most complaints by any ethnicity group, followed by Hispanic citizens who reported 6,424 complaints, and White citizens who placed 2,783 complaints. Additionally, there is a clear increase in the number of complaints starting around the early 2000s.

Figure 2. **Number of Complaints Received by Police Officer Ethnicity Over Time**
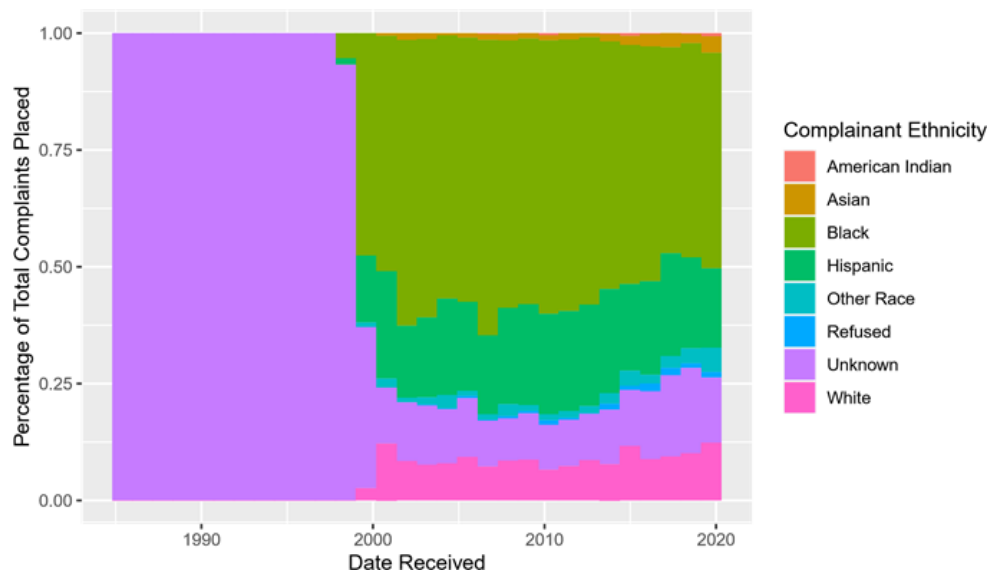

Note. Figure 2 demonstrates the total number of complaints received by New York police officers distributed among different police officer ethnicities over time.

In total, White police officers received 18,074 complaints against them between 1980 and 2020, and 8,970 of these complaints were placed by Black citizens. 9,150 complaints were reported against Hispanic officers and 4,924 complaints were placed against Black officers in total. There are 2,046 White police officers in this complaint database, which is about double the number of Hispanic officers. Then there are twice as many Hispanic officers as there are Black officers.

The numbers of complaints placed against officers of certain ethnical groups are probably reflective of the NYPD ethnical demographic at the time. But this database does not include the police officers in the department who did not receive complaints, so we cannot confirm this hypothesis at the moment. Still, it is concerning that there are over 18,000 complaints against about 2,000 White police officers.

Figure 3. **Recorded Complainant Ethnicity Over Time**

Note. Figure 3 displays the percentage of complaints placed by citizens of each ethnic group by taking into account the total number of complaints reported each year.

This graph also illustrates police records of complainant ethnicity between the 1980s and 2020. Based on the graph, it is clear that prior to the late 1990s, the NYPD did not record the ethnicity of citizens when complaints were reported. Additionally, before the late 1990s, not many complaints were officially filed against New York City police officers, as is demonstrated in Figures 1 and 2. Hence, the beginning of complainant ethnicity recording coincides with a sharp increase in official complaints reported against the NYPD. Although we couldn't find evidence on the motivation of these changes (no related public policy issued or event happened at the time), they suggest an improvement to the complaint process, or a new incentive for the public to submit complaints.

Furthermore, the graph highlights that the larger percentage of complaints placed by Black citizens occurred only within the last 20 years.

III.II Analysis on the Use of Excessive Force

Having uncovered the above trends in complainant and police officer ethnicity over time, we next asked ourselves whether such trends also persisted when examining specific complaint types. In

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particular, we were interested in investigating whether police officers disproportionately discriminated against people of color and other minorities when adjusting for other variables. As a first step, we grouped all complaints into four major buckets.

Figure 5. **Distribution of Complaint Types**
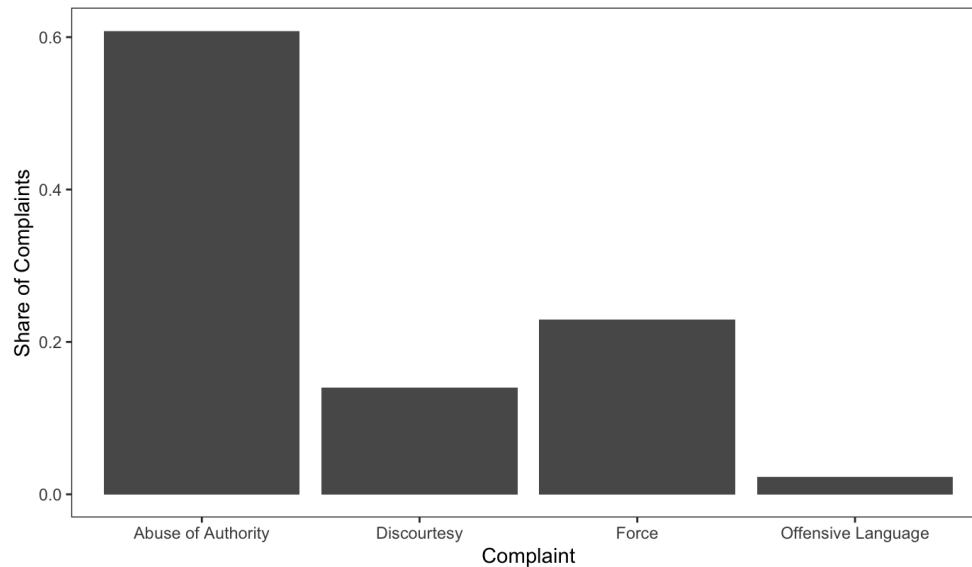
Note. Figure 5 displays the four buckets of complaint types and their share of total complaints.

Due to recent events of police brutality against minorities, we focused our attention on the "Force" bucket, which included all complaints filed against police officers because of excessive use of force. In addition, this type of complaint seemed most severe given the categories we had formed, thus serving as a good proxy for evaluating any disproportionate treatment of specific ethnic groups. As complainant ethnicity was not recorded before the year 1998 (see Figure 3), we had to restrict our data to all years after 1998 to measure any effects. Furthermore, we had to exclude ethnic groups from our analysis for which not enough data was available which could have led to unreliable results. Consequently, our analysis included all complaints from Black, Hispanic, or White complainants starting in the year 1998.

In order to evaluate any potential disproportionate use of force against the three ethnicities named above, we developed a logistic regression model predicting whether a claim was filed for this reason, given the ethnicity and adjusting for other variables which could have had an influence on the likelihood of using excessive force. We hypothesized that the Black and Hispanic ethnicities would see odds ratios of having excessive force used against them significantly above 1 when compared to the White ethnicity, which would indicate negative disproportionate treatment.

As excessive use of force by the officer could also be rooted in other factors, we regressed our logistic model not only on the complainant ethnicity, but the following variables: *police officer contact reason*, *complainant age*, *complainant gender*, and the *precinct* in which the encounter occurred. This was done in order to separate any ethnicity effects from potential age, gender, and location effects, while accounting for the officer's contact reason.

Accounting for the officer's contact reason proved to be a challenge since there were 54 different contact reasons in the database and a long tail, meaning that there were many contact reasons with only a few data points. In order to circumvent this issue and keep our data as low-dimensional as possible, we only took into account the top nine officer contact reasons, placing all other contact reasons into an "Other" category. The top nine contact reasons chosen for adjustment are shown below:

Table 1. **Top 9 Police Office Contact Reasons And Frequency**

PD suspected C/V of violation/crime - street	10078
PD suspected C/V of violation/crime - auto	2981
PD suspected C/V of violation/crime - bldg	2542
Moving violation	1983
Other violation of VTL	1140
Report-dispute	1085
Execution of search warrant	913
Report of other crime	906
Execution of arrest/bench warrant	683

Note. Table 1 displays the top nine police officer contact reasons and their frequency for all complaints chosen for analysis and placed by citizens against the NYPD.

The resulting logistic regression model had a total of 19 different one-hot-encoded features and was trained on 26,249 observations. We further re-levelled our data with the White ethnicity being the new base class, allowing the model to estimate the log odds ratios of a complaint being filed because of use of force against Black and Hispanic ethnicities relative to the White ethnicity.

The model estimated log odds ratios of excessive force being used of 0.185 and 0.220 for the one-hot-encoded Black and Hispanic ethnicity features, respectively. When taking the exponent, these values correspond to odds ratios of 1.20 for the Black ethnicity and 1.25 for the Hispanic ethnicity relative to the White ethnicity. Both values are highly statistically significant at the $p = .001$ level, indicating that even when adjusting for multiple other variables, including the officer contact reason and complainant's age, gender, and location (precinct) effects, the data strongly suggests that discrimination did occur against Black and Hispanic ethnicities when police officers used excessive force.

The result indicating a disproportionate use of force against Black and Hispanic populations was expected, so we wanted to dig deeper and see whether this discriminatory effect changed over time. In order to do so, we binned the complaints received over time, creating groups of five-years spans. The results are shown in Figures 6 and 7:
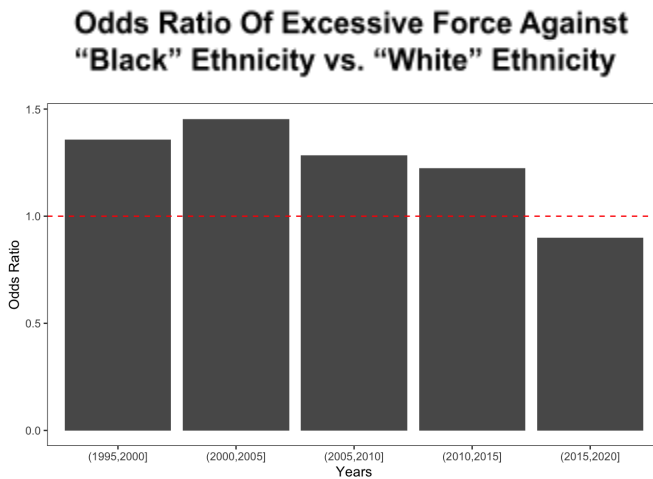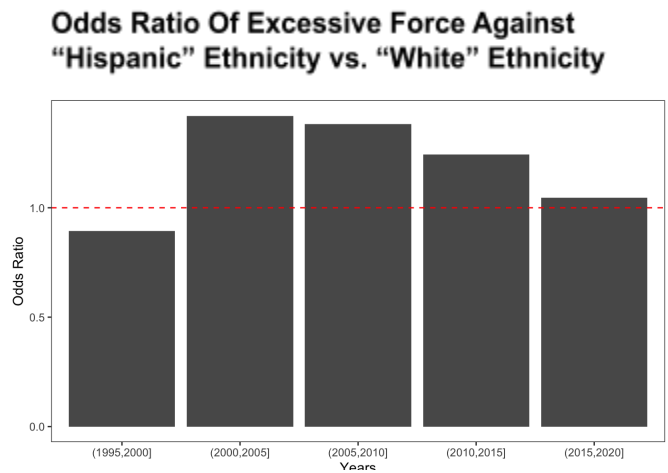
Figure 6.

Odds Ratio Of Excessive Force Against "Black" Ethnicity vs. "White" Ethnicity

Figure 7.

Odds Ratio Of Excessive Force Against "Hispanic" Ethnicity vs. "White" Ethnicity

Note. Figures 6 and 7 display how the odds ratio of excessive force used against the Black and Hispanic ethnicities vs. the White ethnicity has changed over time.

The above results are very interesting: as we can see, excessive use of force odds ratios have generally been very high in the past and decreased over time to approach an odds ratio of close to 1 today. The data suggests that when adjusting for the named variables, the NYPD has struggled significantly in the past with discriminatory use of force complaints, and has since improved. The first bin in both graphs can be considered to be unreliable as we only have 17 White ethnicity samples for the year range 1995 to 2000. All other bins have a support of at least 340 samples for each ethnicity.

We also binned the data according to different year ranges to investigate whether the change in odds ratios correlates with the two New York police reforms that occurred over the period the data was selected, namely the 2013 Community Safety Act, which includes four bills regarding anti-profiling, protection against unlawful searches and police accountability, and the 2017 Lancman's Bill, which requires the NYPD to report number of arrests and summonses issued for subway fare evasion. The results are shown in Figures 8 and 9:
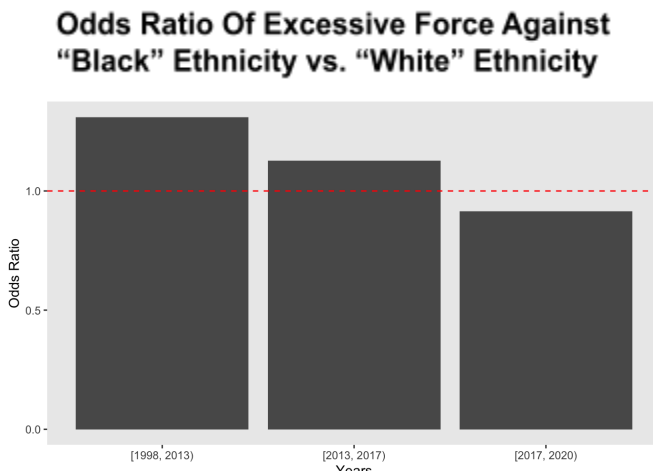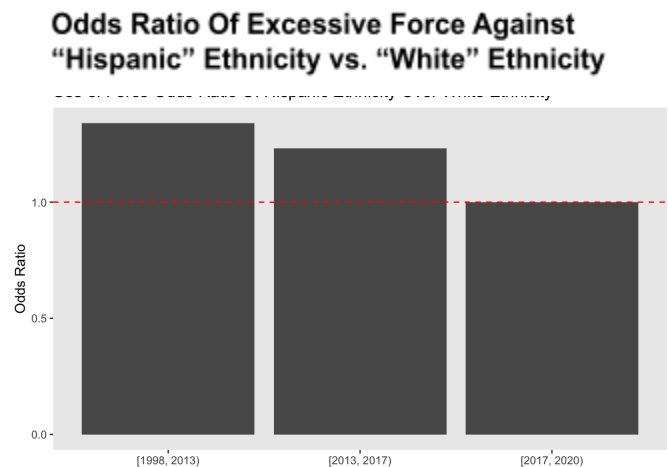
Figure 8.

Odds Ratio Of Excessive Force Against "Black" Ethnicity vs. "White" Ethnicity

Figure 9.

Odds Ratio Of Excessive Force Against "Hispanic" Ethnicity vs. "White" Ethnicity

Note. Figure 8 and 9 display how the odds ratio of excessive force used against the Black and Hispanic ethnicities vs. the White ethnicity has changed over time, binned according to the years in which the two police reforms were introduced.

As we can see in Figure 8 and 9, the odds ratio of excessive force being used against the Black and Hispanic ethnicities versus the White ethnicity shows the same trend when binned according to the years the policies were introduced and when binned according to equal 5-year spans. This suggests that the two policies could have been effective in reducing discriminatory treatment by the NYPD police force, however, no causal claim can be made as there are many different factors that likely influence this trend.

III.III Impact of Complaints on Officer Rank

With the aim of understanding the NYPD's approach towards civilian complaints, particularly from civilians who identify as either Black or Hispanic, we looked at how officers progressed through their career at the Department and its relationship to the number of complaints they got over the years.

In order to explore this, we recoded the officer's rank at the time of their first incident and their rank now, and looked at their yearly rank change. For instance, if an officer got their first complaint in 2010 as a Police Officer (rank 0) and in 2020 they were a Captain (rank 4), their yearly rank change would be 0.4. We then filtered the top 20% of officers with the highest yearly rank change, to understand how the number of complaints they got over their careers affected their progression. We built a linear model to assess this, through which we found a correlation of **-0.12,** that is a weak but significant negative linear relationship. This weak correlation is also reflected in the model's R-squared of ~**0.1,** which shows that the number of complaints explains a small portion of the variability in yearly rank change.

Figure 11.

Number of complaints received vs. officers' career progression
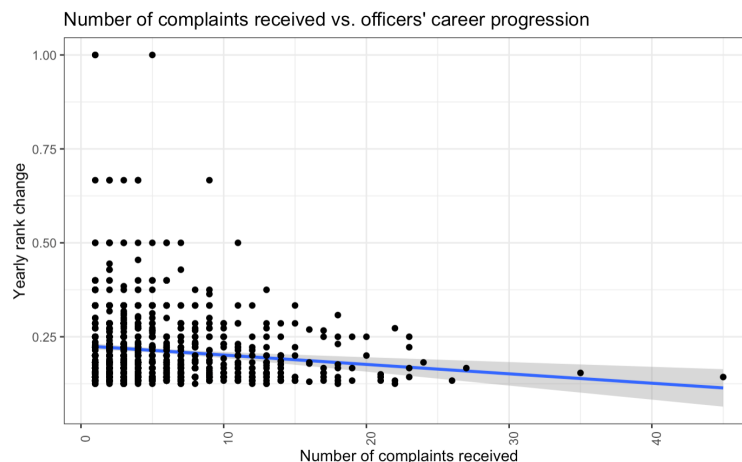
Note. As we can see from Figure 11, while we have some outliers, overall the more complaints an officer receives, the smaller the yearly rank change becomes. This makes sense intuitively, as a high number of complaints can be indicative of poor performance and therefore should result in slower career progression.

We then wanted to understand whether this negative correlation would still hold true if we looked at the number of complaints received from people of color, particularly complainants that identify as

Black and Hispanic. Using the same dataset of the top 20% performing officers, we filtered the complaints for the ethnicity of the complainant and looked at how this would play into the officers' career progression.

The correlation between the number of complaints from POC and yearly rank change was a weak positive one, of **0.05.** This correlation is not statistically significant, but it shows us that a complaint from a person of color is less likely to affect the career progression of an officer than one from a White complainant. To validate this, we built a multilinear regression model that took into account the number of complaints (like our previous model) but also considered the number of complaints from Black complainants and the number of complaints from Hispanic Complainants. Once again, the coefficient for the total number of complaints was negative, while the coefficient for the number of complaints from Black and Hispanic complainants was positive.

Figure 12.
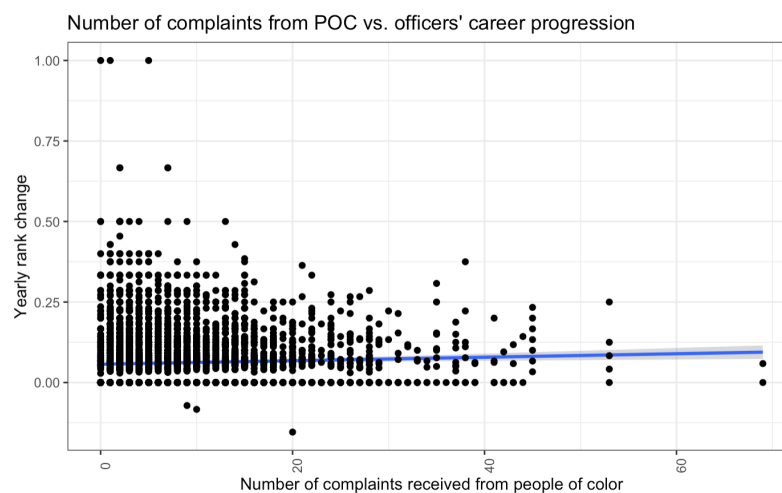
Note. As we can see in Figure 12 there is a slightly positive correlation between the number of complaints from people of color and rank change, although officers with a higher number of complaints were still more likely to have a lower yearly rank change. Nevertheless, this is an indication that racial bias may play a role in NYPD's approach to an officer's career progression.

IV. Discussion & Conclusion

Overall, our data analysis confirms the presence of racial discrimination when it comes to New York police officers' treatment of civiliains. In summary we found that:

- Complainants identified mostly as Black (>50%) and Hispanic (20%). This doesn't necessarily mean that the NYPD was being racially biased and targeting these populations to police, since there are historical and geographical reasons that explain the higher incidence of crime - and therefore more policing - coming from Black and Hispanic individuals when compared to White individuals. For example, the fact that Black and Hispanic minorities often live in less developed and therefore more dangerous parts of the city when compared to Whites means that they are more likely to be stopped by Police Officers who usually watch out for criminal activities in these regions. In this case, place of residence is a confounding factor. Still, it could also be that complaint rates among minorities are higher, even after adjusting for the total number of police-civilian interactions per ethnic group.

- Police Officers who received complaints identified mostly as White (50%) and Hispanic (25%). Again, this doesn't necessarily mean that misconduct rates are higher for White and Hispanic officers when compared to Black officers, for example. The numbers of complaints placed against officers of certain ethnical groups are probably reflective of the NYPD ethnical demographic from the 1980s to 2020. Still, the underlying demographic distribution in the NYPD suggests a disparity in hiring Black versus Hispanic versus White officers.
- Prior to the late 1990s, the NYPD did not record the ethnicity of citizens when complaints were reported. Additionally, before the late 1990s, not many complaints were officially filed against New York City police officers. Although we couldn't find evidence on the motivation of these changes (no related public policy issued or event happened at the time), they suggest an improvement to the complaint process, or a new incentive for the public to submit complaints.
- Even when adjusting for multiple other variables, including the officer contact reason and complainant's age, gender, and location (precinct) effects, the data strongly suggests that discrimination occured against Black and Hispanic ethnicities when police officers used excessive force.
- The data suggests that the NYPD has struggled significantly in the past with discriminatory use of force complaints, but has since improved.
- Although the 2013 Community Safety Act and the 2017 Lancman's Bill may have been effective in reducing discriminatory treatment by the NYPD police force, no causal claim can be made using our data, since there are many relevant exogenous factors.
- The more complaints an officer receives, the smaller his yearly rank change becomes. This makes sense intuitively, as a high number of complaints can be indicative of poor performance and therefore should result in slower career progression. However, there is a slightly positive correlation between the number of complaints from people of color and rank change, although officers with a higher number of complaints were still more likely to have a lower yearly rank change. Nevertheless, this is an indication that racial bias may play a role in NYPD's approach to an officer's career progression.

As explained above, our statistical analysis exposes racial bias and misconduct of police officers, as well as racial discrimination within the NYPD. This exposure is essential to substantiate policies that deal with racial descrimination in the United States Justice System, and to bring society's attention to issues that unfortunately are still relevant. In order to improve our analysis it would be beneficial to have the overall demographic distribution of the NYPD over time. It would also be useful to understand officers' career progression processes.

V. Literature Review Sources:
Police Accountability: Current Issues and Research Needs
"Kettling" Protesters in the Bronx: Systemic Police Brutality and Its Costs in the United States
New York State Police and Criminal Justice Reforms Enacted Following George Floyd's Death
Black Lives Matter: Eliminating Racial Inequity in the Criminal Justice System
Do Police Matter? An Analysis of the Impact of New York City's Police Reforms
Zero Tolerance: A Case Study of Police Policies and Practices in New York City
An Analysis of the New York City Police Department's "Stop-and-Frisk" Policy in the Context of Claims of Racial Bias